JUNE

THE

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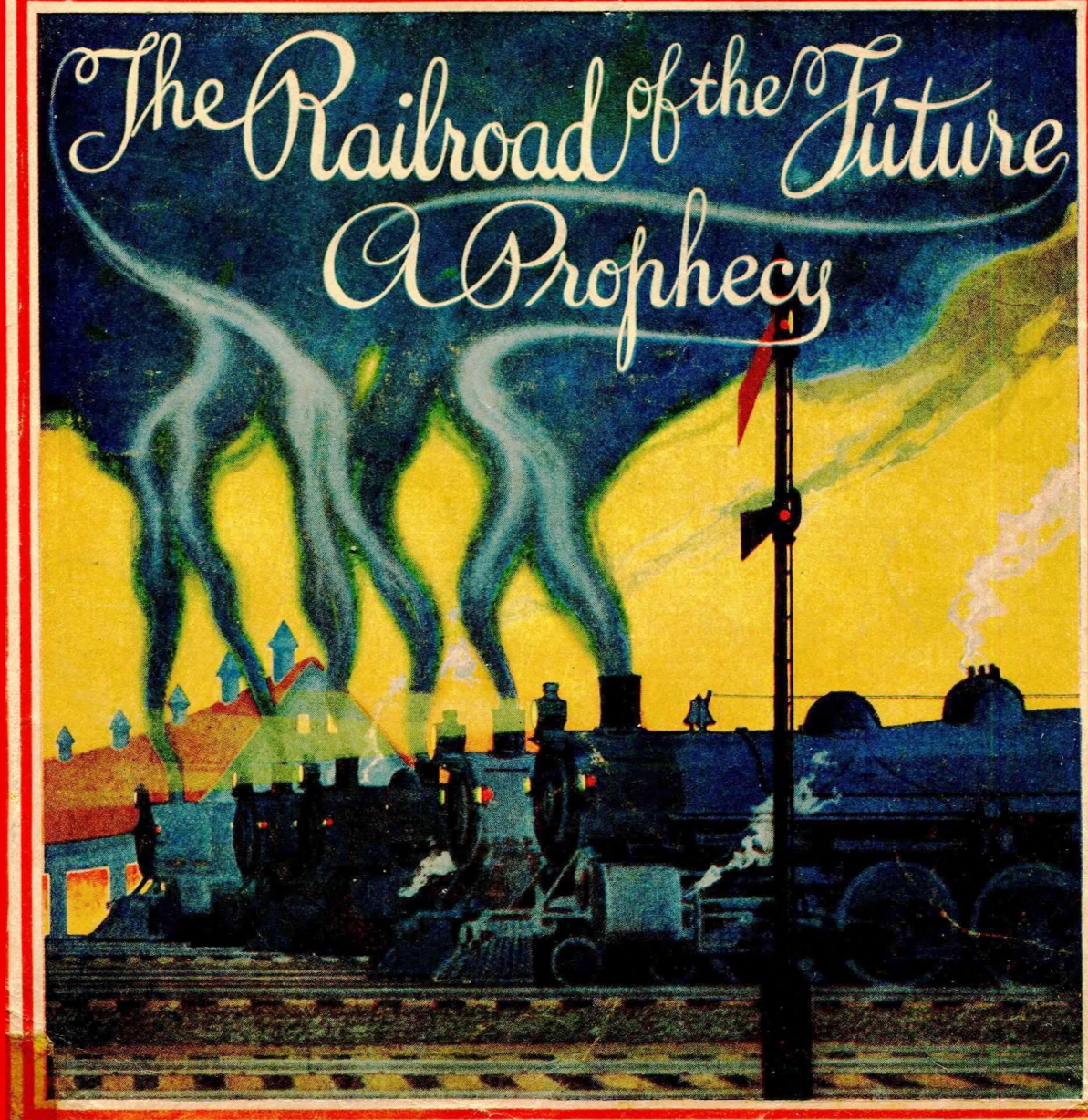
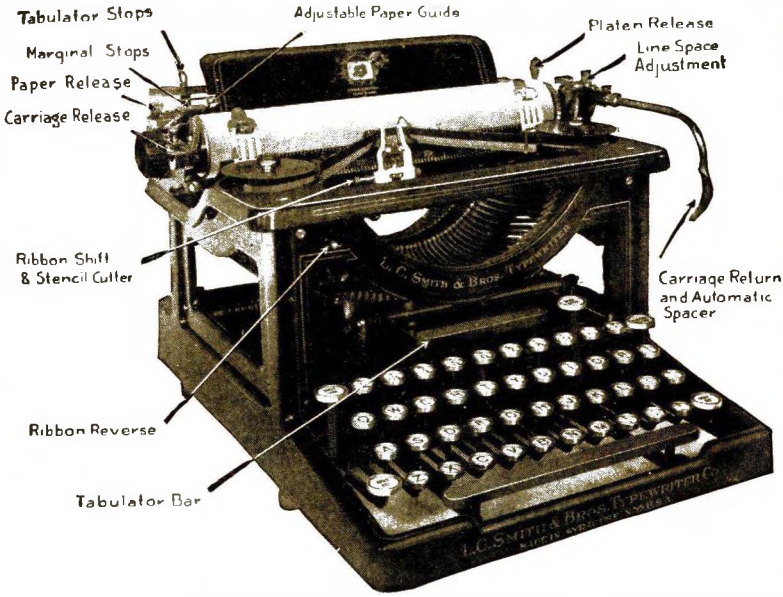
RAILROAD MAN'S MAGAZINE



RAILROAD MAN'S MAGAZINE JUNE



I want, through this advertisement, to establish as friendly business relations with you as I possibly can. I want you to realize also, that it is my earnest effort and intention to give you full honest value for every dollar that you spend with me. This is the only way I can succeed. The publisher of this magazine will vouch for my square dealings during the four years and more my advertising has appeared.

I am building up my business on the foundation of good value and square dealings. I am saving thousands of satisfied customers thousands of dollars, by supplying, perfect—late style—visible writing—typewriters, at remarkably low prices.

All my transactions are handled throughout by personal correspondence. I assure you every courtesy and consideration, in your dealings with me. Your order will have my prompt, careful, personal attention. I will be glad to do business with you.

Harry A Smith

TYPEWRITER SENSATION

Free TRIAL—Use As You Pay

Send me only $2.50 a month until the low total price of $48.80 is paid, and the machine is yours

This is absolutely the most generous typewriter offer ever made. Do not rent a machine when you can pay $2.50 a month and own one. Think of it—Buying a $100.00 machine for $48.80. Cash price, $45.45. Never before has anything like this been attempted.

Standard Visible **L. C. Smith** Model Number 2

Perfect machines, Standard Size, Keyboard of Standard Universal arrangement writing 84 characters—universally used in teaching the touch system. **The entire line of writing completely visible at all times,** has the tabulator, the two color ribbon, with automatic reverse, the back spacer, ball bearing type bars, ball bearing carriage action, ball bearing shift action, in fact every late style feature and modern operating convenience. Comes to you with everything complete, tools, cover, operating book and instructions, ribbon, practice paper—nothing extra to buy. **You cannot imagine the perfection of this beautiful reconstructed typewriter until you have seen it.** I have sold several thousand of these perfect latest style Model No. 2 machines at this bargain price and every one of these thousands of satisfied customers had this beautiful, strictly up to date machine on five days' free trial before deciding to buy it. I will send it to you F. O. B. Chicago for five days' free trial. It will sell itself, but if you are not satisfied that this is the greatest typewriter you ever saw, you can return it at my expense. You won't want to return it after you try it—**you cannot equal this wonderful value anywhere.**

H. A. SMITH
Room 607-231 N. Fifth Ave.
CHICAGO, ILL.

Ship me a No. 2 L. C. Smith F. O. B. Chicago, as described in this advertisement. I will pay you the $40.00 balance of the SPECIAL $48.80 purchase price, at the rate of $2.50 per month. The title to remain in you until fully paid for. It is understood that I have five days in which to examine and try the typewriter. If I choose not to keep it I will carefully repack it and return it to the express agent. It is understood that you give the standard guarantee for one year.

Name .....

Address .....

.....

You Take No Risk—Put In Your Order *Now*

When the typewriter arrives deposit with the express agent $8.80 and take the machine for five days' trial. If you are convinced that it is the best typewriter you ever saw, keep it and send me $2.50 a month until my bargain price of $48.80 is paid. If you don't want it, return it to the express agent, receive your $8.80 and return the machine to me. I will pay the return express charges. **This machine is guaranteed just as if you paid $100.00 for it.** It is standard. Over one hundred thousand people own and use these typewriters and think them the best ever manufactured.

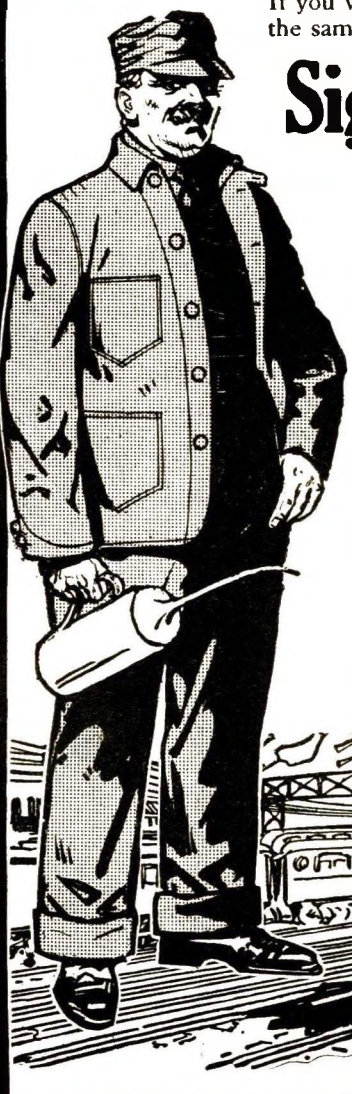
The supply at this price is very limited, the price will probably be raised when my next advertisement appears, so don't delay. Fill in the coupon today—mail to me—the typewriter will be shipped promptly. There is no red tape. I employ no solicitors—no collectors—no chattel mortgage. It is simply understood that I retain title to the machine until the full $48.80 is paid. **You cannot lose. It is the greatest typewriter opportunity you will ever have. Do not send me one cent. Get the coupon in the mails today—sure.**

Harry A. Smith 607-231 N. Fifth Ave. Chicago

Guaranteed not to fade even at this critical time

This trade mark is of great value to you—it guarantees you a non-fading, satisfactory-in-every-way-overall. Look for it.

The Signal standard for Overalls has not been lowered—and never will be. The shortage of dyes has not affected Signal Tubtest Overalls in any way. We are using only Tubtest denim fabric. It is of the same standard blue color. The color is fast and *guaranteed* not to run or fade.



If you want the same kind of overalls that you've always had—and the same guarantee of absolute satisfaction, ask for

Signal TubTesT Overalls

Copyrighted

Loose-fitting Coat—comfortable "trouser fit" Overalls. Union Made.

Chosen by thousands and thousands of railroad men, because of their strength and wear-resisting qualities. Every garment is oversize—giving you the greatest amount of comfort. The famous Tubtest denim fabric will not fade, and has the least amount of shrinkage.

The Signal Tubtest Overall is just the rough and ready overall you need for your work. Every seam is double strength—and the suspenders stand the hardest kind of bending, twisting and turning. It is built for hard service—and gives it.

You'll get better and longer service from Signal Overalls than any other—a better fit—you'll look better and be more comfortable—and you'll also save many dollars. But only by *asking* for Signal Overalls will you get the Tubtest fabric, which will not fade because dyed with the same, dependable dyes that we have always used.

Go to your dealer for Signal Overalls

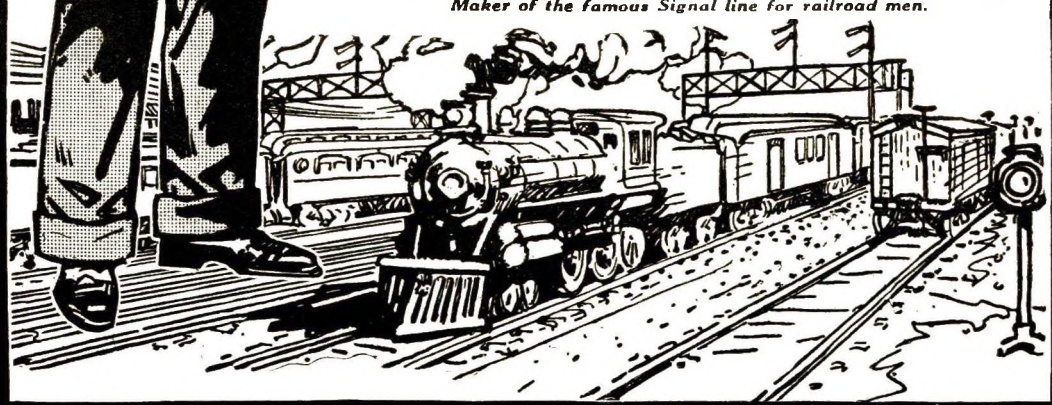
The Signal dealer will be glad to explain the dye situtation to you, and to fit you out in Signal Overalls. If there isn't one in your town, send us your size, and we'll see that you get a pair. Write for sample of the non-fading Tubtest cloth—or an actual size overall pocket, any way.

Hilker-Wiechers Mfg. Company

Dept. A-4

1252 Mound Ave., Racine, Wisconsin

Maker of the famous Signal line for railroad men.



RAILROAD MAN'S MAGAZINE

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DEPARTMENTS

MISCELLANY

THE FRANK A. MUNSEY COMPANY, 8 West Fortieth Street, New York, and Temple House, Temple Avenue, E. C., London

FRANK A. MUNSEY, President RICHARD H. TITHERINGTON, Secretary CHRISTOPHER H. POPE, Treasurer

Single copies, 10 cents. By the year, $1.00 in United States, its dependencies, Mexico and Cuba; $1.50 to Canada, and $2.00 to Foreign Countries. Remittances should be made by check, express money order or postal money order. Currency should not be sent unless registered

ISSUED MONTHLY.

ENTERED AT THE NEW YORK POST-OFFICE AS SECOND-CLASS MAIL MATTER—COPYRIGHTED IN GREAT BRITAIN

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The Purpose of this Department is to put the reader in touch immediately with the newest needfuls for the home, office, farm, or person; to offer, or seek, an unusual business opportunity, or to suggest a service that may be performed satisfactorily through correspondence. It will pay a housewife or business man equally well to read these advertisements carefully.

"A New Force In Business" is a booklet that tells how to advertise successfully in the Classified Department of the Munsey Magazines. Mailed anywhere on request.

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Railroad Man's Magazine	.80	
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	$4.70	

July Railroad Man's Magazine Forms Close May 13th.

AGENTS & SALESMEN WANTED

WANTED—BRANCH MANAGERS FOR MAIL ORDER BUSINESS AT YOUR OWN HOME selling new and popular household novelties. NO CANVASSING. Mail or hand the catalogues we send you and make $2,000 to $50,000. One young married couple made over $3,000.00 in two months. You can do the same. WE FURNISH EVERYTHING. If you have a few hours each day and would like to make money write us, enclosing a self addressed stamped envelope for particulars. IRVIN & GRAHAM, 1161 BROADWAY, NEW YORK.

BIG PAYING BUSINESS: Energetic men wanted everywhere for new mail order agency jobbing enterprise; spare time or whole; good for $50 weekly; cash orders every mail. We give $100. Sales campaign free; few dollars and services starts steady business. Evco, 25 West 42nd Street, New York.

SWELL SUIT FREE FOR 2 HOURS' WORK. Show it to your friends and make $5.00 an hour in your spare time. We show how. Costs nothing to try. Write quick for measure blank and our handy sample outfit. All Free. We deliver everything free. Look into this. Paragon Tailoring Co., Dept. 605, Chicago.

SMOKER WANTED.—WE WANT SILENT SALESMEN who will smoke a pipe and get paid for it. Send no money, just write for particulars. M. H. Putnam, 607 West 51st Street, New York City.

AGENTS—BIG SUMMER SELLER: Something New: Concentrated Soft Drinks. Just add water; delicious drinks in a jiffy—any time, anywhere. Big sellers for home, picnics, parties, socials, etc. Guaranteed under Pure Food Laws. Carry in pocket. Agents coining money—$6 to $12 a day. Write for Free outfit offer today. American Products Co., 4701 3rd St., Cincinnati, Ohio.

1916'S SENSATION! 11 PIECE TOILET ARTICLE SET selling like blazes at $1, with $1 carving set **free!** Whirlwind stunt! Newcome made $18 one day! Write H. Pierce Company, 906 Lake Street, Chicago.

Armstrong Earned $67.50 First Day selling our new business necessity. Retails $5.00 to $30.00. Agents profit 150%. Buyer satisfied or money back. No competition. Exclusive territory. Free sample. Savers Co., 411 Wainwright, St. Louis, Mo.

MAN WANTED AS EXCLUSIVE AGENT. We manufacture six styles self-wringing Mops, for all purposes, including **an** absolutely new combination **Scrubbing Brushmop** that is self-wringing. Every woman wants this proven success. New inexperienced men make $9 per day. One man made $120 the second week, no investment. Send for catalogue and exclusive territory proposition that will make you independent. Hilker Mop Co., 2622 W. Grand Avenue, Chicago, Ill.

AGENTS—ARE YOU LOOKING FOR BIG PROFITS and a sure repeat business? Write for Ilo-Ro-Co Skin Soap, Perfume and Toilet Article plan, the best ever put out. Rothco, 223 N. Second Street, St. Louis, Mo.

RELIABLE PEOPLE WANTED To Place Our Orangeade Powder in stores and appoint agents. Makes the most delicious drink you ever tasted by just adding cold water and sugar. Enough for seventeen glasses and particulars 10c postpaid. Morrissey Company, R-4417-29 Madison Street, Chicago, Ill.

MOTION PICTURE PLAYS

Write Moving Picture Plays. $25 To $100 Each. Big demand. Previous experience or literary talent not required. **No correspondence course.** Send today for **free details** explaining everything. L-Z Scenario Co., R-M, 609 W. 127 St., New York City.

PHOTOPLAYS WANTED BY 48 COMPANIES: $10 TO $500 EACH PAID FOR PLAYS. No correspondence course or experience needed; details sent free to beginners. Sell your ideas. Producers League, 330 Wainwright, St. Louis, Mo.

WRITE PHOTOPLAYS. BIG PRICES PAID. CONSTANT demand. Devote all or spare time. Experience or correspondence course not necessary. Start work at once. Send for free details. Enterprise Publishing Co., R-Y, 3348 Lowe Avenue, Chicago.

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MOTION PICTURE PLAYS WANTED. $25 TO $100. You can write them. We show you how. Experience unnecessary. New, easy, fascinating way to earn money in spare time. Get Free details. Rex Publishers, Box 175, M-18, Chicago.

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SO-LUMINUM, NEW GREAT WELDING COMPOUND FOR ALUMINUM, is a perfect substitute, and does work acetylene welding cannot perform. One fourth cost and time. Saves parts heretofore scrapped. Use gasoline torch. No flux or tools required. $1.50 sample bar, $3.50 per lb. Write for Booklet R. So-Luminum Mfg. Co., 1790 Broadway, New York.

AGENTS & SALESMEN WANTED

SHAKE HANDS WITH THE "LITTLE WITCH." the Magic vacuum broom. **Brand new model** of new invention makes other cleaners obsolete. Entirely different, weighs about three pounds, fully guaranteed. **Only hand vacuum cleaner usable on bare and polished floors, linoleum, etc., and on carpets and rugs.** New patented brush nozzle **positively picks up lint** perfectly. Under-sells and excels anything on the market. Good enough for the rich, cheap enough for the poor. Get our direct from factory price and stake your free territory claim. United Distributing Companies, Inc., 1901-2 Edison Building, Chicago, Illinois.

RAILROAD MEN ADD MANY DOLLARS TO THEIR SALARIES during spare time selling Transparent Handled Novelty Knives with name, address, photo, lodge emblems, etc., showing under the handle. Lightning sellers. We show you how. Also want agents who can give full time. **Big profits** guaranteed. Novelty Cutlery Co., 111 Bar Street, Canton, Ohio.

WE START YOU IN BUSINESS, FURNISHING EVERYTHING; men and women, $30.00 to $200.00 weekly operating our "New System Specialty Candy Factories," home or small room anywhere. No canvassing. Opportunity lifetime. Booklet free. Ragsdale Co., Drawer 92, East Orange, N. J.

$50.00 A WEEK UP. ALL THE FREE CLOTHES YOU WANT TO WEAR simply to advertise us. Write today for self-measuring blanks, style chart, big book of samples, etc. Send no money. A postal card brings all. We pay expressage on everything. American Woolen Mills Co., Dept. 605, Chicago.

WOULD YOU INVEST $100.00 IN OUR PREMIUM Punch Board Deals, if we could show you how to double your money within 30 days? There is a big demand for our Premiums. Washington Sales Company, Dept. R, Chicago.

FREE SAMPLE—NOSPLASH WATER STRAINERS SELL THEMSELVES. No talking—experience unnecessary. Daily profits $5 upwards. Send 2c (mailing cost). S. D. B. Union Filter Co., New York.

AGENTS—500% PROFIT. FREE SAMPLE GOLD AND Silver Sign Letters for store fronts and office windows. Anyone can put on. Big demand everywhere. Write today for liberal offer to agents. Metallic Letter Co., 410 N. Clark St., Chicago.

AGENTS WANTED.—AGENTS MAKE 500 PER CENT PROFIT selling "Novelty Sign Cards." Merchants buy 10 to 100 on sight. 800 varieties. Catalogue Free. Sullivan Co., 1232 Van Buren Street, Chicago.

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DO YOU WANT AGENTS AND SALESMEN TO SELL YOUR MERCHANDISE? Men and women who are educated in personal salesmanship and know the house-to-house, office, and store canvassing proposition. These advertisers are getting them year in and year out, and there are thousands more for you among the 5,000,000 readers of The Munsey Magazines. We have prepared a book entitled **"A New Force In Business"** that goes into the details of the subject. This book we shall gladly send to any one on request. The Frank A. Munsey Company, 8 West Fortieth Street, New York City.

BUSINESS OPPORTUNITIES

MANUFACTURE AND SELL YOUR OWN GOODS. Formulas of all kinds by expert Chemists. Analyses for the trade. Moderate cost. Henderson Formula Company, 65-67 Bank Street, New York, N. Y.

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Become a Minute Photographer. Pleasant outdoor work. Experience unnecessary. Profitable business. Hundreds of men and women make $10 to $25 per day. Sample picture and catalog free. Jamestown Ferrotype Co., Dept. R, 1126 So. Halsted St., Chicago.

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EVERYBODY SHOULD CARRY A LOOSE-LEAF MEMO. BOOK. Why? Because it is economic. Send 25c for a sample book with Genuine Leather covers and 50 sheets. Name on cover in gold 15c extra. Looseleaf Book Co., 814 E. 125th St., N. Y.

VENTRILOQUISM

VENTRILOQUISM. THE REAL THING TAUGHT ALMOST ANYONE at home. No whistle used. Small cost. Send 2c stamp today for proof and particulars. O. A. Smith, Room 414, 823 Bigelow Street, Peoria, Ill.

MUSIC AND SHEET MUSIC

FREE—FREE—12 POPULAR SONGS (SHEET MUSIC) absolutely free to introduce our new method singing lessons. Send 10 cents for mailing. Victor Conservatory of Music, Parkway Building, Philadelphia, Pa.

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FLORIDA

MISSISSIPPI

VIRGINIA

STAMPS AND RARE COINS

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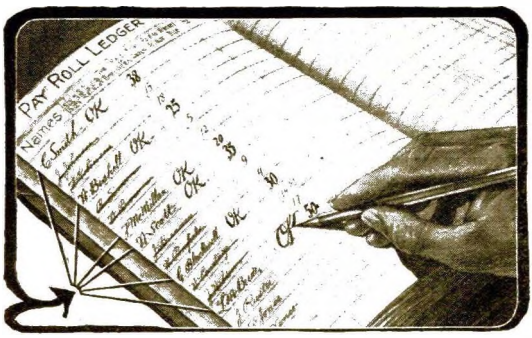
HELP WANTED

TELEGRAPHY

TYPEWRITERS



KEEP THESE MEN!

"It Would Be Hard to Replace Them Because They Have Special Training"

WHEN your employer cuts down the pay roll it is the untrained men that go. His finger will sooner or later go down the pay-roll list on which **your** name appears. Are you one of the men whom he will hold? If you are not, **I. C. S. training will keep you on the pay roll.**

It makes no difference where you live, under what conditions you work, the I. C. S. will bring to you in your spare time, at a small cost, the kind of training that the employer values—the training that will qualify you for a more congenial position—*the training that means rapid advancement!*

You can get this training. Mark and mail the coupon. You will learn how thousands, situated just as you are, **have risen to positions of trust and responsibility through I. C. S. training.**

Make your employer say "Keep *that* man" when he reaches *your* name.

Mark and Mail the Coupon TODAY

I. C. S., Box 5915, Scranton, Pa.

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INTERNATIONAL CORRESPONDENCE SCHOOLS

Box 5915, SCRANTON, PA.

Explain, without obligating me, how I can qualify for the position, or in the subject, before which I mark **X.**

☐ Locomotive Engineer	☐ R. R. Agency Accounting
☐ Locomotive Fireman	☐ R. R. Genl. Office Acc'ting
☐ Traveling Engineer	☐ Bookkeeper
☐ Traveling Fireman	☐ Stenographer and Typist
☐ Air Brake Inspector	☐ Higher Accounting
☐ Air Brake Repairman	☐ Mathematics
☐ Round House Foreman	☐ Good English
☐ Trainmen and Carmen	☐ Salesmanship
☐ Railway Conductor	☐ Advertising Man
☐ Mechanical Engineer	☐ Civil Service
☐ Mechanical Draftsman	☐ Railway Mail Clerk
☐ Machine Shop Practice	☐ Electrical Engineer
☐ Boiler Maker or Designer	☐ Electrician
☐ Steam Engineer	☐ Electric Wiring
☐ Steam-Electric Engineer	☐ Electric Lighting
☐ Civil Engineer	☐ Telegraph Expert
☐ Surveying and Mapping	☐ Mine Foreman or Engineer
☐ R. R. Constructing	☐ Metallurgist or Prospector
☐ Bridge Engineer	☐ Chemical Engineer
☐ Architect	☐ Agriculture ☐ Spanish
☐ Architectural Draftsman	☐ Poultry Raising ☐ German
☐ Contractor and Builder	☐ Automobiles ☐ French
☐ Structural Engineer	☐ Auto Repairing ☐ Italian

Name_____

Occupation & Employer_____

Street and No._____

City_____ State_____

"LEARN BY DOING"

Five minutes of Actual Practice properly directed is worth more to a man than years and years of book study. Actual Practice is the only training of value. Graduates of The N. Y. Electrical School have proven themselves to be the only men that are fully qualified to satisfy EVERY demand of the Electrical Profession.

At this "Learn by Doing" School a man acquires the art of Electrical Drafting; the best business methods of Electrical Contracting; together with the skill to install, operate and maintain all systems for producing, transmitting and using electricity.

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46 West 17th St. New York City

The N. Y. ELECTRICAL SCHOOL

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Write for our special offer. Become a powerful speaker in spare time by mail. Overcome "stage fright", enlarge your vocabulary, train your memory, gain self-confidence. Learn how and when to use gestures; how to suit the speech to the occasion. Increase your earning power—become more popular. We have trained hundreds of successful speakers by mail at home.

Write Now for Special Offer Send quick for details of our special limited offer. No obligation. Write *while this offer lasts.*

Public Speaking Dept. American Correspondence School of Law, A 109 Manhattan Building, Chicago, Ill.

FREE This Complete Set of Drawing Instruments

$15.00 Draftsman's Complete Working outfit, absolutely free. They do not cost you a penny on this offer. Write today for particulars. Do it NOW.

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My graduates are earning from $150.00 to $300.00 a month and more. **Write Today.** Send for my free book on drafting. No obligations. Write now.

Chief Draftsman Dobe, Div. A109 **Engineer's Equipment Co., Chicago**

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I can make a good penman of you at home during spare time. Write for my free book **"How to Become a Good Penman."** It contains specimens and tells how others mastered penmanship by the Tamblyn System. Your name will be elegantly written on a card if you enclose stamp to pay postage.

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and let me see what you can do with it. Illustrators and cartoonists earn from $30 to $125 a week or more. My practical system of personal individual lessons by mail will develop your talent. Fifteen years successful work for newspapers and magazines qualifies me to teach you. Send me **your sketch of President Wilson with 6c in stamps and I will send you a test lesson plate, also collection of drawings showing possibilities for YOU.**

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For the first time—this girl—starved of pleasure and of pretty clothes—looked into the dance hall, yellow lighted, noisy, hot steaming—but gay—gay and filled with girls and men—who to her loneliness looked good. That night she went—and then—but let the rest of her story be told by

O. HENRY

Send coupon—without money—for 274 stories in 12 fine volumes—throbbing with life—with the life of city streets and the life of the Far West plains—of the innocent shrinking with shame, of the guilty who joyously sin, of healthy and jolly fun, of laughter clear and sane, of the weaknesses pardoned by love—and the unforgivable crime.

Send for them all on approval. Send for them at once so you will get the 179 Kipling stories free.

120,000 Own This Edition Already

From the few who snapped up the first edition at $125 a set before it was off the press, to the 120,000 who have eagerly sought the beautiful volumes offered you here—from the stylist who sits among his books to the man on the street—this whole nation bows to O. Henry—hails him with love and pride our greatest writer of stories. Everybody has to have O. Henry—everybody who reads and loves books—senators and authors, actors and artists, and plain people of distinction.

Send Coupon and You Will Understand Why Other Nations Are Going Wild Over Him

why universities are planning tablets to his memory; why text-books of English Literature are including his stories; why colleges are discussing his place in literature; why theatrical firms are vying for rights to dramatize his stories.

KIPLING FREE

And besides, to get your prompt action we give you, free, Kipling in six volumes—179 stories—the greatest he ever wrote—the red, red stories of fight and the keen blue stories of peace.

R. R. 6-16.

REVIEW OF REVIEWS
30 Irving Place
New York

Send me on approval, charges paid by you, O. Henry's works in 12 volumes, gold tops. Also the 6-volume set of Kipling, bound in cloth. If I keep the books, I will remit $1 per month for 15 months for the O. Henry set only and retain the Kipling set without charge. Otherwise I will, within ten days, return both sets at your expense.

Name.....

Address.....

Occupation.....

The beautiful 3-4 leather edition of O. Henry costs only a few cents more a volume and has proved a favorite binding. For this luxurious binding, change above to $1.50 a month for 13 months.

Send No Money With the Coupon

Send the books back—the whole 18—if these stories are not the best you ever saw or read. Better than moving pictures—for these are permanent, real moving pictures of life. Better than classics, for these are the living stories of today, from Mandalay on China Bay to 34th Street and Broadway, and from Piccadilly to the Mexican border ranch. Send the coupon before it is too late. Get both sets shipped at once free on approval.

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Don't wait till tomorrow and be sorry. Send coupon today and be glad.

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New York

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2 Long Novels

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12 volumes bound in green silk cloth and gold. Gold tops; illustrated; 274 complete stories; one long novel.

KIPLING

6 volumes, 179 stories and poems; one long novel; red silk cloth; gold tops.

THE
RAILROAD MAN'S
MAGAZINE

Vol. XXX. JUNE, 1916. No. 2.

STANDARDIZING THE NATION.

We Have a Federal Bureau Which Sees That None of Us, Railroads Included, Shall Receive Short Value for Our Money.

HELPS TO KEEP DOWN COST OF LIVING.

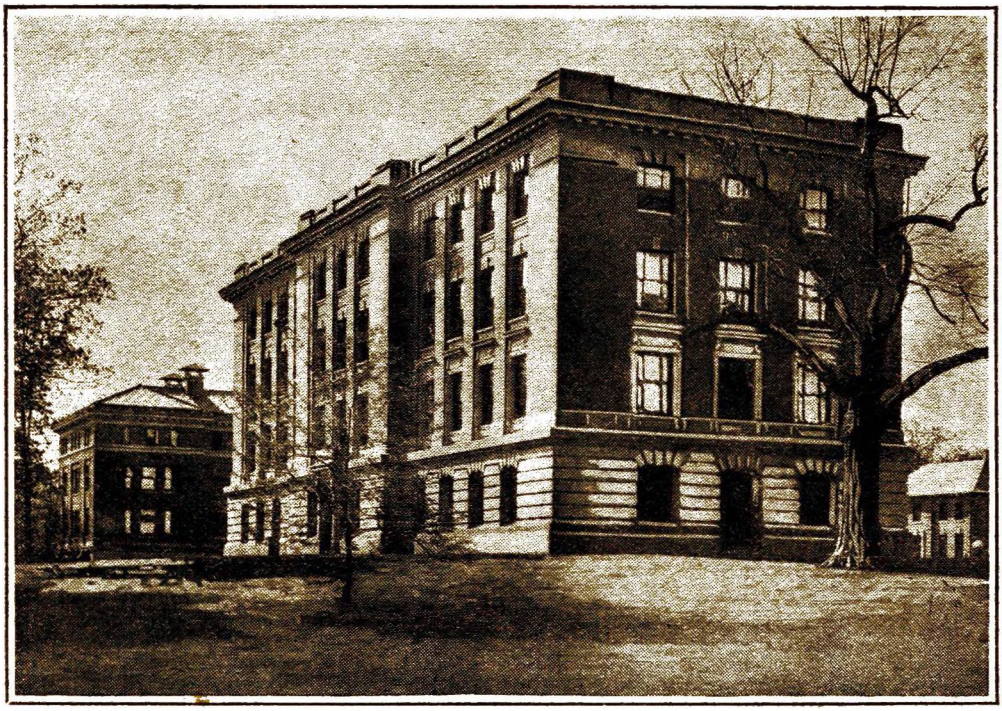
Country's Authority on Weights and Measures Has Mechanisms Which Will Teeter to the Fifty-Millionth of an Ounce, Tell the Heat of a Candle-Flame 53 Miles Away, or Exert a Pressure of 10,000,000 Pounds.

BY CHARLES FREDERICK CARTER,
Author of "When Railroads Were New."

CERTAIN railroads that need not be mentioned here have reason to be thankful that the National Bureau of Standards sent its track-scale testing-car over their lines in the year ending June 30, 1915. For this testing-car proved that some track-scales were underweighing, in some cases, as much as 21,600 pounds in weighing a hundred-thousand-pound car. That is, the railroads were losing the charges on more than ten tons of freight each time they weighed a car-load on these inaccurate scales.

Most Scales Found Inaccurate.

Gratification over the discovery of this unsuspected source of future revenue was tempered by the revelation that other track-scales on the systems were overweighing by substantially similar amounts,



THE BUREAU OF STANDARDS OCCUPIES A PLOT OF SIXTEEN ACRES ON A HILLTOP IN THE OUTSKIRTS OF WASHINGTON, AT A SAFE DISTANCE FROM THE VIBRATIONS, ELECTRICAL DISTURBANCES AND DUST OF THE STREET.

thus resulting in overcharging shippers to that extent, which, of course, would necessitate a corresponding reduction thereafter. In short, the Bureau of Standards found that more than two-thirds of the 241 railroad track-scales and 97 other track-scales owned by manufacturers and the Federal government in fourteen States, tested during the year, were incorrect, the error ranging from 30 pounds to 21,600 pounds.

Reports giving the condition of the scales tested were rendered to the various State governments, and also to the railroads owning the scales, together with advice relative to their proper maintenance and repair. These services have been so much appreciated that the Bureau of Standards built a second scale-testing car late last year, which is now in commission. More are needed.

However important its results may be to transportation companies and to shippers, the tour of the track-scale testing-car was but a routine detail, a minor incident, in the herculean task of bringing the nation up to standard. By a law enacted fifteen years ago, Congress assigned this task to an organization to be known as the National Bureau of Standards.

Briefly put, the work of the Bureau of Standards is to establish standards of weights and measures, which, judged superficially, seems about the most inexpressibly dreary undertaking the mind can conceive. Even summarized more at length from the act creating it, the Bureau of Standards' functions fail to rouse a thrill. These functions are:

The custody of the national standards; the comparison of standards used in scientific investigation, engineering, manufacturing, commerce, and in educational institutions with those adopted by the government; the construction, when necessary, of standards, their multiples and subdivisions; the testing and calibration of standard measuring-appliances; the solution of problems which arise in connection with standards; the determination of physical constants and the properties of materials, when such materials are of great importance to science or to manufacturing interests and are not to be obtained of sufficient accuracy elsewhere.

These functions the Bureau of Stand-

ards is authorized to exercise, not only for the national government, but also for State and municipal governments, institutions, societies, corporations, and individuals on the payment—except in the case of national and State governments—of a reasonable fee.

The Bureau That Standardizes Living.

Yet the proverbial difficulty of judging by its looks how far a singed cat can jump is trifling when compared with that of estimating the picturesque possibilities embraced in a dull title. As a matter of fact, the Bureau of Standards has more spectacular achievements to its credit than all the other government scientific bureaus combined, notable as some of these have been. In its fifteen brief years the Bureau of Standards has extended its myriad ramifications until it comes in contact with the average man in almost every act of his daily life.

Awaking, the average citizen, figuratively speaking, looks at his watch, which has been standardized by the national bureau, and finds it is time to get a move on himself. Into a bulb that has been standardized and much improved as the result of recommendations based on an exhaustive series of tests made by the national bureau, the average citizen turns an electric current generated and conveyed to his home over installations put in place and operated by employees working under a standard code of rules drafted by the bureau. By this economic light he arrays himself in sundry textiles, the fibers and methods of handling which have been standardized by the bureau in cooperation with the manufacturers.

Makes Food Cost Less.

While shaving himself with steel standardized by this scientific branch of the government, his wife cooks his frugal breakfast over gas standardized by the same omnipresent agency and measured out in a meter also standardized. Every mouthful he eats costs him less than it would if the Bureau of Standards had not established honest weights and measures, and taken an active part in securing the enactment and enforcement of laws compelling their use.

The average citizen rides down-town on an electric railroad, some important features of which have already been standardized by the national bureau, and the rest of which certainly will be standardized as soon as the bureau can get around to it. Arrived at his office, he occupies himself with standardized paper, ink, and paste until time to return to his thoroughly standardized home.

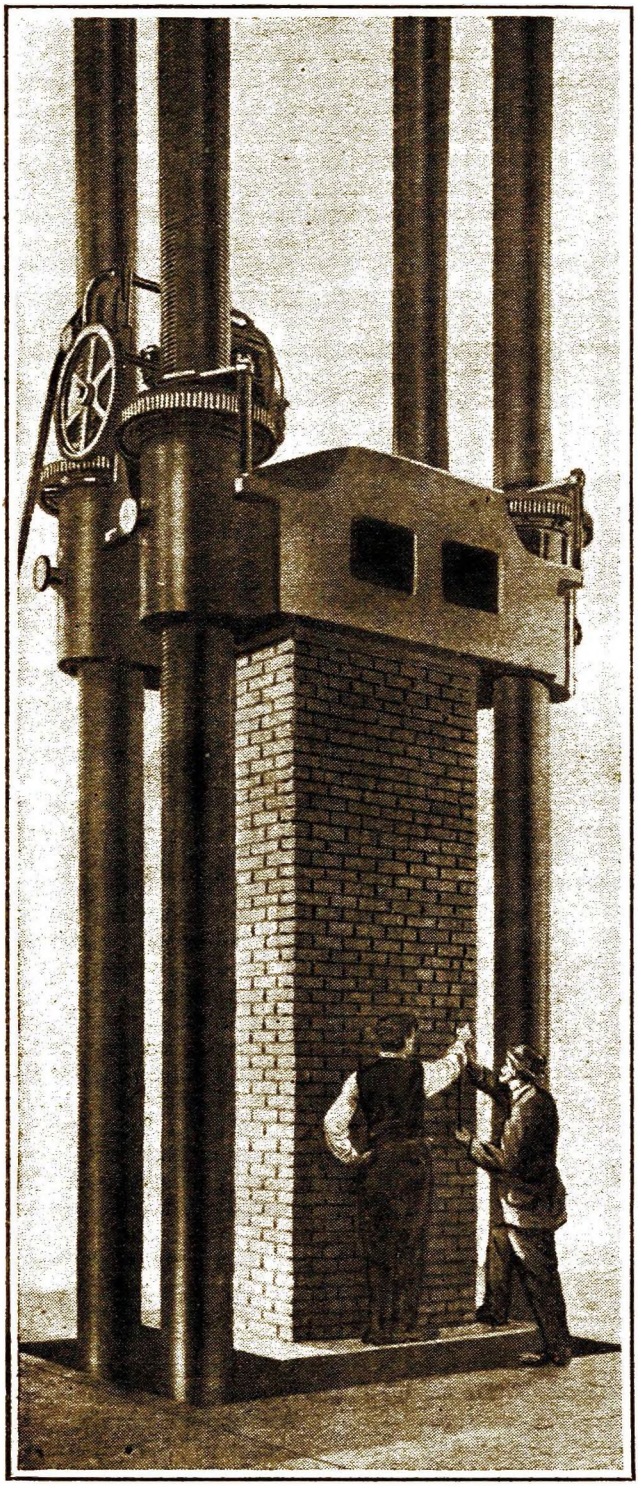
Should these humble details seem commonplace, be assured that the processes by which they were standardized were anything but uninteresting. Moreover, their mere enumeration gives a clue to the reason why the Bureau of Standards, whose legal functions may seem to the unsophisticated to be so restricted, has been able to accomplish such a vast variety of marvelous things without overstepping the bounds set for it.

Ranges over World of Applied Science.

The reason is that when you begin to talk about standards you open up the whole world of applied science. The statute that seems to limit the activities of the Bureau of Standards within such narrow bounds turns out to be a license to roam at will throughout the whole range of human knowledge. Literally, the work of the Bureau of Standards has extended from the uttermost depths of the sea to the infinite spaces of the firmament and into the mysteries of light invisible to the eye.

To be more specific, the Bureau of Standards last year constructed at the request of another government bureau a thermometer, accurate within the hundredth part of a degree, that would give a continuous record of the temperature in the depths of the ocean. As no similar instrument approaching this one in accuracy had ever been constructed, the scientific staff had to evolve an entirely original apparatus, which was constructed in the bureau's own shops by its own expert instrument-makers.

In the last half-century many attempts have been made to measure the heat of the stars. No one succeeded until the Bureau of Standards turned the trick with an instrument of its own invention. This was a thermo-couple, a device familiar enough to students of physics, but in this instance made of bismuth and platinum, and so small that it would look lonesome on a pinhead. Placed in a vacuum, and fitted in the eyepiece of a telescope this seemingly simple apparatus



THE LARGEST TESTING MACHINE YET BUILT. THIS GIANT MECHANISM HAS A COMPRESSIVE POWER OF 10,000,000 POUNDS. IT IS PART OF THE EQUIPMENT OF THE PITTSBURGH BRANCH ENGINEERING-LABORATORY.

proves so incredibly sensitive that, according to theory, tested and checked, it would be affected by the flame of a candle at a distance of fifty-three miles. To a layman this might appear to be a fairly good job of heat measurement; but the official announcement issued by the Bureau of Standards declares it will be possible to improve upon it tenfold by using a thermo-couple twenty times as powerful, and a telescope with a seven-foot mirror, instead of one three feet in diameter.

With this apparatus it was found possible to calculate the heat of the stars falling on a square centimeter of the earth's surface. It was calculated that if all the heat from the star Polaris could be absorbed and conserved continuously, it would take a million years to raise the temperature of a gram of water one degree Centigrade. From this the outlook for posterity, after all the coal, oil, and natural gas have been consumed, and the sun has grown cold, and only the stars are left as a source of heat, would appear to be somewhat cheerless.

Measurements have been made with this apparatus on 112 celestial objects; and the data thus obtained has already found useful application. Two papers have recently been published by astronomers who used these measurements in discussing the probable temperature of stars.

Another purpose served by this adventure among the stars is to give point to the observation that an age of precision has succeeded the happy-go-lucky era of the rule of thumb. The monkey-wrench mechanics who laid the rough foundations for a

great manufacturing nation have given place to university graduates with micrometer microscopes and tables of logarithms. Their equally untrained employers, who muddled through to affluence somehow, wasting more of nature's bounties than they utilized, have been supplanted by scientific specialists who earn greater profits from the waste material of less enlightened days than the principal products can be made to yield.

When investments, output, and earnings are computed in terms of billions, little things become great. The present generation is seeking its fortune in the lightly appreciated regions far to the right of the decimal point; and it is finding sources of wealth hitherto undreamed of with the aid of the minutely accurate standards of measurement established by the national bureau.

For example, a certain railroad company appealed to the Bureau of Standards to determine whether the temperature-correction factor for specific gravity of a particular fuel oil should be four ten-thousandths or five ten-thousandths of a degree Fahrenheit. This difference of one ten-thousandth of a degree in expansion meant a gain or loss to the railroad company of between two thousand and three thousand barrels of oil a month on a single contract.

Looking back, it seems unbelievable that the country ever got along without such elemental things as standard weights and measures. The necessity for these standards was appreciated by the forefathers, who incorporated in the Federal constitution a provision empowering Congress to fix the standards of weights and measures.

Congress Slow to Fix Standards.

Washington kept urging upon Congress the necessity for uniform and reliable standards. Madison, in 1817, reminded Congress that nothing had yet been done about the matter, whereupon the whole subject was referred to John Quincy Adams, then Secretary of State, who devoted four years to historical research and mathematical study. He recommended Congress to wait until the nations had agreed upon universal standards.

Congress waited all right, but, being compelled at last to furnish some sort of standard for the nation's coinage, sent to England in 1828 for a troy pound that would serve as an official standard.

Two years later another urgent necessity arose. The government's principal income is derived from customs and internal revenue dues. As every State and nearly every town of importance had its own ideas of what constituted a pound, a bushel, or a gallon, it became absolutely necessary to establish some sort of standards. F. R. Hassler, superintendent of the Coast and Geodetic Survey, was chosen for this duty for the excellent reason that he was the only man of recognized scientific attainments in the employ of the Treasury Department.

Hassler derived an avoirdupois pound from the imported standard troy pound at the mint. He recommended that the government make certain standards and distribute copies thereof to the States. This was done in 1836, and at the same time the Office of Standard Weights and Measures was created and made a part of the Coast and Geodetic Survey.

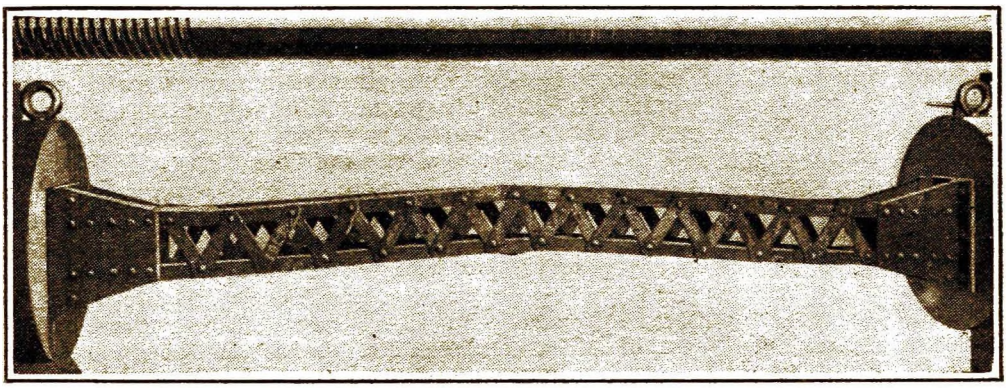
International Organization Established.

An international conference on weights and measures was held in 1875, more than half a century after it had first been proposed by Adams. The seventeen nations participating adopted the metric system, and established a permanent International Bureau of Weights and Measures, which has its headquarters in Breteuil, a suburb of Paris.

The labors of many of the world's greatest scientists for several years were required to perfect the world standards and make prototypes thereof for distribution to the nations participating. These prototypes were not ready for distribution until 1889, fourteen years after the conference adjourned.

The errand was deemed of such great importance that the United States sent a special commission to Paris to get our set. The precious packages were opened in the presence of the President and a distinguished company.

The metric standards were turned over to the Office of Standard Weights and Measures, and that ended the matter for the time being. Meanwhile the official copies of weights and measures delivered to the States in 1836 had been destroyed or lost, and things went along in the good old way.



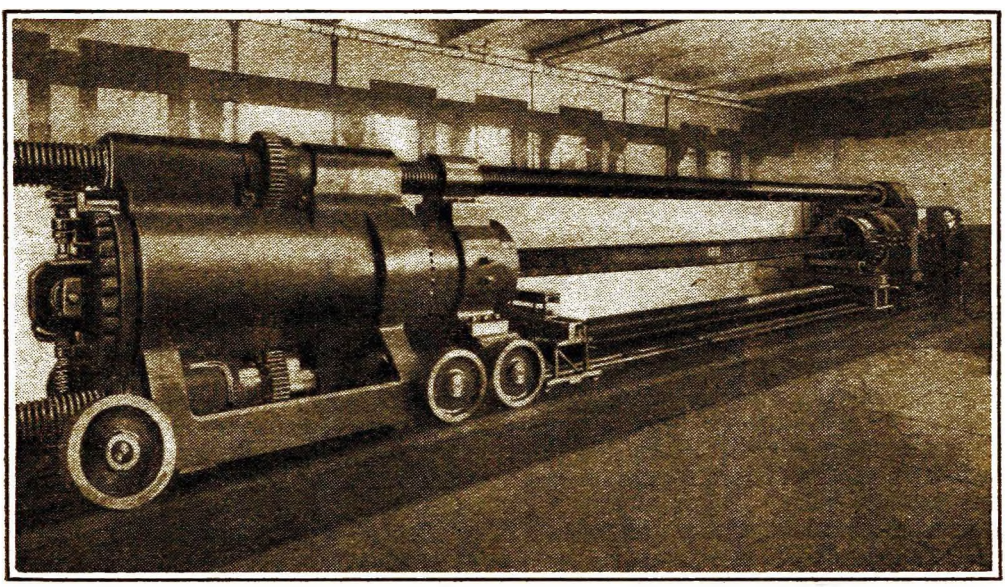
A STEEL COLUMN BUCKLED AFTER A TEST IN THE EMERY MACHINE, A FAULT DETECTOR THAT IS CAPABLE OF EXERTING A PRESSURE OF 2,300,000 POUNDS AND A PULL OF 1,150,000 POUNDS.

When Dr. Henry S. Pritchett was appointed superintendent of the Coast and Geodetic Survey in 1897, he found in the Office of Standard Weights and Measures two scientific assistants, an instrument-maker, and a messenger, all in charge of a field officer of the Coast Survey. It can readily be imagined that such an organization was, for all practical purposes, absolutely useless. Besides, Dr. Pritchett needed that officer in the field.

He persuaded Congress that a physicist, and not a surveyor, should be at the head of the Office of Weights and Measures. The Congressional idea of a salary large enough to induce a physicist of high standing to take the place being $3,000 a year, Dr. Pritchett had a great deal of difficulty in persuading Dr. S. W. Stratton, then professor of physics at Chicago University, to take the usual competitive examination and accept the appointment.

A Physicist Sets to Work.

Dr. Stratton's first job was to draw up a plan for a National Bureau of Standards adapted to American science and American manufactures. After this plan had been discussed and criticised by the Coast Survey and a number of physicists, chemists, and manufacturers, it was incorporated in a bill and submitted to Lyman



PONDEROUS EMERY TESTING MACHINE, WHICH COST $150,000. THIS APPARATUS WILL CRACK AN EGG AND REGISTER THE PRESSURE REQUIRED TO BREAK THE SHELL. IT WILL JUST AS READILY CRUMPLE UP A THIRTY-FOOT STEEL COLUMN.

J. Gage, who was then Secretary of the Treasury. Mr. Gage gave the matter his heartiest support. At a hearing before a Congressional committee, Secretary Gage summed up the case for a National Bureau of Standards so well that his words are worth reproducing. Said he:

> We are the victims of looseness in our methods; of too much looseness in our ideas; of too much of that sort of spirit, born of our rapid development, perhaps, of a disregard or lack of comprehension of the binding sanction of accuracy in every relation of life. The establishment of a bureau like this, where the government is the custodian and originator of these standard weights and measures as applied to all the higher scientific aspects of life which we are so rapidly developing has, to my mind, a value far above the mere physical considerations which affect it, although these physical considerations are fundamental and most important. Nothing can dignify this government more than to be the patron of, and the establisher of, absolutely correct scientific standards and such legislation as will hold our people faithfully to regard and absolutely to obey the requirements of law in adhesion to those true and correct standards.

The bill establishing the National Bureau of Standards became a law March 4, 1901. Dr. Stratton set up housekeeping in rented quarters down-town in Washington with an official family of fourteen persons, all told. Such an organization was pitifully inadequate to undertake the duties that in England are divided between two important government bureaus, and in Germany among three. But there was so much that obviously needed doing, and the new bureau manifested such a notable capacity for coping with difficulties, that Congress has been fairly indulgent toward it in the matter of increased appropriations, though never quite keeping pace with the nation's demands upon the bureau.

Includes 290 Scientific Experts.

Now the Bureau of Standards occupies a plot of sixteen acres on a hilltop on the outskirts of Washington, at a safe distance from the vibrations, electrical disturbances, and dust of the capital. Here are four large buildings and some smaller ones. A fifth large building is now under construction and two more are projected, not to mention the branch in Pittsburgh, temporarily housed in an unsuitable old army building.

The regular staff and special investigators now total 383, of whom some 290 are scientists. It may be remarked here that an appointment to the Bureau of Standards bears the same relation to the scientific world that a blue ribbon does to a horse show; for it certifies that the recipient is the best of his class. It has been the consistent policy of the bureau to leave positions vacant rather than fill them with men of anything less than exceptional qualifications.

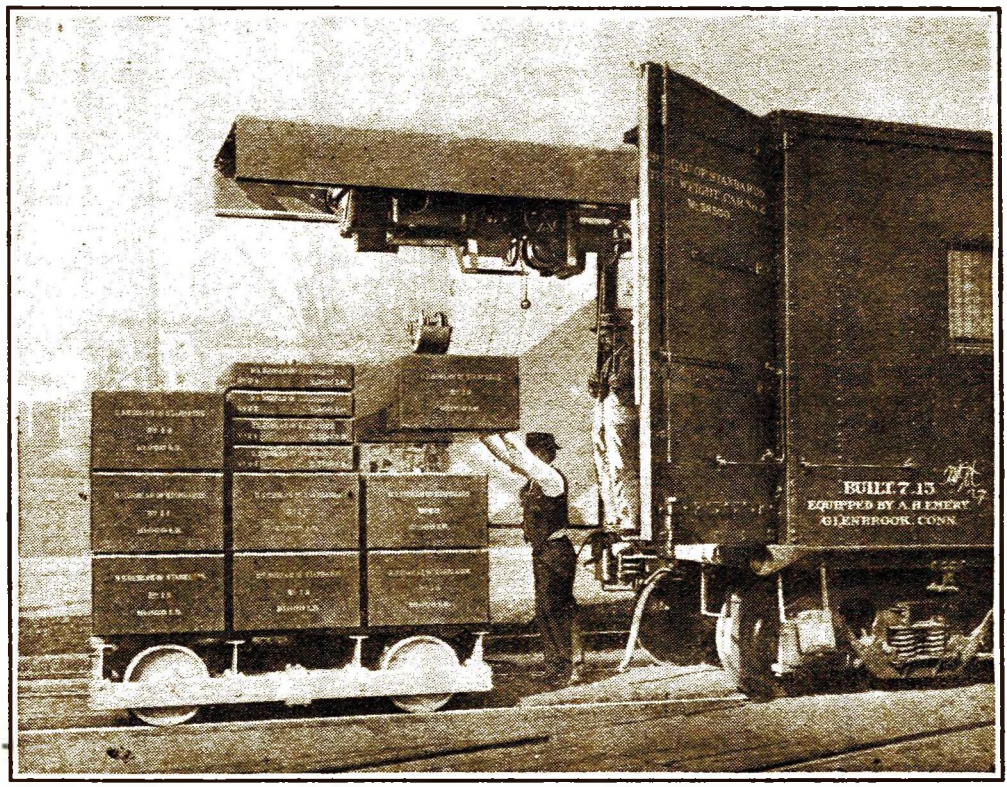
Can Weigh a Fifty-Millionth of an Ounce.

To all but the select few who have been initiated into the domain of pure science, the Bureau of Standards must appear to be a house of marvels. Here are to be found all sorts of things that one knows cannot be true, wherewith an infinite variety of perfectly impossible feats are performed. One can understand and appreciate weights the size of a steamer trunk, for they are but exaggerated forms of familiar objects.

But when the obliging government official who shows you around the laboratories of the Bureau of Standards tries to tell you that the apparatus therein includes balances capable of weighing the six hundred-thousandth part of an ounce, you cannot help feeling that your credulity is being imposed upon. However, you will be shown a weight of aluminum, the lightest metal known, so small that it is almost invisible to the naked eye; and while you are trying to adjust your faculties to this conception, you are told of yet another balance so delicate that it can weigh one fifty-millionth part of an ounce.

The guide is merely leading you up to the real marvels by easy stages. Next you are shown a balance so supersensitive that it will indicate differences due to the earth's attraction. To prove it, two weights of one kilogram each are placed side by side in the scales and balanced. Then one is placed on top of the other, thus lifting the topmost two inches farther from the earth, when the two are found to weigh the sixteen-thousandth part of a milligram less than before.

This balance, which is used in a vacuum, is so excessively delicate that it is actually affected by the heat of the operator's body; so he stands off at a distance



THE BUREAU'S TRACK-SCALE TESTING-CAR. ON A RECENT TOUR OF CERTAIN RAILROADS, THIS OUTFIT SHOWED SOME STARTLING INACCURACIES IN THE WEIGHING EQUIPMENT OF SOME LINES. FOR INSTANCE, ONE ROAD'S SCALE WAS UNDERWEIGHING TO THE EXTENT OF 21,600 POUNDS.

of ten feet, adjusts the scales by screw-rods and levers, and reads the scale through a telescope.

The climax comes when you are told of yet another balance used in voltameter work far more sensitive than this touch-me-not. It reposes in lonely grandeur in a glass case deep down in a crypt with thick walls and double doors, where the temperature is never allowed to vary. In using this balance, which is worked in a vacuum, and in the dark; the operator cannot even remain in the room with it lest the heat of his body should prejudice its decision.

Giant Press That Cost $150,000.

Instead he works in an adjoining room, also with double doors, and also maintained at a constant temperature, manipulating the balance with rods passing through double glass panels, and making his observations through a telescope, after the balance has been adjusted and the light turned on.

It is something of a relief to be shown the ponderous Emery testing-machine, which cost $150,000. In touching upon machinery and price-lists one is getting down to earth again. With this machine it is possible to crack an egg, a feat that is much more readily performed with a spoon. But the machine registers the pressure applied in breaking the egg, which the spoon does not. Furthermore, the machine will just as readily crumple up a steel column thirty feet long. This testing-machine is capable of exerting a pressure of 2,300,000 pounds and a pull of 1,150,000 pounds.

The branch engineering-laboratory at Pittsburgh includes in its equipment the largest testing-machine yet built. It has a compressive power of 10,000,000 pounds. Here the Bureau of Standards, in cooperation with the American Society of Civil Engineers and the American Railway Association, has been conducting for some time the first series of tests of full-sized steel-bridge members ever made.

For it is a singular fact that engineers and architects hitherto have had nothing more trustworthy upon which to base their specifications for sky-scrapers and bridges than empirical formulas derived from laboratory tests of specimens of steel an inch square. It was due to the lack of available information about the behavior of large steel columns under pressure that the Quebec Bridge was improperly designed, with the result that in August, 1907, it collapsed under its own weight when half completed, carrying down to death in the depths of the St. Lawrence seventy-six workmen.

The Pittsburgh tests are intended to supply this lack of information. Eighteen exact duplicates of certain members in bridges recently built have already been tested to destruction so far, and it is proposed to test twenty-four more full-sized steel columns in the present investigation. A large number have also been tested at the national capital. When the series has been completed and the voluminous data worked out, engineers will have something trustworthy upon which to base calculations.

As a foil to this leviathan among testing-machines you may obtain, if you are fortunate, a view of the interferometer which constitutes part of the equipment at Washington. This will register deflections in a steel bar three feet long and three and a half inches in diameter of so little as two-millionths of an inch.

Being beyond the range of the microscope, the bureau people had to provide some way of reading these delicate movements. In the center of the frame is a mirror; above this is a frame bearing another mirror partly silvered, both adjusted so that they reflect the light of a sodium burner. The lower mirror shows a series of black and yellow concentric rings.

WIRE ROPE, BEFORE AND AFTER BEING TESTED. IT IS PROBABLE THAT NO COMMERCIAL STEEL CABLE HAS EVER BEEN BUILT WHICH COULD LONG WITHSTAND THE MIGHTY TUG OF UNCLE SAM'S GREAT ENGINES.

The weight of a pin laid on the middle of the steel bar causes it to bend, and this movement causes the circles of light on the mirror to expand into a series of ripples like those made by tossing a pebble into a pond. By counting these circles the investigator calculates the extent of the deflection.

Laboratory Building's Air Is Filtered.

The physical laboratory building is a marvel in itself. Thick walls and double windows render this four-story structure, 172 feet long by 55 feet wide, immune from the disturbing influences of outside temperatures, humidity, and drafts. No plebeian steam radiators intrude in the physical laboratory lest their magnetic properties should interfere with the refined electric and magnetic experiments conducted there.

The air-supply is filtered, dried, and heated in winter or cooled in summer to the exact shade of temperature required by the experiments in hand. The workers do not count. In fact, they are a distinct detriment to some of the superdelicate investigations because most of them breathe more or less, thereby adding moisture to the air.

However, the rate of ventilation can be adjusted to overcome this drawback to a great extent. In every room steam, gas, compressed air, exhaust, every variety and volume of electric current that anybody ever heard of, distilled water, iced water, just water, and cooled brine are on tap for the convenience of the experimenters.

Prototypes Are Guarded Like Queen-Bees.

In a thick-walled vault with double steel doors the national prototype standards of length and mass are preserved. The vault is carefully ventilated, and ideal temperature and dryness are maintained to prevent deterioration.

The importance of these precautions is demonstrated by the fact that the old standard troy pound, obtained in 1828, has lost five-thousandths of a grain in weight in eighty-eight years. Similar losses in the metric prototypes would be a very serious matter. The prototypes are never taken from under their double glass covers except at rare intervals to check up the working standards.

In a tunnel connecting the physical with the mechanical laboratory—provided with brine and steam coils to afford accurate control of temperature—comparisons of measures of length are made with the working standards, and of the latter with the national prototype meter. When such an important event is to take place, the prototype and the working standard are placed side by side in a receptacle, which is then placed in an oil bath in a trough-like comparator which is kept at an even temperature. Microscopes mounted on pillars independent of the foundations are adjusted to the prototype by means of the most delicate micrometer screws, and the working standard is then brought beneath the microscopes. It is possible to read corrections down to the 254-thousandth part of an inch.

One working standard is a bar five meters long. When in use this bar is surrounded with shaved ice and mounted on a movable carriage so it can be brought beneath the microscopes. The tapes used by the Geological Survey and the Coast Survey are brought here to be tested before and after each expedition.

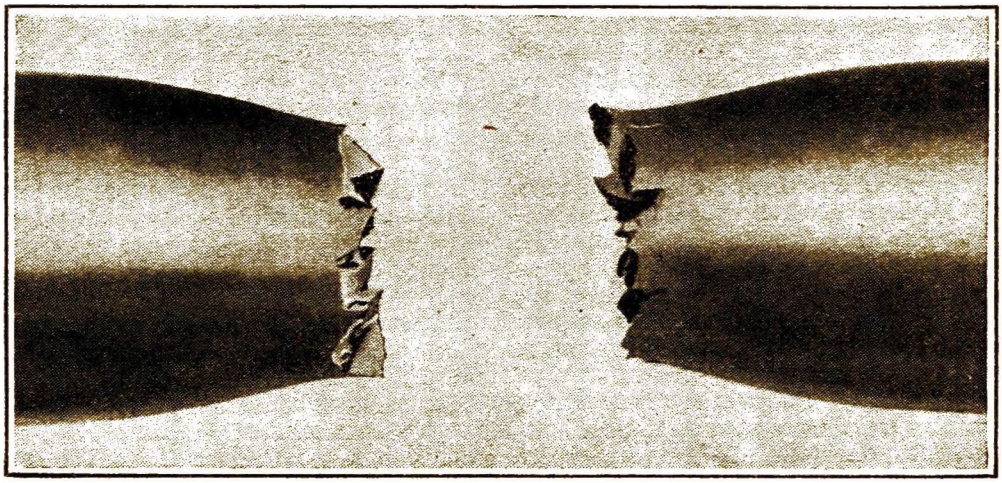
Makes Tests for Watches, Too.

For establishing accurate time-standards the bureau has a Riefler clock which keeps within half a second a month of absolutely correct time. Its pendulum is of nickel steel to avoid errors due to expansion. The clock runs in a partial vacuum in a vault maintained at a constant temperature, and it is checked daily by the United States Observatory.

In addition to the regular test of high-grade watches, the bureau has undertaken an investigation of stop-watches and timers. This work was extended in 1914 to the testing of watches for the public, each test lasting for fifty-four days. A certificate of performance is issued for each watch passing the test.

The bureau has even undertaken an investigation of the relative reliability of the cheaper grade of watches. Of course, the bureau cannot do all such work for the whole country, but is merely establishing standards. Regulations and full information regarding tests and advice on the care and handling of watches have been published.

Among the things to be standardized is the length of waves of invisible light. The human eye is capable of utilizing light only within a comparatively narrow range of



AN ANCHOR BOLT WHICH WAS BROKEN ON THE EMERY TESTING MACHINE. FROM THE FORM OF THE BROKEN PORTION THE SCIENTISTS DETERMINE FLAWS AND IRREGULARITIES IN MANUFACTURE.

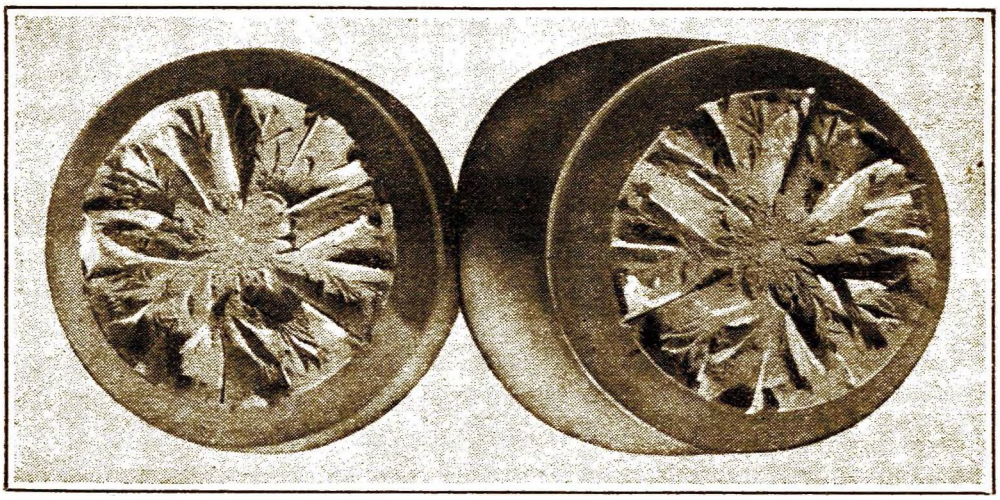
wave-lengths. Light-waves too long to affect vision are called infra-red rays; those too short to see with are known as ultra-violet rays. All play their part in spectroscopic analysis, which performs an increasingly important part in industry; hence the necessity for standard wave-lengths in various spectra.

Resulted in Better Spectacle Glasses.

As part of its work in this field, the Bureau of Standards has established 131 standard wave-lengths in the iron spectrum. This was rather a nice job, for all were in the ultra-violet region, ranging from 285 to 370 hundred-thousandths of a millimeter in length.

Another practical result of these investigations of invisible light was to show how to protect the eyes by means of colored glasses. For instance, there has been considerable agitation of the question of protecting the eyes of workmen from the intense infra-red radiations from red-hot furnaces, arc-lamps, and so on. Thanks to the Bureau of Standards, manufacturers are producing spectacle glasses that absorb all the injurious rays without interfering with the wearer's clearness of vision.

In standardizing instruments for measuring temperatures some remarkable results have been accomplished, while work of still greater importance appears to be



ANOTHER VIEW OF THE SAME BROKEN ANCHOR BOLT. THE BUREAU OF STANDARDS TESTS FINISHED PRODUCTS, INSTEAD OF RELYING ENTIRELY UPON EXPERIMENTS WITH RAW MATERIALS.

on the eve of successful completion. Clinical thermometers, for instance, bring this matter of temperature measurement home to everybody, for they are an essential guide to the physician in the treatment of many ills.

When the Bureau of Standards first began testing clinical thermometers, these instruments were found to be so inaccurate that they were practically valueless, no less than forty per cent failing to pass the test. Thanks to the information gained by these official tests, the thermometer-makers have so improved their product that of 16,524 clinical thermometers tested last year, 90.4 per cent were certified as correct. American clinical thermometers are now so well made that they have driven the German product from the market.

Temperature - measuring instruments used in industry were also very inaccurate when the Bureau of Standards was first established. A large percentage of the instruments designed for measuring temperature of 400 to 500 degrees Centigrade varied from 30 to 40 degrees. As some manufacturing processes are materially affected by a variation of 20 degrees, and some by as little as 10 degrees, it will be seen that such instruments were valueless, or worse than valueless.

Saves Money for the Coal-Consumer.

In purchasing coal at prices based on the number of British thermal units in a ton, great accuracy is required in measuring these units. For instance, the Bureau of Standards acted as referee in a case in which a difference of five one-hundredths of a degree between the thermometers used by buyer and seller was discovered. This discovery resulted in an agreement between the parties interested. It also made a difference of $25,000 a year in the price paid for the coal.

Thanks to the development of standard heat-measuring instruments, guesswork in the manufacture of steel is being abandoned. In hardening and annealing steel, a difference of 25 degrees Centigrade entirely changes the properties of the metal. In connection with this finishing temperature of steel, the Bureau of Standards last year began a series of investigations of the utmost importance.

Records kept by the American Railway Association show an increasing number of rail failures. In 1911 there were 36,641 rail failures out of 12,688,714 tons laid. Next year this increased to 61,047 failures in 13,736,956 tons laid. Some of the breakages cause disastrous wrecks.

Help in Reducing Rail Failures.

A vast amount of discussion and no little research have been devoted to efforts to discover the causes of these rail failures, hitherto without result. The fact has long been recognized that rolling rails too hot or too cold had a very bad effect, but the only way in general use of fixing the right temperature was to guess at it. Almost all known methods of pyrometry were tried in measuring rail-temperatures, but with such indifferent success that engineers were skeptical about its practicability, and this prevented the introduction of temperature control, even in mills whose management was convinced of its importance.

The Bureau of Standards believed there were no difficulties in the way of using pyrometers to control the temperature of rails while being rolled. Operators equipped with a variety of these instruments for reading very high temperatures were sent to four of the principal steel-mills, where they demonstrated that there was no difficulty at all in applying the process.

One type of pyrometer can be sighted on the rail-head at a distance of fifty feet, giving the temperature correctly within one or two degrees, Centigrade, which is accurate enough for practical purposes. Another type does not need the attention of an operator, but can be clamped in position, when it will give a continuous record of temperatures, which record can be made in the superintendent's office.

This investigation disclosed the fact that rails were being finished at too high a temperature. It has also caused a commotion in technological circles, and has already led to further research in which the Bureau of Standards is cooperating with the American Society for Testing Materials in this important subject.

Working to Standardize the Railroads.

The Bureau of Standards has also discovered that hidden flaws in steel rails may be revealed by large magnetic coils slid along them, and is now developing an automatic machine that will do the whole work on a commercial basis.

In a great variety of ways the bureau is working to bring the railroads up to standard. In addition to the investigations already mentioned, the bureau is studying some of the fundamental problems in the design, manufacture, and properties of car-wheels, axles, tires, boiler-plate, and signal-lights, and is even trying to find some way to settle the hopeless muddle in headlight legislation in the various States.

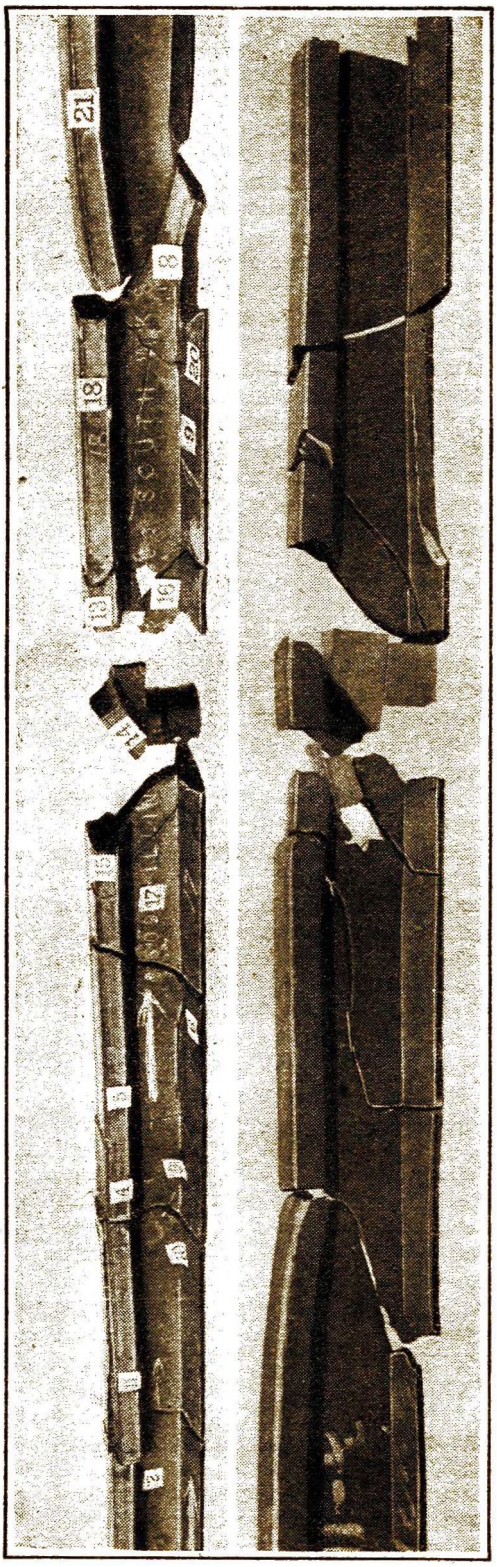
Some States require that headlights shall measure 1,500 candle-power without a reflector; another requires 10,000 candle-power with a reflector; another specifies 300 watts at the arc; yet another specifies the size of the reflector, and still others require that an object the size of a man shall be visible at specified distances, but fail to specify the color of the object, which would make a material difference in the distance. The bureau is even considering standards of lighting and heating cars, and for defining the desirable degree of cleanliness that should be required of the transportation companies.

Our Extravagant Gas-Bill.

Leaving the steam railroads out of consideration, the people of the United States spend about two billion dollars a year for the services of the public utilities, including telephones, gas, electric light and power, electric-railway transportation, and miscellaneous utilities. The States through their public-utility and railroad commissions spend four million dollars a year regulating the utilities and the railroads, and the cities spend a large additional amount.

Laws and regulations are so hopelessly at variance that there is no such thing as standards of service; yet these standards are needed, and one of the statutory duties of the Bureau of Standards is to provide them. At present there is an appropriation of only forty thousand dollars a year for this work.

By spending one cent per capita per annum, it is calculated that the Bureau of Standards might save the people of the United States $100,000,000 a year by taking the lead in an efficient study



TWO EXAMPLES OF RAILS WHICH FAILED UNDER TEST. THE BUREAU IS HELPING TO REDUCE RAIL FAILURES AND HAS DISCOVERED THAT HIDDEN FLAWS IN STEEL RAILS CAN BE REVEALED BY LARGE MAGNETIC COILS SLID ALONG THEM.

of the conduct of public utilities, defining standards of service, preparing safety rules, studying local services, acting as referee in cases of dispute, carrying out laboratory investigations, and so on.

In fact, the bureau has already rendered services of immense value in connection with public utilities. For instance, the nation's gas-bill is $100,000,000 a year. The bureau has shown that much money is wasted in making gas of high candle-power in obedience to law when nine-tenths of the gas used for illumination is burned with mantles, which require heat-value rather than candle-power. The bureau has defined suitable standards for making and distributing gas and methods of testing, and has embodied these in standard ordinances designed for cities and towns of various sizes.

Most street railways are operated on the single overhead-trolley plan, with the electric current flowing through the car-wheels into the rails, through which it returns, theoretically, to the power- house. In practise, though, a good deal of the current strays off through gas and water-pipes and the lead sheaths of telephone and electric-light cables. This results in corrosion and often complete destruction of these underground conductors. In fact, electrolysis is a very troublesome problem in many places.

Upon request, the Bureau of Standards conducted investigations of electrolysis in Springfield, Massachusetts, Springfield and Elyria, Ohio, St. Louis, Missouri, and Altoona, Pennsylvania. These studies resulted in the development of a standard method of preventing electrolysis which is already in use in the cities named.

A $100,000,000 Premium on Dishonesty.

Of most interest to the average man, perhaps, are the efforts of the Bureau of Standards to eliminate fraud in commercial transactions. From the beginning the bureau has done all in its power to assist in establishing and maintaining efficient State and local inspection of weights and measures used in trade. For the last ten years an annual conference on weights and measures has been held under the auspices of the bureau, which is largely attended by weights and measures officials, manufacturers, representatives of commercial organizations, and others interested.

This has been an important factor in standardizing laws and practises relating to weights and measures throughout the country. Seven years ago only two or three States and a few of the larger cities maintained anything like an efficient inspection service. Negligence in this regard cost the people $100,000,000 a year and put a premium on dishonesty.

In a nation-wide investigation the bureau found nearly 45 per cent of the scales tested were incorrect, and 48 per cent of the dry measures cheated the buyer. Since then a majority of the States and many of the important cities have passed laws and ordinances establishing inspection of weights and measures, and this service is constantly gaining in efficiency.

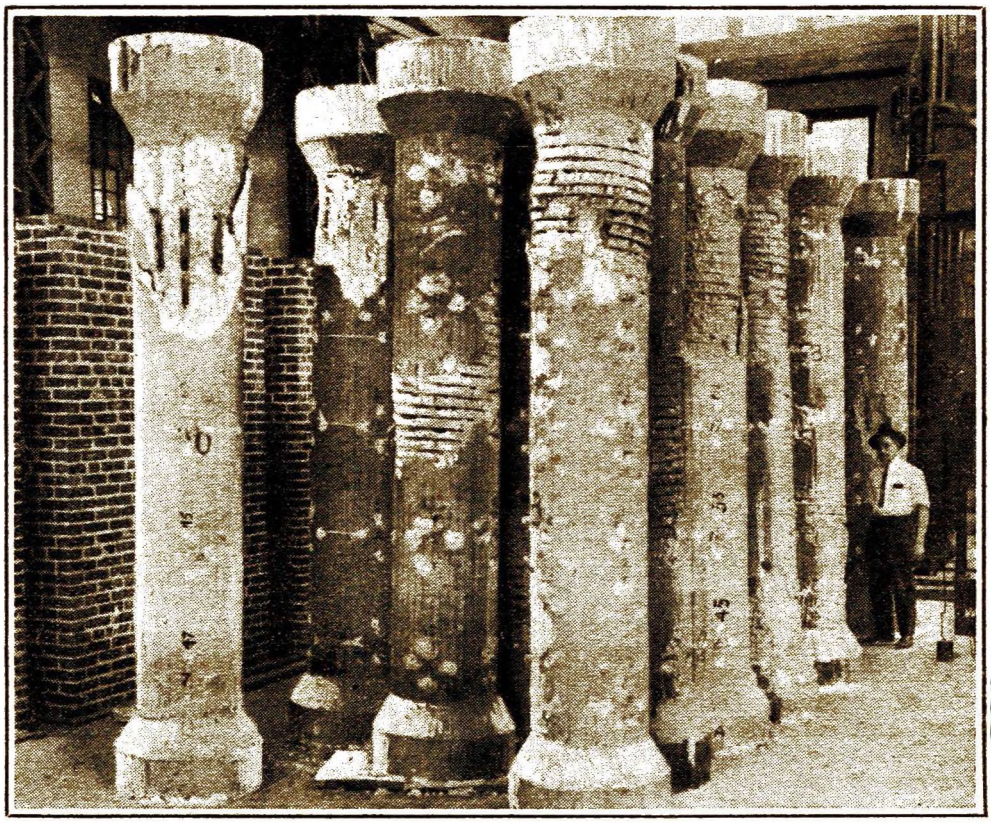
Found a Way to Prevent Collisions at Sea.

The latest important achievement of the Bureau of Standards is the perfection of a radio direction-finder, so eagerly sought in Europe and America for several years past. This instrument, which is simple, practical, and highly efficient, shows with unerring precision the direction from which wireless signals come. This is a discovery of the utmost importance to the army, navy, and mercantile marine. It provides, at last, an adequate means of preventing collisions at sea, for one thing.

The Bureau of Standards by its investigation of vacuum cleaners has brought great improvements in that useful article; it has shown how to protect live stock from lightning; it is now working out a scheme of color standards; studying the problems of electrotyping; investigating the vagaries of barometers in the hope of being able some day to standardize these uncertain instruments, and carrying out an immense variety of other highly technical work, all of which will have a direct practical application in the daily life of the people.

Works Closely with Private Concerns.

The national Bureau of Standards has surpassed any similar institution in Europe in establishing working relations with private industries and encouraging in commercial organizations a spirit of investigation. It not only cooperates with the various technological and scientific associations, but it makes a point of cooperating with as many of them as possible as often as possible. In thus fostering a habit



CONCRETE COLUMNS AT THE END OF A TEST. ENGINEERS, ARCHITECTS, AND BUILDERS ARE ABANDONING THE GUESSWORK PLAN OF CONSTRUCTION AND ARE FOLLOWING THE GOVERNMENT'S SCIENTIFICALLY DETERMINED MATERIAL SPECIFICATIONS.

of research and mutual helpfulness, the Bureau of Standards is rendering the nation a service beyond price.

EDITOR'S NOTE.—And Mr. Carter, too, is rendering a service beyond price—to railroad men at least, if not to the nation—in thus clearly and graphically describing the activities of an organization whose work affects this country's transportation systems in their every branch. It isn't often that a magazine gets a chance to publish an article as new and meaty as the one you've just read.

As this number goes to press, Mr. Carter is on tour, gathering material for several articles—one about a plant that is turning out a steel car on an average of twelve minutes, night and day, and another about the most complete railroad city in the world—Altoona, Pennsylvania, where everybody either works for the railroad or else works for those who work for the railroad. Watch for these articles. They'll be good.

MYSTIC ESSENCE, BY RICHARD WHITMAN.

IT is sleepless; it is tireless;
It makes daytime of the night;
You can talk with it by wireless
Since Ben Franklin flew his kite.

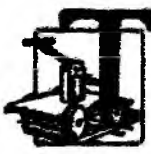
It wakes thunderings of traffic;
Whispers o'er an ocean's bed;
And it thrills its message graphic
To the forces Time has sped.

Its power runs like a river
Raging down a rocky sluice;
It has set a world aquiver
Since Ben Franklin strung the juice.

CONQUERING THE SUISUN SINKS.

S. P. Had a Stretch of Track That in Spots Would Bog Down Four Feet in 24 Hours—Tamed after 45-Year Fight.

BY EDMUND G. KINYON.



THE Ogden Branch of the Southern Pacific Railroad of California (formerly the Central Pacific) has been in full operation for approximately forty-five years; yet the sinks of one ten-mile stretch of track have just been brought under control. This section, known as the Suisun Sinks, between Sacramento and Benicia, is believed to represent the most expensive railroad track, mile for mile, in the United States. The first cost of construction was not extraordinary; but since, throughout nearly half a century, literally millions in money has been poured into the insatiable maw of it, the last big feed, covering a period of less than two years, costing $250,000.

Guessed Their Way across the Bogs.

In the sixties, when the Big Four—Huntington, Stanford, Crocker, and Hopkins—built the Central Pacific, the first overland connection, traversing the mighty Sierras from Sacramento eastward, the demand for rails on to the Golden Gate amounted to a public clamor. Out of this frenzy for faster traveling than the river steamers afforded grew a line by the shortest and most easily constructed route—straight across the miles of boggy tule-lands between Sacramento and Benicia, by ferry, then and now, over the Straits of Carquinez, and thence along the bay shore to Oakland, opposite San Francisco. The search for solid bottom on the tule-lands was not always successful; but the track was built anyway, on the chance that an adequate roadway could somehow be developed.

It will, of course, be understood that this swamp was but comparatively recently an arm of the Bay of San Francisco. Gradually, silt from the interior, brought down by the Sacramento and San Joaquin Rivers, filled it in; after which vast growths of tules added their annual decay until a terra was formed. Thus, a shifty, oozy, peatlike formation confronted the builders of the original line.

The plan adopted was to drive pilings in all places where test borings showed solid bottom. Where no bottom could be found, fills were resorted to. The piles never gave much trouble; but the fills, confined mostly to the ten-mile stretch mentioned, began sinking from the day the rails were laid and kept it up for forty-five years.

After trying various expedients and experiments looking to a solid road-bed, the company settled down to the task of feeding the monster. On an average, for many years, it was found necessary to raise that ten-mile section of track one foot per year, this foot of additional material representing the settlement.

A regular crew was maintained with special equipment to keep the rails at the proper height and the road-bed sufficiently solid for traffic. Even in the earlier years, however, slow orders were the rule rather than the exception, and trains had to be detoured over another and longer route with annoying frequency.

Tides Aggravated the Trouble.

Strange as it may appear, the Suisun Sinks grew more voracious with age. This may have been due in part to the ever increasing weight which the evolution of rolling-stock imposed upon the road-bed. In time, too, it was noticed that the tides had something to do with the moods of the slough, the greatest trouble always devel-

oping during times of extremely high or low tides.

The beginning of 1905 found the ten-mile section in generally unsatisfactory condition, the settlements having gained, little by little, upon the repair-crew until in places the track was three and four feet below level. Then it was that the company made a large appropriation and directed that the defective track be brought up to standard.

All went well until the work was nearly ready for the roadmaster's final inspection; then a strange thing happened—the work-train found itself marooned, it having settled within a few minutes to such extent as to disrupt the track. Immediately, other sections of varying length went down for no apparent reason.

The fight to keep the line open to traffic became desperate. Every sort of material —rock, gravel, old ties, scrap-iron—was poured into the sinks. Over one million feet of lumber was used in cribbings. The acute stage finally passed and the old expedient of replacing the settlement with new material was resumed.

In 1911 the double-tracking project started the trouble anew, the sinks apparently rebelling absolutely against any additional burdens. Seemingly, the internal reservoirs were becoming filled; for what went down made grotesque shift of coming up again in like volume alongside the right-of-way.

Telegraph-Poles Shot Out of Ground.

In time, huge ridges developed near the edge of the right-of-way on either side. Telegraph-poles were shot out of the ground overnight and left suspended by the wires overhead.

In the worst places, shoo-fly tracks were built, and heavily loaded cars left standing to act as a counterbalance. The expedient availed little, it being necessary to soon remove the cars in order to keep them from being engulfed.

On one occasion a car loaded with cord-wood was derailed, every vestige of it disappearing into the earth overnight. In places the track would sink four feet in twenty-four hours, going completely under water.

At its best it was barely in condition for trains to creep over.

At the beginning of 1913, J. D. Brennan, superintendent of the Western Division, decided that the sinks must be conquered once for all; and, having mapped out a plan of campaign, he arranged to give the work his personal supervision for such time as might be necessary. Brennan's idea was to overfeed the monster—that is, pour in crushed rock, gravel, and dirt faster than it could be absorbed, and keep it up until the settlement permanently subsided. In addition he planned to extend the fill on each side of the track-bed to sufficient width and weight to act as a counterbalance to trains passing over the rails.

Brennan Overfed the Monster.

The soundness of Brennan's theory, after so many failures, was doubted in some quarters; but to-day a solid, double-track roadway spans the Suisun Sinks—a roadway which shows no abnormal settlement, is unaffected by tides or rainy seasons, and along which the slow-order had been eliminated.

The transformation was brought about in this manner: Between the cataclysms of 1905 and 1911-1913 it had required twenty-five car-loads of material a day to keep the track in condition for trains to pass over at slow speed. Brennan increased the amount to one hundred car-loads a day. Three work-trains, much special equipment, and large crews of laborers were employed.

One sink, 1,200 feet in length, absorbed 1,663 car-loads of crushed rock and other coarse materials. Several much shorter sinks gulped down from 800 to 1,500 car-loads each. Brennan fed and overfed each sink in turn until not another car-load could be absorbed. In all, thousands upon thousands of car-loads of this filling-material were dumped into the maw of the monster.

It was only recently that Superintendent Brennan announced his belief that the Suisun Sinks had been conquered, and that no further trouble in that locality need be feared. And so it has come about that now, virtually for the first time since the line was built, the heavy overland trains thunder through the tules, past the aquatic stations of Cygnus, Teal, Jacksnipe, and Sprig at average speed and in perfect safety.

And yet the question sometimes recurs to the more pessimistic of Mr. Brennan's associates: Will this conquest of the Suisun Sinks—brilliant as that conquest is—prove to be permanent after all?

TUTT OF THE D. Y. N.

BY J. C. WRIGHT.

He Might Have Held the Lightweight Championship Title If He Hadn't Had Railroaditis and a Girl.

"IT'S sure a weird bug, this railroaditis," said my very good friend, Arty Means. He scratched his right ear contemplatively, at the same time refusing to meet my eyes.

"What's that got to do with the wedding?" I demanded, out of patience with his evasions. "Sit down, can't you, and cut loose with the Wonder-Woman business!"

"Wait a minute! Wait a minute!" he exclaimed. "About this railroaditis thing now; it's like some hereditary disease, layin' dormant for ten years, mebbe, and then slippin' up on you like a thief in the night to drag you back into the service. They always come back—funny thing, but they always do."

"Look here, Art!" I exclaimed with some heat. "You wire me to hop a train and come dangling clear across the country to your wedding, naming to-day. Well, I'm here and I want a peep at this little missus of yours. Can this mystery-of-life stuff and talk girl! Is this Rose-of-the-Water-Tank light, dark, brown or—"

"As I said, it's sure queer," Arty mumbled at the ceiling. "Seeing Timmy Tutt, who was within a pink pig's whisker of the lightweight championship title only last Saturday night, meandering down to the yard to take out his train, put me in mind of it. One thing or another brings 'em back to the fold. Want to hear about Timmy Tutt's come-back, son?"

Now the papers had been full of stuff about Timmy Tutt of late and the news that he'd retired from the squared circle interested me a lot. Also I knew Means too well to accuse him of stalling. He's usually going some place when he's on the move.

"Have at it, Charles Dickens," I told him, and reached for my smokes.

Art recognized my surrender with a half-smile, and plunged abruptly into the story:

"Timmy had to sign a minor's release when he began braking for the D. Y. N. He was just an average sort of rollicky Irish kid—a rattling good shack and fond of mixing it with the 'bos just for the fun of seeing 'em fall. Curly-haired, of course, and blue-eyed.

"And he was like greased lightning on his feet. It's probable that his footwork saved his life a dozen times during the three years he carried a stick for the D. Y. N. He was always a great chance-taker and this line is a chance-factory.

"It runs right alongside the river and outa every thousand feet a hundred is trestle-work and two hundred tunnel. And the tunnels are all low! She's a two-bit trail from end to end.

"Telltales are almost as common as mileposts. You savvy what a telltale is—a wooden standard over the track supporting swinging ropes at just the right height to sweep a man's face when he's riding the top as a warning that his head'll be jerked off in about thirty seconds by the tunnel roof.

"It's these everlasting telltales that give the road its nickname. The boys call it the duck-your-nut! line, and I claim it's appropriate.

"On the night runs the hogger'd keep his eagle-eye skinned for the holes. They'd slip into one and he'd sing out: 'Duck your nut!' to the head-end. He'd flop to the roof and then pass it on to the swing man, who'd relay it on to the crummy folks. That would happen every ten or fifteen minutes.

"Being without whiskers at the start, Timmy always caught the head-end and that was where you had to duck, and duck quick. He got caught once and put in two months in the 'sewing ward.' He was nerv-

ous for a long time afterward, and every time he'd hear a guy say, 'Duck your nut!' he'd flop in a jiffy. I saw him go flat to the sidewalk once when an awning fringe tickled him under the chin.

"Well, Timmy went his way for the better part of three years, scrapping the 'bos, chinning the girls, and, out on the line, ducking his nut well enough to keep out of the hospital.

"He had quite a reputation as a scrapper among the boys, although he was never quarrelsome. They took a lot of pride in him, and when they opened a new athletic building nothing would do but Timmy must go on with a mighty tough boy from the city.

"Timmy vindicated their judgment by winning from the professional in such an impressive fashion as to attract the attention of a professional fight-promoter named Black.

"He tried to sign the kid then and there, but Timmy turned him down cold and went out on his run as usual. You remember, son, I handled a track-wire in Frisco two years. I'd gotten acquainted with most of the sports around town and knew more than the average about scrappers. Timmy looked like a comer to me.

"Timmy liked the fight-game; there was no question about that. During the holidays he took on a tearing pork-and-beaner from the East who had cleaned all the local talent in jig time. The kid put him away in the eighth, and Black, who had dropped down on purpose to get a better line on Timmy, raised his ante a mile. The kid signed.

"Well, about the time Timmy got the fight bee in his bonnet I got an altogether different kind in mine.

"I'd been engaged to the Kiddo for almost a year then. You know how I've been cantering the last six years, son. I saved a little piece out of every dollar I earned and all the while I was waiting for the right one to come along; and—Well, the Kiddo was the one. I'd bought the lot, the house was all planned and we were figuring on the furniture.

"Then, just before Timmy's first scrap, I heard her talking to him about it. She didn't want him to fight; and—well she cried a little. When a woman's cheeks get wet about a fellow there's no way to figure but just one. Still she didn't say anything. I didn't say anything and we kept on talking about the furniture just the same as ever.

"But I watched close and right away I began to notice things, little attentions like keeping tabs on his eats to see he didn't run outa butter—the Kiddo was hashing for Donnelly—and, oh, little things like that.

"His going away brought things to a crisis, for the Kiddo broke down at the station and bawled for fair. I was on duty, but I saw it all through the bay window. The kid kept patting her shoulder and tried to laugh her out of it. I could see it was like pulling teeth for him to leave her. She was all broken up and had to beat it before his train came.

"The next day I wrote her a note and she sent me back my ring. That ended it—no quarreling, hard feelings or nothing. Just friendly all round, it was, but I'm telling you, son, I didn't sleep for a week."

Art isn't one of these blow-it-all kids, and I knew it was doing him a barrel of good to unload on me. I didn't cut in with any sympathy stuff—just let him ramble.

"In the meantime," he went on, and his voice was steadier, "Timmy had been going great guns. Black didn't crowd him any, sending him against icebergs all the time. He beat 'em all by a good safe margin and this gave him a world of confidence and at the same time built up his rep. He was picking up the fine points of the game, of course, and getting experience.

"He won a hair-line decision over Fisty Burns, Labor Day and this burg went stark, raving mad with joy. Burns, you know, was then the runner-up for the championship and a mighty tough trial-horse to beat. This win put Timmy knocking at the gate. The home folks began to think the kid a world-beater, and others, too, apparently; for the papers began boosting his stock for a crack at the champion, Bruiser Kelley.

"Timmy did a turn in vaudeville then, and from every town Black loaded the papers with challenges and the usual bunk. After three months of this the Bruiser decided that public interest was as high as it'd ever get, and signed to meet Timmy for twenty rounds Turkey Day.

"There wasn't much else talked about in this man's town, let me tell you. Timmy had always been popular, and now that he was putting the town on the map he was every guy's side-kicker. The Kiddo came in for her share, of course, for it was no

secret that they were engaged; seemed a toss-up, too, which was the worst hit.

"Timmy was no great shakes as a letter-writer, but he was strong on night letters. He always timed 'em to come in when I was off shift, which was darned considerate of him, but I saw the office copies without meaning to, and—"

Means got up and paced the floor for a minute. His hands were clinched. After a little he sat down with his face turned from me and went on:

"I'd gotten so I could speak to the Kiddo without my left lung climbing up into my throat by now, and one night I spoke of Timmy when I was eating a late supper and we were all alone in the restaurant.

" 'Kid's doing fine, ain't he?' I asked casual. 'Great little man, sure. Bound to come through Thanksgiving.'

"And she began to bawl! S'help me, she went off in a second!

" ' 'Aw, come on now,' I told her. 'Maybe you don't just cotton to this fight game, but, shucks! It's nothing to cry about. The Bruiser couldn't hit Timmy with a broom!'

" 'It—it isn't that—so much,' she told me through her hankie. 'It's the—the *life!* Cafés, fast comp'ny and all that! I don't want him to fight. I want to—to just settle down and meet him when he comes in off his run, and have a home and—and kids, and—and—!'

"Well, son, she lit into the weeps for fair and I don't mind telling you I wasn't far from the sniffle stuff myself. You see, I knew just how badly she *did* want a home —and the rest.

" 'If there's anything I can do, Kiddo, just raise your hand,' I told her; 'but I wouldn't worry about Timmy if I were you. He never was strong for the white lights and frizzly dolls. There ain't a grief in him, if you ask me.'

"Well, I kidded her along till she felt a little better and then beat it; but the very next morning's paper brought the thing she was afraid of.

"It was a big spread announcing Timmy's engagement to Black's daughter! She was a big doll and, according to the picture, some queen, as those queens go—big hat, big plume, swell duds. She didn't look *nice,* though, like the Kiddo.

"I tried to do a sneak after I'd had m' supper that night, but the Kiddo headed me off. She was off-color and her eyes were red. It hurt me to look at her.

" 'You've seen—it, I suppose,' she began in a voice I wouldn't have recognized over the phone.

"I had to tell her yes.

" 'It's as I thought. They've got him—that huzzy!'

"I asked if he'd written or wired. She shook her head.

" 'Then,' I had to admit, 'they've got him, apparently.'

" 'You've *got* to save him, Art!'

" 'Oh, sure,' I said, just like that. 'Sure, I'll save him. That'll be all right.'

"But she meant it! Yes, indeed, she meant it. The next thing she said was this: . " 'If you *will* save him I'll—I'll marry you!'

"Yes, she meant it, all right. I was 'just' to save Timmy from 'that huzzy' and we were to begin all over again. She seemed to think it was a stiff job and worth a good price.

"There weren't any hysterics. It was a business proposition. She wanted the kid weaned away from the flesh-pots so bad she was willing to lose him herself to have it done.

"Of course I didn't intend to hold her to her bargain, but I let her think so for the comfort she got out of believing herself a martyr. You know how much good that does a woman, son.

"I didn't let it worry me too much for a few days—thought the Kid would wire and straighten it up. Nothing doing, she tells me. And she went to the martyr business with both fists—began talking furniture and wallpaper again. Game, let me tell you —game clear through!

"Son, how would you plan to get a fellow to give up great chunks of easy dough so you could win said fellow's girl? How would you?"

I shook my head.

"I pass."

"That's what I thought, too. But I knew a lot about Timmy, and after a while I lit on a scheme—a hop-head scheme for fair—but the only thing I could think of. I turned it over in my mind for a while, and—. Well, that brings us down to the fight.

"I just *had* to be there, for reasons you'll understand better after a while. I made sure of a layoff by getting hold of a boomer op. and staking him along so I could throw

him into the breach at the last minute if necessary.

"For I could see in advance that a relief wasn't going to be available. Every brass-pounder along the line was screaming for a relief. They were bound to see the scrap if it took a leg. As Thanksgiving drew near fathers, mothers, aunts and what not began to die at an alarming rate. Everybody, from chief despatcher to call boy, was just simply *bound* to be at the ringside to see Timmy cop the bacon. As Crogan, the master mechanic, put it:

" 'Tis an epydemic's sthruck the division, an' 'twill be fatal to many, I'm thinkin'—if the b'y loses!'

"Well, we managed it, most of us. A special train, carrying two-thirds dead-head, went up to the city.

"I gathered the bunch forward and made 'em a proposition.

" 'We're making this trip to boost the kid's game, I take it?' I asked 'em. They were. With noise and much money.

" 'It goes without saying that we back him to the limit!' They were hog-wild. There was no limit.

" 'But we want to get the best odds we can,' I told 'em. 'Now I've lived in Frisco for years and know where to locate the boys with the big rolls. Suppose we form a pool and let me place it. Personally, I'm a believer that there's better chances to plant our dough in a pile than if we scattered it all over town and make a noise that will shorten the odds.'

"Well, that listened good to the railroad bunch and they passed the hat. I made a memo of each fellow's contribution and they agreed to leave the matter in my hands. There was fifteen hundred in the roll when all hands had cut in.

"Timmy was down to the station, glad no end to see us. He shook my hand till the poor thing just laid down and died. Some grip the kid had. He pulled me away from the bunch.

" 'Say, Art,' he began, 'maybe you think I got a crust, but there's something I want to know and I figure you're the guy with the info.'

" 'Let it come, kid,' I told him.

" 'It's about the Kiddo. She don't write any more since that fool newspaper story. What's wrong?'

" 'There's a similar complaint about you,' I told him. 'But first let's get this thing straight: How do you fit in to get the Kiddo back? Are you tied up with this doll like the paper says?'

" 'Nothin' like it!' he gritted, mad clear through. 'Black had been tryin' to tie me up with a long-time contract and I refused—I'm not satisfied with the way he keeps books, see?—and so he gives out this yarn, thinkin' I wouldn't turn his show-case kid down after all the publicity, and then, being in the family, I'd sign with him. Nothin' to it a-tall.'

" 'And you wired the Kiddo to that effect—by night letter, eh?'

" 'Sure; dozens of 'em. Didn't she get 'em?'

" 'Seems not, kid,' I told him. 'And now tell me one thing more: Are you in this fight-game for keeps?'

" 'That depends. There ain't a lot of money in it unless you're the champ and can demand the dough. If I cop to-night I'll stick it out till I'm got; if Kelley gets me, I'm through.'

" 'Fair enough,' I told him. 'The bunch wants you now.'

"They began to tell him about the fifteen hundred pool, when the kid hung out a yellow flag.

" 'Ride light, you guys! This man Kelley is a real champ. He's got a swan-song in both gloves and he's about as easy to hit as a passing-track behind an open switch. Besides that, his conk is full of a mighty foxy brand of monkey-motion and he moves like ninety loads on a four per cent. without air! Get me right, now! This guy is a derail without lights and you're darned apt to get on the ground bettin' against him!'

"He might just as well have waved his yellow at the breeze that blew. They howled at me to get busy and place the roll—all of it!

"Well, I broke away from 'em and peltered around town talking to fellows I knew. It was all scrap. The champ was the favorite, of course. They were offering three to one on him. I didn't take any of it.

"After a while I blew into Spider Kelley's for lunch and bumped into 'String-'Em' Smithy. Smithy used to be a middling good welter, but he was so crooked that the promotors finally refused to card him and he was forced out. He made a living around the track in the old days, but drifted back to the fight-game eventually. He was a sparring-partner of the champ's just now,

he told me, and I listened as though I hadn't heard of it before.

"He was awfully glad to see me after he found out that I was well acquainted with the kid, and we talked a long time about—oh, everything. Smithy was a great gossip. He shook my hand like a long-lost brother when I left him to hunt up the bunch.

"We'd reserved a section of seats in advance or we'd have stayed outside and read the bulletins. The house was sold out at noon.

"The preliminaries were fair, but nobody took a great deal of interest in 'em. I worked it so I sat beside Gordon, the first-trick operator at home.

" 'What you mean by holding out those night letters on the Kiddo?' I come at him.

"Gordy turned red and then white.

" 'You ought to know,' was all he said, but it was enough. I did know.

" 'I appreciate it, all right, on my part, but it was mighty tough on the Kiddo,' I told him, and let it go at that.

"After a minute, though, I reached down and gripped his hand under the seat. The old boy was flirting with the pen, holding out those wires, and he knew it! You see, he figured the Kiddo and I would drift together again if she though Timmy had quit her cold.

"Timmy came on then and we all stood up to welcome him home. He laughed and waved his hand. The crowd began to call us the 'home-town' bunch, and kidded us about walking home and that old stuff. Some of the tin-horns tried to rib the boys up for a good bet, and they came to me for the coin to take 'em up. I laughed and told 'em the sack was empty.

"The Bruiser blew in after a while—late, of course—and got a great hand from the crowd. He was a rough, tearing fighter, and that kind always takes well with the bugs. He looked to be a good ten pounds heavier than Timmy—the match was at catch-weights—but that didn't bother our crowd any. Nothing did, for a fact.

"He jockeyed around the ring a little, testing it and his shoes. The announcements that nobody could ever make out were yelled out, every pug in town tried to be introduced, and the referee called 'em together for instructions. A minute more and the gong had started 'em on their journey. Our bunch took one long breath and held it. You know how it is.

"Timmy was cautious, of course. He let Kelley do the leading; and I'll say this for the old boy: He was never backward about coming in.

"He fiddled, trying to get Timmy closer, and then put a right to the head; tried to, that is. The kid took it on his forearm, grinning. He danced back and then slipped into a clinch without taking anything worse than a little hook that didn't wrinkle the skin. They weren't really fighting—just looking over the ground, if you know what I mean.

"I watched both boys close in that first clinch, and I was hep in a minute that Timmy was the better in-fighter. He shot a flurry of hooks to Kelley's mid-section in a clipped second. The old boy cuddled in to get away from them. They were stingers.

"Well, everybody gave the champ the first round on aggressiveness, and he was entitled to it. Timmy didn't hurry. There were nineteen more.

"Things began to liven up a little in the second, although Timmy was still playing 'em safe. The fans began to boo at him, yelling that it wasn't a foot race, as they always do in the early rounds. They didn't know the kid. Mixing it was his long suit, but he wasn't ready yet; he wanted to find out what Kelley had before taking a chance on meeting up with it. He figured it'd be safer to look at a sample than to let the champ slip him a carload of something he didn't want.

" Kelley tried to keep the milling at long distance; he didn't seem to thrive on the close-up stuff, with the kid slipping in those short-arm hooks in clouds. Early in the third he cut loose with a haymaker that would have h'isted Timmy into the gallery if it had landed. Timmy just squatted and let it sail over his head, digging in like a tiger when the old boy left himself uncovered.

"And that's a fair sample of the whole scrap. The Bruiser had an awful kick in both gloves and was a bear for punishment. But he was away slower than the kid. Timmy landed oftener, but not so hard. Ring history is full of such fights. As a fan next me put it:

" 'Just let 'im get to that burglar wit' one poke and they bring on the stretcher—just one little poke!"

"But Kelley seemed to be out of luck with his pokes; the kid was too quick to

duck. His training on the D. Y. N. was surely standing him in good stead.

"The fifth round was a hummer. After a clinch or two the champ cut loose with all he had, and, man! But it was a load!

"He brought a short one from his hip to start things with. It was the first upper-cut he'd tried and it caught Timmy with nobody home. It hooked as neat to the jaw as could be and brought the kid to his toes. It hurt; I could see that. He wee-wawed into a clinch and hung on. Kelley shook him off and put a dinger to the face, a right to the body.

"Timmy was in deep water before he knew it. He covered up and took it without attempting to come back. Our bunch was blue. Timmy looked like a mighty sick hope. Kelley had him hurt and worried, but the old boy had always ended his fights with a good old round-house wallop and didn't know any other way. Timmy let it swing overhead and snuggled into a good tight clinch that the referee had to take both hands to break.

"The champ cut loose with another breath of oblivion—more time for Timmy, another clinch. They were still wrestling at the bell and I'll bet it never was so welcome to Timmy.

"His handlers worked like fiends getting the blood back into circulation. The towels flew like snow-clouds. They pressed ice against his spine and had him sniff ammonia. He was grinning a little as he stood up for the sixth. I knew he was feeling happy. He had stood up to the champ and had taken all he could give him outside of the haymaker, which Timmy wasn't afraid of. He had stood the gaff. He had a world of confidence now.

"He proved this in the seventh. Kelley figured he had him on the run and kept after him from the gong. And just to prove he wasn't contrary the kid let him have his way. They mixed it for fair. The fans came up in a jiffy and the whole house was ringing with noise.

"In the ring, they were head to head like a pair of goats and slugging like sin. I could see a lobster-red creeping up the champ's shoulders and I knew he was getting the worst of it. The majority were yelling themselves into the batty house telling Kelley to put the kid away. Our bunch was shrieking the same advice to Timmy. They were staging a royal roughhouse. A hard punch meant a lot right then.

"But nothing happened. Timmy was grinning as chipper as you please when the bell sent them to their corners. The champ had a bad welt under his right eye, which was swelling badly. He was breathing hard and looked a little worried.

"His handlers, Smithy in particular, worked like mad on him; but he was in bad shape when they stood him up for the eighth. Timmy came to him at a run and they went to it hammer and tongs. The old boy tried to keep Timmy back so he'd have room to swing his wallop, but the kid kept slipping in to fight it out his own way.

"Every now and then the Bruiser would cut loose with his hard one and the kid would go under it and come up with a fresh supply of hooks for the old-timer's mid-section. It sure got a slug of nourishment that evening. As the round closed, Timmy brought the crowd up standing by driving the champ clear across the ring with a whirlwind attack. There was no use dodging; the champ was taking an awful beating.

"But he kept right on working at the only chance he had—his wallop. He had won a hundred fights with it and probably figured it was good for one or two more. The fan at my side kept muttering:

" 'One leetle poke! Just one!'

"The fight went on. Round after round the kid was getting closer to the goal. He had already won the fight on points. Barring a knockout, he was the champion of the world. Kelley tried desperately, but he was away slow. The kid went under every sleep-producer. At the end of the sixteenth there was a flurry of Tutt money at ten to one with no takers.

"And then came the seventeenth. At the first tinkle, Timmy was after his man. He hooked a hard right to the jaw and they clinched, slugging like sin. Smithy yelled to Kelley to break away and the old boy faithfully fell back and lammed away. The usual duck, and then Timmy was roweling away at close quarters again.

"He tore in like a mad hornet. He put a flurry of hooks to the body and another to the Bruiser's half-closed eye. Kelley whaled away with his ace that didn't gather him anything, and then Timmy cut loose with all he had. It looked like a kettleful from the road!

"The whole crowd was on its feet and the place was a madhouse for noise. Timmy shot an upper-cut to the jaw, a hook to the

same place. He mixed 'em up. He slammed a right to the body, a left to the head, a stinger to the face.

"The champ's head was jumping back at every poke. He gave ground. Timmy came on. He was punching his heart out.

"The champ's shoulders and neck were a-flood with red. His blood stood still. He kept his head down and took it all. His legs sagged. He was dog-tired. He kept backing around the ring. Pandemonium was loose. He went to one knee, but gamely struggled up again.

"The kid hooked a killing wallop to the jaw, and then, catching the Bruiser off balance, bunched his shoulders into a knot for the try!

"It went through, fair and clean to the heart. Kelley sagged, straightened, sagged again. His eyes went backward a little, opened again. He spilled sidewise to the floor. One smeared glove pushed through the ropes as the old boy lay where he had planted so many others, flat out and facing the crowd.

"Seven thousand fight-fans of the wild-eyed type had just seen the gamest, wickedest fight it had ever been their privilege to behold. A world's champion was on the floor, the referee's arm was making a no-champion of him and crowning a new king with the same motions. They were humans—fight-mad, curious humans. They wanted to see!

"In a jiffy the whole room was pushing and shoving. Those close to the ring were crowded forward by an irresistible force. The referee shouted at them to keep out. He pushed a scrambler out of the ring with his left hand, while his right tolled the passing of Kelley.

"I saw all this as a sort of by-play. I was trying with all my might to keep my eyes on 'String-'Em' Smithy.

"Scarcely had the champion fallen before the handler was there beside him. He couldn't touch him, of course, but he was putting the fight back into him just the same. I saw the Bruiser nod slightly, indicating, I thought, that he *could* get up.

"And then, so quick that it seemed hardly to have occurred, I saw Smithy's agile fingers rest for just a minute on the wrist of that outstretched, smeary glove. No one saw him; the referee was shouting at the crowd, and the crowd itself was fighting for breath. The trick was done!

"'Five! Six! Seven!' The champion stirred—raised himself to an elbow. The crowd stood still, breathless.

"'Eight! Nine!' He was on one knee, his scarred face set, calm.

"At the ten he lurched to his feet, pushed through a flurry of hooks, and clinched, drawing great breaths. The fans went wild.

"Timmy tried frantically to break away, but Kelley clung to him like a bulldog. The referee forced them apart, but in a minute the champ was hugging again. As they stood there straining I saw that the champion's left glove was unlaced. Smithy had done his work!

"Part of it. The rest was at hand. I saw Kelley nod ever so slightly at his handler. Smithy sprang close to the platform. Kelley pushed Timmy back and swung a left at his head. At the same moment Smithy shrieked through cupped hands at the top of his lungs: 'Duck your nut!'

"Timmy paused, paralyzed. The unlaced glove-strings swept his face. The combination was too much for him. He started to throw himself forward—as he used to do on the car-roofs—and met Kelley's haymaker right square on the jaw! He met it coming in!

"He was still petting the twittery little dickie-birds when the referee's arm went down for the last time."

Art swung round to face me. He was smiling a little slow smile.

"Well," was all I could say. "Well!"

"Any post-mortems needed?" Art asked.

"Well— Er, let's see. I understand that you tipped Smithy off in the lunch-room and that— Oh, how about the Kiddo? Did she keep her promise?"

Means's smile grew a little tired.

"The Kiddo, son, is a woman and I— Well, I try to be a man. She is Mrs. Timothy Tutt since last night, and, I hope, happy. I never intended to hold her to her promise."

"But, say, Art, how about that fifteen hundred? Did the boys lose it?"

This time his smile was a grin.

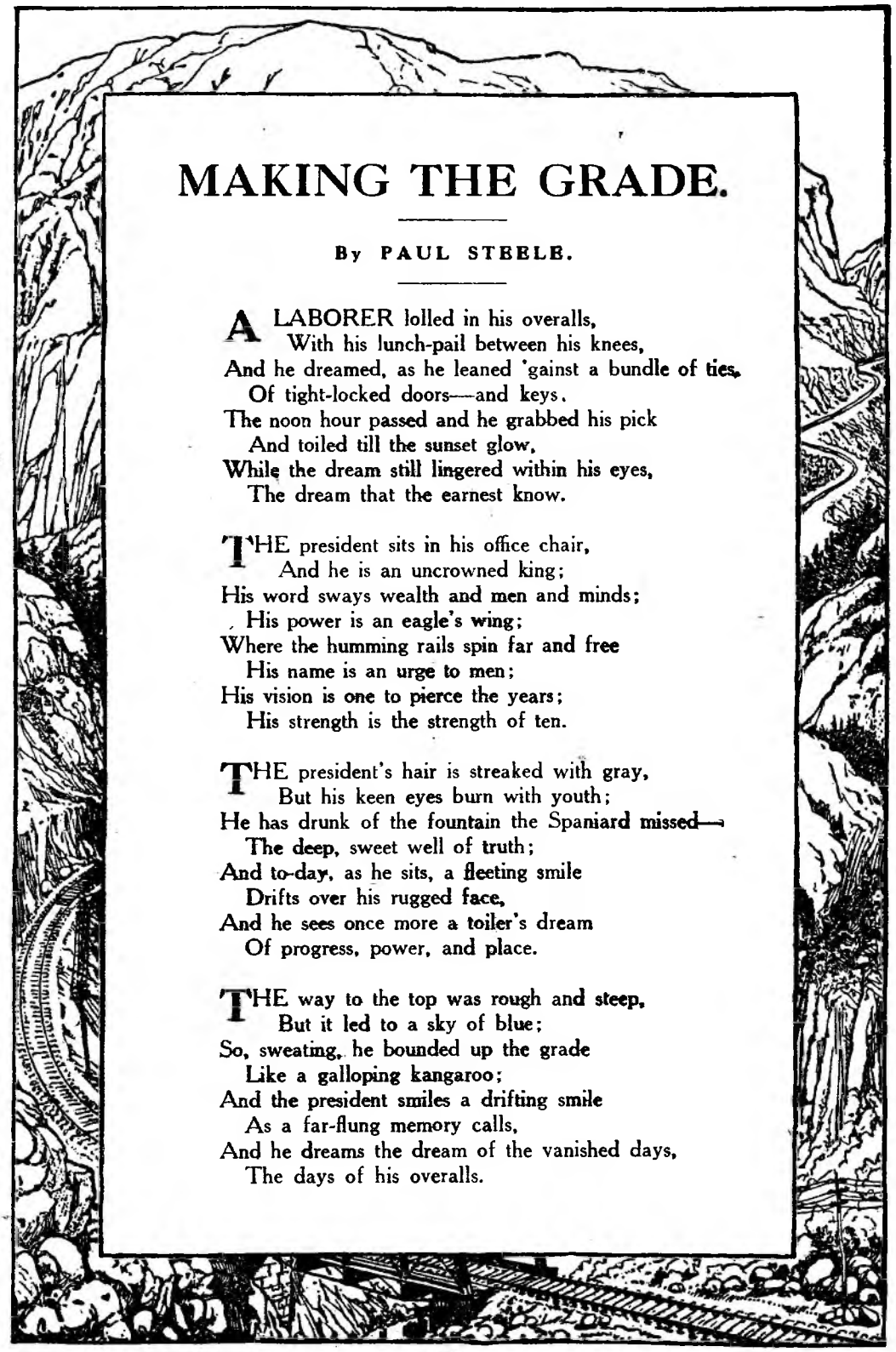
"They think they did, but"—he pulled aside a cushion in his chair to show me a canvas money bag—"it's right here. I'll leave it with Donnelly to distribute. Yes. Just the original fifteen hundred; I never took it out of the sack."

And as he packed his suit-case for a trip to a land called Anywhere, I heard him murmur to himself, "It's sure a weird bug—this Railroaditis!"

FROM FLAGMAN TO PRESIDENT.

AGNEW THOMSON DICE, HEAD OF "THE READING."

MR. DICE WAS RECENTLY ELECTED CHIEF EXECUTIVE OF THE LEADING ANTHRACITE RAILROAD IN THE COUNTRY. HE FIRST ENTERED RAILWAY SERVICE IN 1881, AS A FLAGMAN FOR THE PENNSYLVANIA RAILROAD AND, AFTER A YEAR WAS PROMOTED TO RODMAN AND ASSISTANT ENGINEER. WHEN MR. DICE LEFT THE PENNSY IN 1892 HE WAS SUPERVISOR. HIS NEXT CONNECTION WAS WITH THE NEW YORK CENTRAL. HE LEFT THIS ROAD IN 1894, AND BECAME SUPERINTENDENT OF THE ATLANTIC CITY RAILROAD. IN 1897 MR. DICE WAS MADE SUPERINTENDENT OF THE READING DIVISION OF THE SYSTEM WHOSE DESTINIES ARE NOW IN HIS HANDS. HE ROSE RAPIDLY TO THE POSTS OF GENERAL SUPERINTENDENT, GENERAL MANAGER AND VICE-PRESIDENT, STEPPING FROM THE LATTER POSITION TO THE HIGHEST OFFICE OF ALL.



MAKING THE GRADE.

By PAUL STEELE.

A LABORER lolled in his overalls,
With his lunch-pail between his knees,
And he dreamed, as he leaned 'gainst a bundle of ties,
Of tight-locked doors—and keys.
The noon hour passed and he grabbed his pick
And toiled till the sunset glow,
While the dream still lingered within his eyes,
The dream that the earnest know.

THE president sits in his office chair,
And he is an uncrowned king;
His word sways wealth and men and minds;
His power is an eagle's wing;
Where the humming rails spin far and free
His name is an urge to men;
His vision is one to pierce the years;
His strength is the strength of ten.

THE president's hair is streaked with gray,
But his keen eyes burn with youth;
He has drunk of the fountain the Spaniard missed—
The deep, sweet well of truth;
And to-day, as he sits, a fleeting smile
Drifts over his rugged face,
And he sees once more a toiler's dream
Of progress, power, and place.

THE way to the top was rough and steep,
But it led to a sky of blue;
So, sweating, he bounded up the grade
Like a galloping kangaroo;
And the president smiles a drifting smile
As a far-flung memory calls,
And he dreams the dream of the vanished days,
The days of his overalls.

R. R. TIME AND TIMEPIECES.

The Trainman's "Turnip" May Not Be Much to Look at, but the Works Cost $40 to $50 and You Can Bank on Their Accuracy.

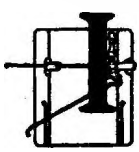
PART OF JOB TO CARRY A GOOD WATCH.

In Each Division of a Big System There Is a Master Chronometer, Which Gives the Time to All Others Controlled by It, Whether of Mechanical, Pendulum, or Marine Type—Biggest Railroad Clock Has Fifteen-Foot Dial.

BY THEODORE BENTON,

Author of "The Railroad 'Fix-It' Man," "Railroad Chiefs Who Rose from the Tracks," etc.

The 75th Meridian, or Eastern Time, is the Standard, and will be transmitted to all points at 2 A.M. and 2 P.M. daily, at which clocks must be adjusted to show correct time. —*First Rule in Book of Rules Governing Pennsylvania Railroad System.*



T nears two o'clock of a spring morning, the hour when the pulse of the world beats faintest. Cities and towns and hamlets are steeped in sleep; the sandman ranges still fields and quiet waters; men and things feel the healing of rest that girds for the new day.

While the heart of the cosmos beats faint there continues the mystic nocturnal roar which never dies, the supertriumph of man's tireless effort. It hums in fantastic whisperings over uncounted miles of singing wires; it sounds in the distant growl of a railroad train hurtling through the night; it beats in the measured ticking of the clocks upon the walls.

It is now a few seconds before two. At a little station, the outpost of a contributory line to a great railroad system, silence is profound. The rumble of a passing train has died; for the moment even the stir of the "talking wires" is stilled.

The operator sits by the key he is set to watch through the night. He is a servant of that traffic which conveniences and conserves human life and property. Apart from his breathing there is but one sound to break the stillness of the station. It is the rhythmic ticking of the pulse of time, the clock upon the wall.

The Click That Means—"Ready!"

Now there sounds a single sharp click of the telegraph-key. It is shot from the observatory a thousand miles away, flashed simultaneously to every cog of that vast railway system.

That click means—"Ready!"

The operator in the lonely station straightens in his chair. With a motion like that of an automaton he draws out his watch. At this instant, throughout the great web of steel and stringer and span, thousands of men straighten and automatically draw out their watches. In massive terminals, in signal towers, in despatchers' offices, in lonely outposts, these thousands are for the instant as one

man with one magnet and one undiverted thought. It is a stupendous situation, the last word in that wonderful modern product which men call "system."

Thousands of ears have heard as one the imperious click of the key that flashed the signal, "Ready!" Thousands of eyes scan the little dials. Thousands of minds focus upon a single object. Thousands of soldiers of traffic, separated by rods or by miles, await with a common impulse the second signal. Man, the slave and fruit and prey of time, waits with his gaze riveted upon the dial. The hands creep relentlessly:

"*Now!*"

Thousands of eyes dart from the hands of the watches to those of the clocks.

Man, Time's Slave and Master.

"Two A.M." has been flashed. If there is a variation of a second or two here and there, the change which is compulsory under the rules is made. All over the system those thousands of watches in point of unison are as so many hearts that beat as one.

Paradoxically, man, the slave of time, is the master of time. For his allotted span he may dominate it to the extent of his brain and will and zeal. And if, in his waiting—as in this picture—to "check" time, there seems a supreme audacity—

Wait a minute!

Is it not his privilege? Should not he be allowed to "keep tabs" on time, whose appalling secret of recording was somehow drawn out of the void by his own mind when thought was young?

Well, anyway, he *does* it!

He does it twice; at two in the morning and again at two in the afternoon.

And this in a nutshell explains to the layman the seeming miracle of uniform exactitude in railroad time. In the first place the railroad man must carry a "standard" watch, so styled, of fixed minimum value. Secondly, these "tickers" are required to tally each day with the "daddy of 'em all" at the observatory, and such is the excellence of construction in the standard watch nowadays that surprisingly little variation is found in "matching up."

These introductory paragraphs have served to show you that in the railroad world the watch and the clock are interdependable, but it is upon his watch that the eyes of the men rest when the spark from the observatory traverses the wire; and if the clock is a trifle off, it is reset from "little brother"—that is, if it is a hand-set clock, to borrow a printing term. Of course there *are* watches, mostly near-obsolete, that need to be set from the clock.

But it is the ambition of the average railroad man to own a watch so dependable that the average station-clock will have figuratively to eat out of its hands. Such is the up-to-the-minute science of watch-making that the average railroad man has an inalienable right to feel rather upstanding about his watch. His friends ask him, "What time is it by your watch?" and from it they set their own watches—and then their clocks.

There is no need to recount here the story of the institution of standard time. Suffice it to say that Old Sol is ignored, and when he thinks of it he sulks in his tent. Presumably it is at such times that the weather is cloudy. However that may be, man that is born of dust—and who raises a lot of it during his scramble through this vale of tears—has consigned the solar system to the discard and gets along better on the "Standard."

Time is a little word of four letters which is to the raw recruit in railroad work a mentor or a bogy man. If the former, he climbs; if the latter, he doesn't stay in the business. Since time is to the conducting of railroads as the *motif* of a fugue, it is not strange that it becomes to those of the steel rails who serve it faithfully as vital a conscious force as if it were a breathing presence.

The Four-Letter Superautocrat.

It "snags" them out of bed at the appointed moment; it shoots them mechanically through the processes of dressing and breakfast; it walks arm-in-arm with them to the job; it swings aboard the train or sits at the key with them, as the case may be. Throughout the hours of duty it is the necessary sidefellow and the pal dependable. Throughout the hours of rest it sleeps with them, close to the subconscious mind.

It is imperious, the superautocrat; yet to those who serve it it is kindly. It is exactly fifty-nine minutes and fifty-nine seconds ahead of "I need thee every hour."

CHARLES G. TANEY, CLOCK-WINDER OF THE PENNSYLVANIA.

SINCE JUNE 15, 1886, WHEN MR. TANEY ENTERED THE PENNSYLVANIA'S SERVICE, HE HAS BEEN WINDING CLOCKS. THE CHRONOMETER SPECIALIST IS HERE SHOWN WITH HIS EQUIPMENT OF STEP-LADDER AND TOOL-BAG. HE HAS CARRIED THIS TOOL-BAG OVER THIRTY YEARS.

The glittering opportunity for the ambitious and the able in railroad work is proverbial, and the impetus granted the deserving is directly attributable to the premium which is put on time; in effect, man's sole asset.

This being so, it is not strange that the railroad world is filled with what the laity may regard as "time cranks."

The Little Story of a "Clock Bug."

There is in New York a certain railroad man, well up in the game and there for just one reason. He got the jump on time, years ago at the tape, and he is leading it to the finish line. This man is known as a "clock bug." To begin with, he has a watch that is universally conceded to be a wonder. In a year it varies just about as much as the fixed smile of a chorus girl.

His hobby is the comparing of clocks—railroad, home, and the garden variety—with his watch. He secures an incalculable amount of satisfaction in the course of a day in checking flippant fractions of variation in the timepieces he is always scanning.

This man has several timepieces in his home in the West Eighties, and they all "strike." But they must all strike *together*. If one of them shows any disposition to strike separately—a little in advance or a trifle behind—its owner exhibits all the symptoms of a man with a jumping toothache. He displays the nerves of a zoo elephant that has seen a mouse. The harried object of a legislative investigating committee has a piece of pie anointed with whipped cream, compared to the probe which is instantly inserted into the works of that clock. And not until the timepiece is once more resonantly striking in accord with its companions does its owner again deign to smile.

How the Public Is Sped Up.

Speaking of time, railroad time, a situation, full of that ironic humor distinctly American, has come to light from no less than three sources. In each case the request was made not to give "horrible details" of location, but the public may rest assured that the information is authoritative, since in each instance it comes from "higher up."

And, anyway, the public has no snarl coming, for the railroad benevolently takes it by the back of its devoted neck and literally hauls it to the station in time to catch its train. And if it *didn't* catch that train, be sure that the railroad would be the "goat" forever after in the patron's mind.

(N. B., which, in the dear old yappy days of the little red schoolhouse, they used to tell us meant, "Take Notice." Gentle reader, don't try to take advantage of the information herein disclosed, for you don't know the stations.)

Traveler, maybe your watch was slow; maybe you started late. It is more apt in these days to be the latter than the former. Anyway, according to the station clocks, you just made your train. You sink into the cushions with a sigh of relief: you're expecting instantly to feel the preliminary tug and the slow progress of the train out of the station. Not yet. One—two—and perhaps three—minutes crawl by before the start; and you wonder why the train is pulling out late.

It isn't. And thereon depends a little tale.

Are Set Ahead a Little.

At least in certain communities of free and fearless America those wise heads which control traffic have found among the traveling public, despite all its vaunted hurry, a disposition to dawdle, to clip the last moments. Here is where the subtle knowledge of human nature, practically applied, among railroad executives shines like a Tungsten. For the traveling public is cleverly cajoled, filliped, and convenienced into catching its trains.

In certain stations—but there are not enough of them to allow you very much opportunity for reckless experimenting—the clocks are set somewhat ahead. And it is surprising how much the net result helps both the patrons and the road.

There is in a certain large station in a city of this glorious U. S. A. a wrinkle of this idea that is a record-breaker in its automatic results. And its workings demonstrate to a hair that the railroad, in the endless guessing-contest, is always one jump ahead of the public it serves.

There is a popular route of approach to a famous terminal. This is purposely made as vague as possible; you have three guesses, and you'll need them all, and more.

Allow your notice to fall upon Bill

Brooks, commercial traveler, armed with two grips, enjoying a short walk to the station from his hotel. He wants to get a mouthful or two of air before a three-hours' trip.

He sets down his grips and draws out his watch. He stares at the dial in slow-gathering horror. Suffering, swirling snakes! Stopped again! That comes from carrying a keepsake instead of a watch! Confound it! He'll buy a real turnip next pay-day, sure!

Sprint, Bill! Sprint!

But what time *is* it? His gaze lifts to a big clock in a tower close at hand. Wow! He has exactly two minutes in which to catch his train, and there's not a car nor a taxi in sight.

Bill Brooks catches up his grips and swoops as well as a man can swoop with two grips. He comes to a second clock; he is reassured. Why shouldn't he be? He has made the distance from the first clock to the second in no time at all; or, rather, he has gained about thirty seconds on himself. All records are annihilated; and still more so when he reaches the third clock, which is located in the tower of the station itself. For he has still two minutes to catch that train, and he does so without trouble.

Small wonder that Bill Brooks, commercial traveler, takes his seat in the smoker feeling abundant satisfaction with himself. In that flight, though encumbered with two grips, he has made the greatest sprinters of all times look by comparison like fiddlers' crabs running backward. For he did that five-minute run to the station in exactly naught-cipher flat!

But presently a look of wonder creeps into the eyes of Bill Brooks, solicitor of twentieth-century business. It must have taken a *little* time for that run; not much, but a *little*. And some years have passed since his cinder-path at college. He wonders hazily; in his mind a group of clocks dance like dervishes and leer at him; he wipes the perspiration from his streaming forehead.

"Well, anyhow, I made it!" says Bill Brooks, and lights a cigar and forgets about it.

Now, how did Bill Brooks make it? Through the kindly and effective pace-making of the railroad company, which benevolently controls the clocks along that certain popular approach. Thanks to the canny foresight of the railroad company, the Bills approaching the station from that quarter have two able-bodied pace-makers, and they are the two clocks mentioned. And between them, in case of need they get Bill to the station on time—and the exercise has done Bill good.

While the watch is naturally the magnet for one pair of eyes, the clock inevitably attracts thousands. The station clock has a grave and reverend history, and a face full of solemn dignity. When you think of it keeping pace with its rollicking little brother, the watch, said reflection possesses a certain grotesqueness. It is as if *Ariel* were chased by *Falstaff*. But *Falstaff's* legs are longer than *Ariel's*. While the sprite's drum, the elder's stride; so we have the never-ending dead-heat.

There are some curios among the older station clocks. There is the one, for instance, in the office of Senior Vice-President W. W. Atterbury, of the Pennsylvania system, in the Broad Street Station at Philadelphia. It used to be in the old Baltimore Station, and when it was to be discarded Mr. Atterbury made a bid for it. Those who used to frequent the old waiting-room will remember it. Besides the time, it contains the weather, the moon, the stars, and pretty nearly everything else in the cosmic scheme, proved and guessed at.

Reverting for a moment to the practise of keeping certain station clocks ahead for the enforced convenience of the public, there are prominent hotels in nearly every large city of the country that habitually keep their clocks fully five minutes fast. This is directly due to the difficulty which many guests experience in making trains on time, and these guests are apt to fret and fume after entering the hotel buses that are to take them to the trains. They are sure that the said buses are going to be late; but they never are, and neither are the guests.

A Minute-Hand Twelve Feet Long.

Speaking of "daddies" among clocks, many persons have tried to guess the dial space of the "master" clock in Tower No. 2 of the Pennsylvania Station in New York. The size has been estimated anywhere from two feet to ten. Too small; it is fifteen feet.

The minute-hand of this monster, in the

main waiting-room, is twelve feet long. The material is popularly supposed to be bronze, but it is wood, and the hand is so light that it can be readily held on a man's middle finger. This is a half-minute " jump " clock of the motor-driven pattern, and when the jump forward occurs, if you had your leg wound around that minute-hand in an effort to stay it, you would jump with the hand, such is the power behind that little movement.

This giant among timepieces is largely a bluff, however, for it is rigidly controlled by a joke of a clock, a round, fat little thing not much bigger than your two fists. This little fellow is in a compartment on the other side of a three-foot stone wall, and when the two clocks were being installed the curious spectacle was presented of workmen telephoning to one another through the thick wall regarding the setting of the hands and the general arrangements for " getting 'em off " together.

The famous Colgate clock, with a thirty-six-foot dial, is, of course, the largest in the country; but the " Pennsy " station has the largest railroad timepiece in captivity—which is to say inside. It is merely a timekeeper, being controlled from the master clock in the train-despatcher's office and set once every hour. No less than thirty-three clocks are synchronized in this station for the benefit of both the public and the railroad workers; because it is as necessary for despatchers and baggage handlers to have the exact time as for the patrons of the road.

Gets Four Seconds Out in Spring and Fall.

This big master clock in the waiting-room varies scarcely a hair's breadth in the year save in the spring and fall, when the periods of " settling " weather cause a slight variance, as with all timepieces—not more than four seconds at any time. There are plenty of other tickers about the station, synchronized every hour—" self-contained " clocks, so-called, winding themselves from the batteries in each.

If there is any electric trouble disarranging the circuit, this secondary system keeps them going. If the big " daddy of 'em all " is sick, however, they are all sick. But there are plenty of pills in the station, and, anyway, it's the Japanese methods of medical procedure that prevails there; they pay the doctors to keep the patients *well*.

So assiduous is the care that the timepieces are kept constantly in the flush of health. To this end the entire attention of an expert is devoted to installing new batteries and attending to various similar details of keeping the system in constant order.

Clocks are " squadded " like men in the railroad scheme. In each division of a big system there is a master clock which takes care of all others controlled by it, of mechanical, pendulum, or marine type, as the case may be.

" Courtesy First."

You can't convince a railroad man that the public is not much like the other works of Providence, curiously and wondrously made, any more than you can induce the public to look otherwise upon a railroad. And the men entrusted with the care of the time system around a great terminal station certainly get some odd " slants " at human nature.

Understand that any big railroad system in these days absolutely demands of its employees scrupulous and respectful attention to the communications and complaints of all patrons, whether their words, spoken or written, deal with common sense or with vagaries. If any patron comes to any employee of the road with a complaint or a criticism, the investigating machinery of the system gets busy forthwith.

Here is a specific instance of a curious situation that is repeated interminably throughout the country. A fussy patron comes hustling into the waiting-room of a big terminal station. He hauls out his watch and glances critically upon the smug and rotund face of the big clock. He smiles a smile of evil triumph.

" Say, you!" says he to an attendant. " Did you know that your clock is exactly one minute fast?"

Does the station attendant request him to " forget it an' g'wan "? He does not. Under the rules of the road, which demands from its employees courtesy under all circumstances, such an answer would entail his kissing his job good-by.

We will assume that the time Sherlock with the triumphant grin is James J(inx) Jones, of Peoria or New York; they live in both places, among others. He hasn't had any particular reason to check up the station time; he just likes to run it by his watch, that's all. The attendant doesn't

inquire Mr. Jones's reason. The station time has been questioned, and it is his business to start in motion the machinery of investigation, that is all.

Stationmaster Checks Up On Official Clock.

So he apprises the stationmaster, whose office is a sort of clearing-house of troubles, and he or an assistant immediately phones to the "time department," which gets its clock man in jig time and puts him on the job. In ninety-nine cases out of the traditional hundred the expert finds forthwith that the station time is O. K. In an incredibly short time this fact is reported to James J(inx) Jones, who has stood superciliously expecting the humiliation of the railroad system.

"The time is O. K.," Mr. Jones is told. "It checks to a hair with observatory time, which we received a half-hour ago."

For it is now half after two o'clock in the afternoon.

"I don't care!" spitefully retorts Mr. Jones, a la Eva Tanguay. "I'd put my watch against your whole darned outfit!" And he wrathfully departs with his timepiece, which more likely than not cost him just a dollar ninety-nine at "special bankrupt sale."

Now James J(inx) Jones—and he is ubiquitous—has visited, for instance, the Pennsylvania Station in New York. In that case his $1.99 watch has been literally tried in the balance and found wanting by at least a minute. But in the interval of research he has taken the time of several men whose time is worth considerable money. However, they don't care about that, since they are paid to serve the public. Moreover, he has with his $1.99 arraigned many thousands of dollars.

For the equipment of the time system in the Pennsylvania Station cost $6,000, "lawful money of the United States," the figures being unofficial and including the cost of three-quarters of a mile of pipe and eight miles of wire. Also, the cost of maintenance since the system's *première,* and that of massive "scenery" in the form of noble columns of masonry, *et cetera,* will aggregate several thousands more.

Where the Timepiece Is Dominant.

Now, indulgent reader, it does not always follow that the visitor who steps up to a station attendant and informs him from his watch that the station clocks are "off," is a James J(inx) Jones. It *has* happened that the visitor's watch was right, but it doesn't happen to be a $1.99 watch, and its owner is apt to be a high official of the road. Oh, there isn't an angle from which Old Daddy Time can avoid being checked around a railroad station.

Said a well-known official whose office is in the terminal of the Grand Central Station of New York:

"We find the greater number of critics of our clocks reasonable to begin with, and practically all of them are so after they are shown. On the other hand, we railroad men are willing to go far toward meeting them more than half-way. It's all in the day's work.

"For instance, I was stopped the other evening by an excited suburbanite who was sure that our clocks were wrong, as he had just missed a train. Of course he was certain that his own watch was right. Another official, whose room is near mine, was passing just then, and I hailed him.

"'Joe,' I called, 'come over here a minute.'

Missed a Train to Quiet a Kick.

"Joe and I compared watches; they were just with the clocks. We took time to explain the system to the suburbanite, and convinced him that his own timepiece was nearly two minutes slow. He left in good humor. Joe and I both missed the train toward which we had been hurrying, but we didn't mind that. The five minutes we spent in making a friend to the road we considered well expended, and we're willing to do the same thing again, whenever necessity arises."

Mistakes are made in many instances by the traveling public through angles of distance. A man may be "rubbering" almost vertically at a clock seventy-five or a hundred feet above his head; small wonder that he does not get the proper slant at the dial! Or he may be looking at a clock that seems reasonably close, but which is a thousand feet away. And if he is allowing himself a hair-line margin for catching a train, as so many do, he is apt to miss it—in which case he is likely to make the clock the goat.

You carpers who flash the writhing sneer at the male bipeds that run to wrist-watches, on the ground that such bespeaks the Alps of affectation, one moment, please! Learn that at least some-

times the carrying of such a coy ticker serves the convenience of utility.

Considerable responsibility devolves upon the "clock man" at the big terminal station. The custodian of the timepieces sleuths them by means of a watch that must be ultradependable. To him that watch is as indispensable as is a dictionary to the press-agent of a much adjectived circus. He talks watch, he lives it, he sleeps with it. Meet him in the big terminal, pursuing his rounds, and ask him, "What time is it by your watch?"

He produces it and, following the famous railroad formula, repeated man to man or flashed over the wires by phone or key, he replies:

"It is fourteen minutes and twenty-three seconds past two—*now!*"

And that "*now*" is significant; it is the key-note of the business of railroading. With that "*now!*" you are fairly abreast, stride for stride with flying time.

Oh, yes; how about that clock man with the wrist-watch? He is a later exponent of modernity, for he is assistant to the veteran who coaches the clocks in the Pennsylvania System's Broad Street Station in Philadelphia. The veteran is Charles G. Taney, who first saw the light January 10, 1848. He entered the Pennsylvania's service June 15, 1886, and has been winding clocks ever since.

His jurisdiction up to the comparatively recent appointment of his assistant included the general offices and the offices of the president, vice-president, and others in the Broad Street Station. His assistant, J. A. Ballinger, began his duties January 1, 1914. Mr. Ballinger and his chief wind approximately four hundred and fifty clocks each week, also generally ministering to clock health. And the information comes right from headquarters that Mr. Ballinger at times wears a wrist-watch in the pursuit of his duties.

Who after this will have the nerve to allege that Philadelphia is *slow?*

Modern Watchmaking Wonderfully Exact.

Here is an incident which emphasizes the wonderful exactitude of modern watchmaking. A certain station clock man employed by the Pennsylvania carried one watch for fifteen years, and it was never cleaned or adjusted in all that time. That watch was an exact "tally" for a master-clock system. He paid sixty dollars for the movement; the case, to a railroad man, is always a secondary consideration.

Finally, though the watch was still "Johnny-on-the-spot" for the purposes of his job, its owner decided on general principles that it was about time to have it overhauled. He sent it to the makers, a Philadelphia concern, and they retained it for two months, resetting and readjusting it. And till he got it back he was as lonesome as a man who has just lost some life-long companion.

He received it back with exceeding joy.

"I don't know as I needed to have it gone over," he said later, "for it ran all right before, the same as it does now. I thought it would take 'em a day or two. But they tell me it needed overhauling, all right, so I suppose it *was* all right."

"Watch" is the middle name of this veteran. He wears it in a certain pocket, and by means of various ingenious wrappings he adjusts it always to a uniform heat of his body. He winds it at a certain minute each day. He would not open and explore the movement for worlds.

A Whisper from the Old Days.

The watch and its big brother, the clock, are the absolute monitors of the train-schedule in these days. In former times, before the uniformity of timepieces had been so imperiously established, both by rule and by excellence of manufacture, the trains were protected against differences in time then inevitable by the old five-minutes' clearance rule, both for passenger and freight-trains.

Then the crews carried time-tables in their pockets, and on reaching a meeting-point the tower-operators arranged for the necessary "cut-outs" on the main line. Because of this clearance rule, there were not so many smash-ups as else would certainly have resulted from the differences in a time system that was crude in that period.

The clearance rule is filed away in the dusty archives of the big lines. To-day the watch is autocrat; there is an alined army of master watches keeping step with the vital spark that is shot from the observatory. For at Summit Avenue and Jersey City 1,300 trains pass in a day, and they are all reported and scheduled.

At this point, for eight hours rests upon one man the responsibility for every passing train and every signal movement. His

watch is paramount; every train must pass on the second; for these hours of duty his brain is a charted map; the burden is terrific. Of the ranks of railroad toilers the train director breaks down earliest. He starts in, very likely, as a young man; it is not long before his hair is streaked with gray. He is the slave of the watch, and there is no tyranny more absolute.

Average Cost of R. R. Ticker Is $40 to $50.

Upon all railroad lines of the country the employees operating the trains are required to carry "regulation" or "standard" watches, so called, this term covering the higher-jeweled movements. The men invariably buy their own watches and pay for their keeping in order. The required minimum cost of these watches—meaning merely the works—is $28 on some of the largest systems; on some others the required cost is somewhat lower.

From this figure the price runs up as high as a man wants to pay. There are some engineers and conductors who carry watches costing $75 or $100, but these are rather the exception. Inspectors say that the average value of trainmen's watches, by and large, runs from $40 to $50.

All systems require that high-grade watches be owned and carried by their trainmen, but not all systems require inspection — meaning a careful examination of the timepieces at stated intervals by an expert in the employ of the railroad.

To begin with, the engineer and conductor of every passenger and freight train must carry these standard watches and must compare their timepieces before starting a run. The fireman, especially if he has qualified as an "extra" engineer, also has his watch, and so does the "gentlemanly announcer" that the comic-paper joker claims nobody can understand—though this is sometimes almost untrue.

From three to five men on passenger-trains are required to carry these watches —the number being larger on the limiteds —and at least three men on a freight-train. In fact, the demand for high-grade railroad watches is by no means confined to those employees who are compelled by rule to possess them.

For instance, often all the members of a shifting crew who drill all day about the railroad yard carry watches every bit as good as those sported by the conductor and engineer on a fast passenger run, and for a very practical reason. They like timepieces that register to a hair, because if their work extends a minute beyond the prescribed knocking-off hour, on almost any of the more important lines, they are entitled to an hour's overtime. So the watch is to these workers as a benevolent little brother that "keeps tab" for them.

Upon lines where inspection of watches is carried on rigidly, if a railroad man already has a 19-jewel watch, he is usually not required to buy a new one, but the 21-jewel timepiece is now the watch required by most of the big systems, and the 23-jewel, the "limit" for efficiency, is preferred.

This term "jewels" is one little understood by the layman, even though he may be carrying a regular 23-jeweled standard watch. He thinks of it rather vaguely as a "trade term." But they are actual small jewels—rubies, sapphires, diamonds, *et cetera*—set in the works. In the 23-jewel grade some of them are so tiny as hardly to be seen, but each lilliputian gem has its place in the scheme.

The range to-day runs from seven jewels up to twenty-three, and there is a corresponding range in prices. A seven-jewel watch in a gold-filled case can be bought for $7.50, while one of the leading houses puts out a 23-jewel watch, in one of the cases you read about, for $285. And if you have it to throw away, and want a watch turned out especially to your order, with all the scenery, you are at liberty to crowd the sky for your limit. Like Barkis, the manufacturer "is willin'." Order what you want and he'll give you what you order.

Latest Pattern Is Absolutely Accurate.

These jewels contribute to both dependability and the ease of movement, and the present standard, "23," is the acme of watchmaking triumph. It's the kind of a watch that old Father Time consults himself. When it came out he threw his hour-glass on the scrap-heap. In the 23 all the essential mechanism runs on the hard surface of the jewels, and an absolute accuracy is assured.

The trade of watchmaking has been revolutionized in the past twenty-five years. The timepieces popular in those days are now obsolete. Not only have the manufacturers long since stopped making them, but you find very few of them still car-

ried. Reason why? They weigh too much; it makes a man tired to lug them around.

The new and popular 12 (millimeter) size man's watch contrasts oddly enough with the old antiques of a quarter-century ago. It weighs about a third as much, and is fashionably thin. The case was an " 18 "; to-day it's a " 12." Then the 7-jewel was the usual thing, and to-day, in the higher grades, 15, 17, 19, 21, 23; each grade represents so much better made, smoother works all through. The " 23," the modern super-watch, may well smile benignly at its poor old tarnished brother that looks a fit candidate for a fat cure. And the very latest models, marvels of dainty works set in extra thin cases, look, beside the old fellows, like a wafer reposing by a loaf of bread.

Railroaders Prefer Gold-Filled Cases.

There are some extra " faddy " watches of the present day, in cases of unique shape, that a two-fisted railroad man would elevate his nose at, but they keep time. Many men buy four or five watches to go with four or five suits of clothes. The average railroad man, be he a brakeman or a " super," is content with one watch, which he transfers to pockets as needed. As for cases, you'll run across all kinds among railroad men, from near-brass up, but you can bet on the works.

Your railroad man usually prefers a plain case, and usually of the twenty-year guarantee, gold-filled pattern, as that is " stiffer " than solid gold and doesn't dent easily—and the watch is apt to receive some hard raps. It is intended for service, and usually is clad in a service uniform.

The old-style seven-jewel " 12's " are not allowed nowadays to be carried by responsible employees on roads with any pretensions to adequate inspection.

Watch-Sleuths Are Thorough.

For a sample case, look at the Long Island Railroad. Regular inspection of trainmen's watches is required on this division. First in order of importance are the " turnips " of the engineers and conductors. Those firemen qualified by length of service to act as engineers must also produce their timepieces on demand. Those of despatchers, of course, are included. A room in the administration building at Jamaica is the theater of activities.

The expert employed to inspect these watches is a representative from a well-known jewelry house in New York. Every three months he comes to Jamaica with several assistants, and the boys are notified to bring their tickers to the doctors. All watch " innards " are carefully probed, and if " medical " attention is needed the watches are sent in to this house to be restored. A careful record is kept of the condition of all watches.

In addition to those mentioned above, some of the telegraphers at the more important points are also required to have their dials " Sherlocked." On this division a 21-jewel watch will get by, but a 23-jewel timepiece is preferred. Long Island contains many of the direct descendants of the first English families to locate in New York State; but, in spite of that handicap, it's up-to-date, you bet yeh!

As for values, they vary. There's one engineer, at least, on the Long Island division who sports an $80 watch. The average of value is $40. To show the benefits of such a rigid system of inspection, it is but seldom at the " round-up " that any watch is found to vary from the official time more than five seconds. And that fact also fairly howls aloud the excellence of present-day watch manufacture.

Inspection Humors of the Past.

Not always have such glittering results been recorded, nor are such rigid inspections required on all roads.

Years ago, for instance, an operator secured a job as agent at a " burg " station on an obscure line in the New England States. Having no watch of his own, he borrowed one of his landlord's son. It cost three dollars once. The timepiece lost exactly twenty-five minutes per day when it ran; then our agent friend would shove it ahead and start anew.

Let it be mentioned incidentally that there was no watch-inspection system on that road.

It was, of course, a part of the agent's duties to report the arrival and departure of trains to the despatcher's office in a city forty miles away. He got to be a regular expert in mental arithmetic. He could estimate the amount of time that watch had lost at any given moment of the day—or he thought he could. So when a train came along he would call the despatcher's office, shoot a quick glance at the dial of his trusty (!) turnip, do a bit of lightning

calculation, and report the time when the train passed.

But that couldn't go on forever. One day he became cross-eyed in visualizing the unknown, and the despatcher came back with a sharp uppercut. The agent stammered the inevitable explanation over the pounding brass.

"What you need," ticked back the despatcher, "is to go out and compare time with the section hands."

They used to tell about the troubles of some of the boys on a small line in the Southwest years ago. It has since been absorbed by a big system. Watch inspection was required, but it wasn't conducted as it is now. The inspector came at irregular intervals, and the boys had their reasons for getting word to each other quick.

They were a prodigal lot off duty, and wages weren't exactly up with the stars. Watches of high value were required, and their owners found that "uncle" was always ready to advance a modest amount of "kale" on them. So many of the watches rested while their owners carried two-dollar turnips till the soaking process of the costlier tickers should haply be completed.

"For Ways That Are Sharp—"

When word would arrive that the inspector was coming there would be a scramble. The boys would hustle like rabbits, trying to raise the price of getting the "real ones" out of pawn. If they couldn't do it they would look for one fellow who hadn't his good watch in pawn. And frequently, through contriving to meet the inspector at differing moments, one watch would serve for a squad of a half-dozen. The friends stood by each other, and the inspector, who wasn't a particularly sharp one, passed recurrently upon the merits of the same watch.

It might have worked then, but not any more. Inspectors nowadays, through the medium of exhaustive records, maintain a regular Bertillon system on each watch. A railroad man who tried to put that over in 1916 would hit the grit.

And Last, a Touch of Tragedy.

As any art fan will tell you, no real picture, any more than a real life, is complete without its shadows. Look upon a pathetic figure. It is that of a gray-haired railroad veteran, worn and old and with his shoulders bent as with a burden. His days of usefulness are over. But he was a good man once.

He gazes blank-eyed toward the gray of the approaching evening. In his ears the hum of traffic is as the echoes of the past. He sits forlorn, beaten, apart, reflecting bitterly.

"I have lugged some load in my time," he mutters. "I lugged it pretty well, but *something* broke me at last. An *extra* something. What *was* it, I wonder?"

Then suddenly, for the first time and when it is too late, the answer comes. His shaking hands search a pocket and draw from it the straw that broke the camel's back.

It is a keepsake of the early eighties, his seven-jewel "eighteen" gold-filled turnip that weighs about a quarter of a pound and then some.

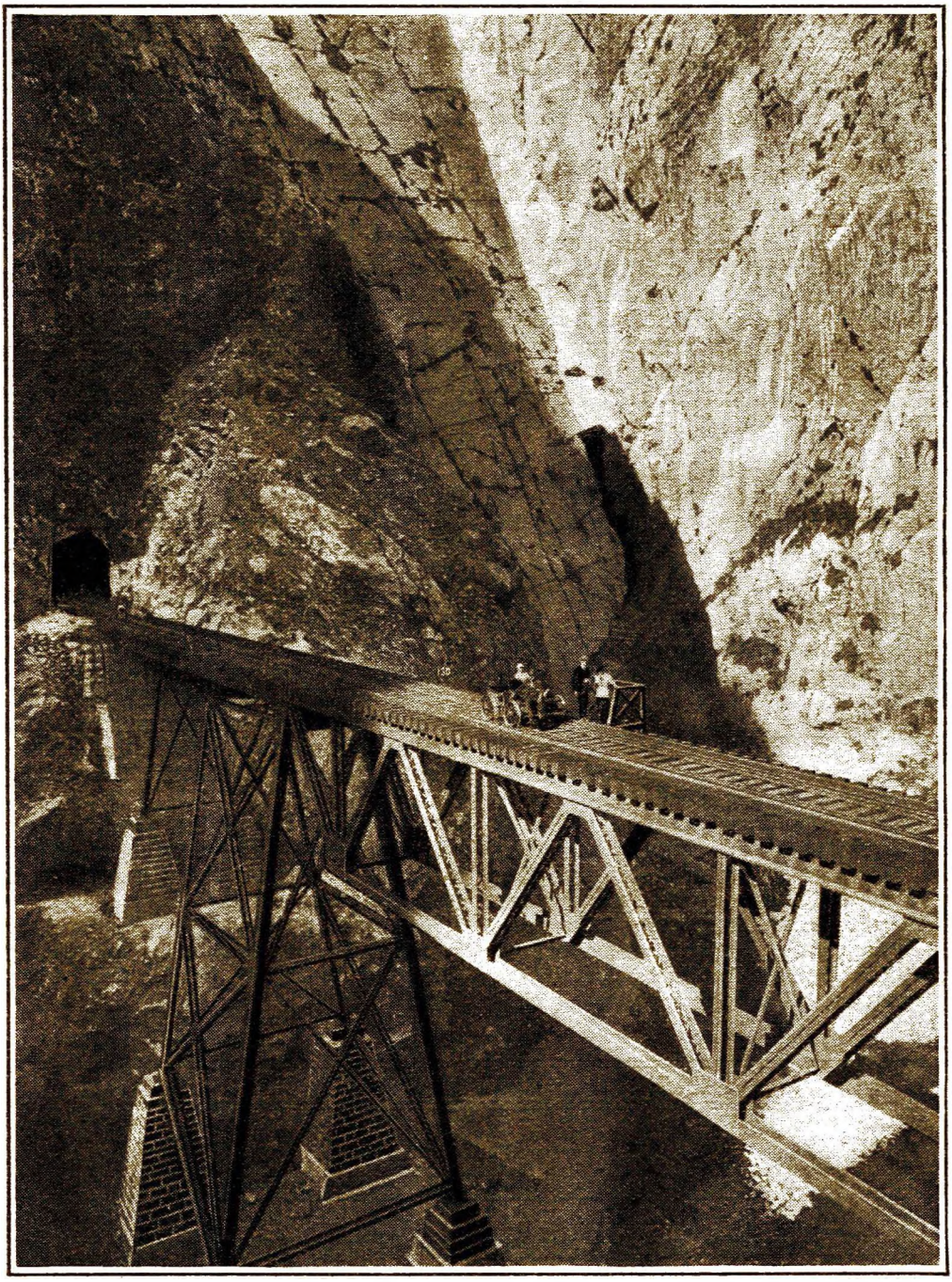
And with a shuddering sigh he sits down to figure that overweight he carried for thirty-five years, the weight that broke him!

THE CHIEF DESPATCHER SAYS:

EDISON tried ten thousand experiments for one success. Most people try ten thousand excuses for one failure.

FROM THE RAILROAD MAN'S MAGAZINE

R. R. IN CLOUD-CAPPED PERU.



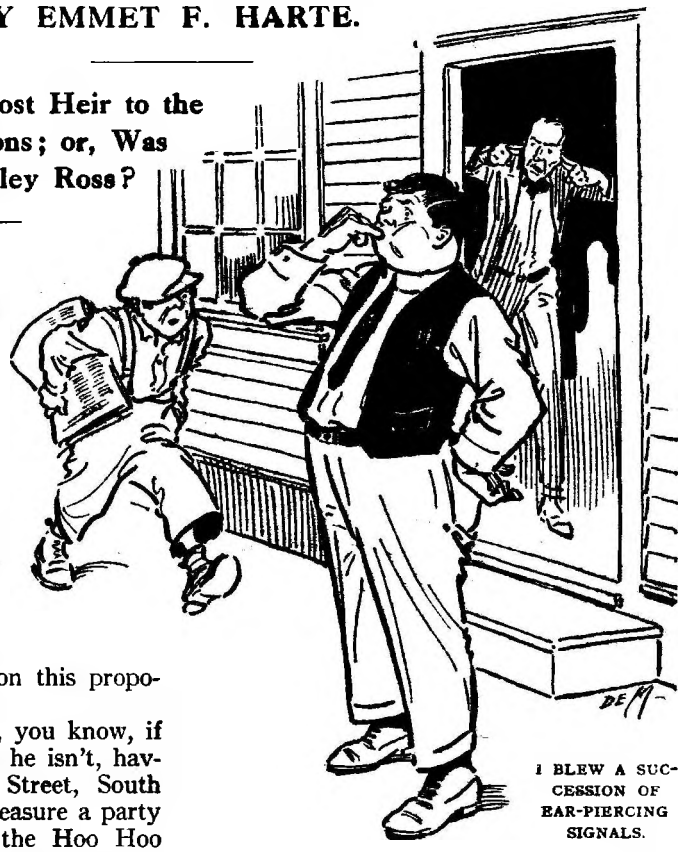
THIS TRESTLE IS 13,500 FEET IN THE AIR. IT IS ONE OF THE ENGINEERING FEATS ON THE OROYA RAILROAD, FROM OROYA TO CALLAO, PERU. ON THIS ROAD THERE ARE 67 TUNNELS, 65 TRESTLES, AND 17 SWITCHBACKS. TICLIS, AT AN ALTITUDE OF 16,000 FEET, IS THE HIGHEST RAILROAD STATION IN THE WORLD.

From a copyrighted photograph by Brown & Dawson, and E. M. Newman, Stamford, Conn.

HONK AND HORACE.

BY EMMET F. HARTE.

The Mystery of the Lost Heir to the Higginbotham Millions; or, Was He Another Charley Ross?



I BLEW A SUCCESSION OF EAR-PIERCING SIGNALS.

BUT isn't it a fact, now — speaking as a learned legal gentleman might, when endeavoring to intimidate—I mean interrogate—a witness, but meaning no offense withal, of course. Ahem!—isn't it a fact, though, that you never know what's going to happen next, on a main line railroad? Quite so. I'm glad that all three of our opinions coincide so neatly on this proposition.

My friend Honk Simpson, you know, if he were present here—which he isn't, having gone out on Chicadee Street, South Valhalla, this afternoon to measure a party of delegates for tickets to the Hoo Hoo Conclave at Minneapolis in June—I say if Honk were present there'd be at least one difference of opinion right away, if only for the sake of argument. Honk loves to argue—but I beg pardon! Permit me to revert to what I was about to say, please.

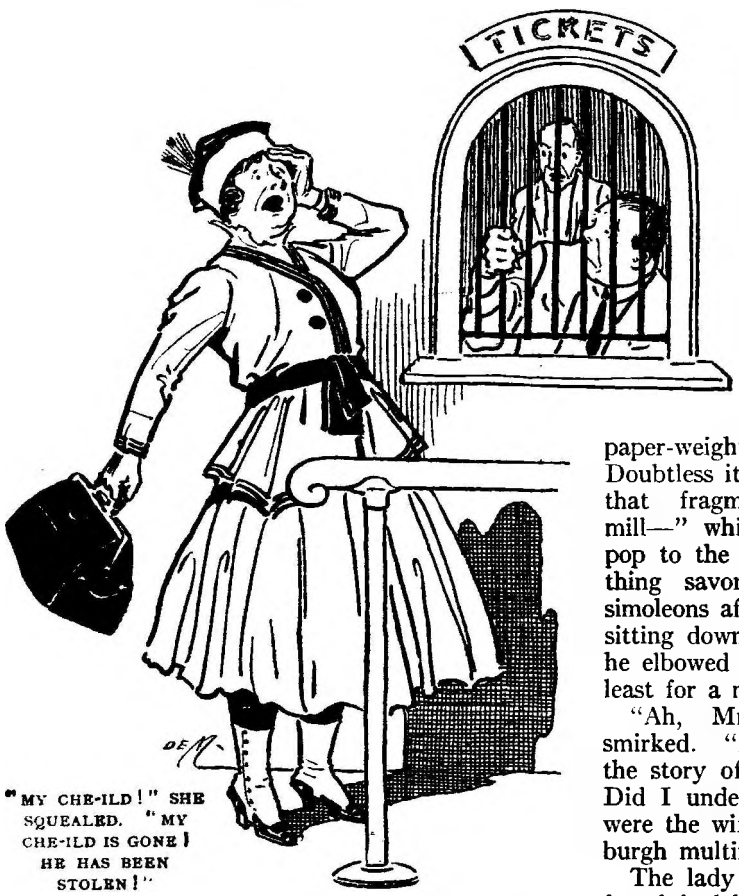
Some day when I'm feeling glib, I want you-all to let me tell you about Buzzard Barrett, and the time he tamed The Tigress, a man-killing engine—and another good one is the story of Tink-Tink Mullen, or the Marvelous Adventures of a Truck-Inspector, but in this present instance I've set myself to recite the facts—the inside facts, mind you!—concerning the abduction of Millionaire Higginbotham's kid and heir—or if it wasn't an abduction, then what was it? Let us begin at the commencement.

And, oh, say! Remind me to recount, some time when we both have time, the startling sequence of surprises attendant upon Bullhead Sampson's quest for the Man with the Missing Overcoat Button. Well, all right—

It was along toward the shank of the day, with the gloaming gathering in the offing. In our place of officiation, isolated as we were on an islet against which the surging waves of a turbulent sea of transcontinental traffic banged and roared incessantly, Honk and I calmly viewed the turmoil about us with a bored air. It doesn't do to lose one's aplomb around a busy railway station, any more than on grimmer firing-lines where hot shots are coming thick and fast. But then I, for one, rarely lose mine.

Consequently I didn't turn a hair when, happening to turn my head (no pun!) for a moment, an ear-piercing shriek resounded two feet away; right through the ticket wicket, in fact. I pivoted quickly and peered out to ascertain why anybody should squawk like that in a stranger's ear.

I saw a medium, under-sized, large, pale, flushed, retiring, outspoken, excited, well-dressed, slender, somewhat dowdy female aged forty-three, but disguised to represent a giddy girl in her teens (not fooling any one but herself, however), who was quite



"MY CHE-ILD!" SHE SQUEALED. "MY CHE-ILD IS GONE! HE HAS BEEN STOLEN!"

flustered, or else simulating flustration right cleverly.

"My che-ild!" she squealed when she saw my handsome hero's lineaments trained in her direction. "My che-ild is stolen!"

"Softly, ma'am, more softly, please," I abjured her with mingled firmness and sympathy. "Less loudly, if you'll be so kind. Contain yourself, and state the basic facts, if any, in your case," and I whisked a pad of scratch-paper into position and poised my stylus expectantly.

Something in my tone, or the lofty calm grandeur of my expression seemed to annoy the lady; she became inflated with haughtiness in a second. I took it that she imagined she was Somebody or other.

"Sir!" she exclaimed. "Sir, I am Mrs. Higginbotham! Of Pittsburgh!" (I'm positive the burg was spelled with a final h as she uttered it.) I rapidly jotted down this highly interesting data. "My husband," she added, "is the multimill—"

Now I resented her use of the word "the" in connection with her husband's financial status instantly. The country is reeking with husbands who sail under the generic term of multimill—

But 'twas here that my rude-mannered compatriot Honk Simpson brushed me to one side with no more compunction than if I were a paper-weight or some such triviality. Doubtless it had been the sound of that fragmentary word "multimill—" which had caused him to pop to the front so actively; anything savoring of the chink of simoleons affects Honk the same as sitting down on a carpet-tack. So he elbowed me ruthlessly aside—at least for a moment.

"Ah, Mrs. Biggerpother," he smirked. "Er—permit me to hear the story of your—h-m—difficulty. Did I understand you to say you were the wife of the wealthy Pittsburgh multimill—"

The lady preened herself with a few deft dabs of her kerchief.

"I am," she replied less vociferously "My husband is president of the Shingle-Nail Mills." (Bah! again that unctuous "the" as if there weren't but one shingle-nail mills on the planet.) "And I," she continued glibly, "am a descendant of Colonel Skillett of the renowned Skillett family, several of whom fell at Bunker Hill. I am the social arbiter of the exclusive set in Pennsylvania, sir."

'Od's bodkins, indeed! She was Somebody then, maybe, after all. How Honk's countenance burst into iridescence you may well imagine. Money, lineage, and social prestige—either one of the three holds a peculiar appeal to Honk; and to have 'em all wrapped up in one prize pack-

age was enough to knock his trotters clear from under him. He all but salaamed and groveled.

"Phone to all the reporters," he barked in a hasty aside to me. "This is a tremendous story for 'em. Now, Mrs.—um—Wigglefrothing, I believe you remarked something about a child, a little boy—"

The lady hurriedly reassumed her look of distress; I had a sneaking suspicion that she'd come dangerously close to forgetting her strayed brat while reciting the list of her own preeminences.

"Oh!" she sniffled. "My boy! My precious Williston, our only son! I—we boarded the wrong train at Salt Lake City as we were returning from the Coast; I learned afterward that the fast train didn't leave till several hours later; so I—we stopped off here in order to take that train instead. It is so much more in keeping with my—our station than the other was. I must be in St. Louis on Thursday, so that I may keep important social engagements. I must be there. I have positively promised to be there."

"Ah, yes, quite so," breathed Honk. "And your son—how—where—?"

"I tell you he has been kidnaped. Of that I feel certain. Several strange-looking, evil-faced men were at the depot when we got on the train. And later I saw them in the same car we were in. Then when we arrived here I recognized one of them standing just outside a window of this room. I had only left my precious che-ild for a moment to get a cup of tea at the lunch-counter, but when I returned he had disappeared.

"It is terrible; and your railroad is responsible for it. I—my husband will hold them to a strict accounting, too. We—I shall sue for large damages, at once. It is an outrage!"

In fact, the descendant of the renowned Skillett outfit that had gone partly defunct on the bullet-swept slopes of Bunker Hill seemed to be getting more and more bellicose the further she went; from the look in her eye I thought possibly she might try personal conclusions with us in a minute, so I busied myself at getting the reporters Honk had ordered on the phone. I got them, and they said they'd be right down immediately, if not sooner. Meanwhile Honk palavered his best.

"Oh, my dear Mrs. Higglebrotham," he soothed. (That was the nearest he'd come to her name yet, and he clung to it henceforth.) "I beseech you, ma'am, not to act hastily in this matter. Speaking as an accredited representative of our company, I assure you that your son shall be found and restored to you in—er—good order, and quickly."

The roar of the Flyer's arrival just outside, at that moment, drowned the lady's reply, if she made one.

"Horrors, what train is that?" she asked excitedly when the noise subsided.

"That is the limited for the East," Honk vouchsafed.

"The one I—we were to take! What shall I do? I must go on that train—my social engagements—but I cannot go without my precious—and yet I *must!*"

"Why—why—" Honk floundered a bit. Even he seemed at a loss for the moment. "You—you can safely trust the matter to me, madam," he blurted.

"Oh, can I?" she began to beam somewhat. "I believe I will go. My social—"

"You may feel perfectly confident that the child will follow you promptly," Honk declared, regaining his aplomb. "I shall devote myself personally to the matter. If you will give me the address where I'm to send him, Mrs.—"

The other mentioned a street and number in St. Louis. Honk wrote it down, and proceeded to convoy her to the train. I pondered. It seemed that a social engagement was something pretty binding on one in whose veins pulsed the blood of the Revolutionary—not to say culinary—Skilletts, several of whom had won glory along with immortality in the shell-shattered trenches of Bunk—but just then the flyer departed.

Honk reentered our sanctum looking quite smug and pleased with himself.

"Um—my dear Horace," he began, "what do you think about this lost child business, now, anyhow?"

"Are you consulting me in a professional way or merely pumping me for pointers on how to begin?" I asked coldly.

"Oh, come, old fellow," he cooed, "be a sport. I'm counting on you to help me out a lot with this. Your sagacity and cleverness—"

"All right, then," I returned less bruskly. "Cut out the blarney and go ahead. What was it you wanted to know?"

"The question is, was the child kidnaped, as his mother contends. If so, who

did it? If not, then what's become of the kid? In any case, what's to be done, eh? She instructed me to spare no expense, and charge same to her multimillionaire husband. I'm to wire East and employ the best detectives, and—and—she authorized me the last thing she did to offer five thousand dollars reward for the child's return, and no ques—"

"You have the youngster's description?"

"Why, by Jove, I clear forgot that. I only have his name, and where to send him when he's found. But we can wire for a description of him. I'll attend to it now."

This he did, and a reply came promptly from the lady, speeding eastward on board the limited. It was substantially as follows: "W. has his father's ears otherwise bears marked family resemblance ancestral Skilletts blue eyes nose mouth chin famous Colonel Skillett long yellow curls great grandmother Artemisia Skillett wearing velvet cap Fauntleroy suit stockings walking shoes made in London opal ring answer if found."

After a couple of second's concentration I for one had a perfect mental photograph of little lost Williston Higginbotham; I could see him quite plainly, a fragile, hothouse floweret, with his long, yellow curls and china-doll eyes, in his Fauntleroy togs, stockings and shoes, "London made," aged not quite six years, and the living image of the pampered offspring of a decadent stock.

"H'm," I mused. "Of course, I don't swallow the kidnaping theory at all. I'll say that right at the outset; and if you'll take my expert advice we'd have the kid located in short order. My idea is to put my Bow Street runners on the job, and sit back calmly to await results."

"Whaddye mean—Bow Street runners?" demanded Honk. "Obscure joke, or what?"

"Forget the allusion," I snapped. " 'Twas purely literary and metaphorical, and requires at least a superficial knowledge of the classics in order for any one to pick it right off the bat. I meant to convey that we ought to put my friend Skeeter Cooper and his gang of street gamins on the scent. Skeeter is a modern Gavroche, you know, and if, as I think, this kid we're looking for has only strayed off somewhere we'll have him rounded up within an hour or two at most. What I don't quite understand about the matter is why the alleged mother of the child would beat it without instituting a search herself; she seemed in a terrific hurry to make her hiatus, don't you think?"

"But she did raise considerable of a hullabaloo, Horace. Before she brought the matter to our notice she'd looked all over for the child, she told me. And she'd had everybody else searching the yards, and all around. She'd notified the police, too—"

I sniffed openly.

"Ptt! The police! They'd trample the brat under foot without ever seeing him," I commented. "The thing to do is to get my clever young street ferrets on the trail as quickly as possible."

"All right, go to it," said Honk, subscribing to the proposed move with a readiness that almost made me think I'd overlooked a bet somewhere.

But I stepped to the outer door and inserting two fingers within my proud lips blew a succession of ear-piercing signals. Skeeter appeared in a surprisingly short time, considering that, so far as I knew, he might be miles away; but it chanced that he'd been selling noon pink extras just around the corner of the station. I curtly explained the situation, described the child we wanted found minutely, and bade him mobilize his fellow-ferrets and get busy. 'Twas all as simple as simplicity itself. Skeeter asked one or two questions about minor details, saluted and hurriedly departed. Honk was very much impressed with our business-like methods.

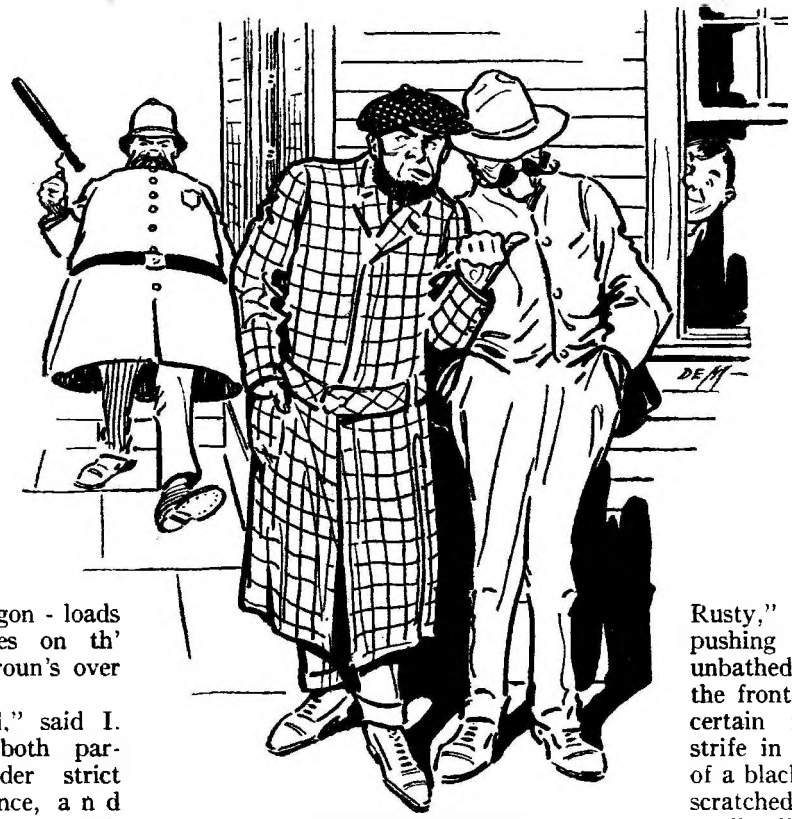
"Er—d'you s'pose the kid'll be found by supper time?" he asked awesomely. "You and your Bowsprit runners, or whatchoumay-call-'em, seem to have things pretty well organized for getting action in cases of this sort."

"We have," I agreed proudly. "When we can't fix you up you can bet we'll leave things in such shape nobody else'll be able to do it."

Well, the plot commenced to thicken right shortly. I may say that the action never did drag so you could notice it either after I got matters to moving. About five-fifteen o'clock that afternoon Skeeter presented himself for his first report; he was accompanied by four or five of his gang, not exactly an impressive-looking array of sleuths, according to half-a-dollar a word literary standards, but keen as cambric needles and foxy as foxes just the same. Skeeter briefly recited progress made so far. I translate his polyglot argot into intelligent American.

"We ain't struck hair ner hide o' the kid," quotha, "but you said t' look out fer gypsies 'n' hoss-traders, so we gotcha some o' both. West o' town 'bout a mile is camped a bunch o' hoss-swappers, 'n' they's four wagon - loads o' gipsies on th' circus groun's over east."

"Good," said I. "Keep both parties under strict surveillance, and report as usual. Skiddoo!" the word "skiddoo" being a cabalistic expression signifying, "You may now quietly and quickly depart from this immediate vicinity." You see what a time-saver the word is.



A COP IN UNIFORM AND A COUPLE OF PLAIN-CLOTHES SNOOPERS, CONNECTED WITH THE LOCAL GENDARMERIE, HUNG AROUND THE STATION UNTIL TIME TO GO TO SUPPER.

Four reporters reported next; they were a little belated, but still hopeful. I refused to talk, or to let Honk talk—at this time. Later on, I promised them, we'd give out some startling disclosures, which is the only way to handle reporters. Also a cop in uniform and a couple of plain-clothes snoopers, connected with the local *gendarmerie*, hung around the station until time to go to supper. From the blank look on their faces, I got it that they were working on some kind of an important clue.

But at nine o'clock the next morning we struck our first streak of "color," to use a mining simile. My clever assistant, Skeeter, accompanied by a rabble of other ragamuffins, appeared at the station. Skeeter lost no time getting to the point.

"This here's a tough guy, name o' Rusty," he said, pushing a tallish, unbathed youth to the front who bore certain marks of strife in the shape of a blackened eye, scratched nose, and swollen lip. "Had t' lick him 'fore he'd come," Skeeter went on to explain. "He b'longs with them hoss-traders, an' he bragged how he knowed somethin' about th' kid we're lookin' fer. He'll tell fer four bits."

"Very good," I returned. "Leave the young gentleman with us, and skiddoo."

The urchin who bore the soubriquet of Rusty stood sullenly staring from the corner of his unblackened eye, first at Honk and then at me. A deathly stillness reigned for some seconds after the mob had gone.

"You, Rusty!" I suddenly thundered. "Where is the Higginbotham child?"

If the witness was agitated or taken aback, he didn't show it outwardly.

"You talking to me?" he inquired blandly.

Ah, he was disposed to be obstinate, was

he? I shook an accusing finger under his scratched nose. I also signaled to Honk to fork over the fifty cents to him as agreed, which Honk did, a little reluctantly.

"Now then, go on and tell what you know," I bade the deponent dourly.

That young worthy sat himself down on a convenient stool.

"Well," he began, "I belong to a band of robbers. We've got a wagon and some horses to fool people with, but our regular business is robbing everybody. We rob banks, stores, houses, railroad trains, any place where they got money. I come clear from California with these robbers, and I've helped steal millions of dollars. We stole that boy you're trying to find, but you won't never find him. He's been taken away off; thousands of miles from here."

The calm nonchalance of the youthful cutthroat before us, as he spoke of the appalling crimes of himself and his associates, momentarily stumped even me, while Honk was breathing like a horse with the heaves.

"D-do you—ahem—know the names of the men who stole the child?" I asked in a still small voice.

"Sure. It was Bigfoot Mike and Texas Pete that did it."

I sank back limply.

"Take the witness," I murmured to Honk..

Honk hemmed and hawed.

"How old are you?" he questioned.

"I'm past twelve," the boy replied. "And I'm an expert pickpocket, too; I could steal your watch and money so slick you'd never guess I was doing it."

I rose unostentatiously, and moved over nearer the window.

"But you fellers needn't be scared of me," he added reassuringly. "I'll not rob you, because I've kind of taken a liking to you."

"H'm, that's all," said Honk hastily. "You may go, young man."

"Go where?" asked the witness.

"Where?" shouted Honk hysterically. "Anywhere! Go to the deuce for all of me!"

Rusty grinned appreciatively.

"I guess I'll eat dinner with you fellers, if you don't care," he said, settling himself comfortably to wait.

Honk's gaze wavered toward me. I shrugged my shoulders.

"All right, Rusty," I said pleasantly. "You're the biggest liar I've met in a blue moon, but that's of small consequence. We'll be pleased to have you as our guest."

The youngster bristled instantly at the imputation regarding his veracity.

"I can prove I'm a robber," he declared, sweeping off his battered hat as he spoke, and bringing from the crown of it a small bundle tied up in a red kerchief. "I robbed a jewelry store just yesterday, and here's the jewelry I got."

The bandanna did indeed contain an assortment of gewgaws which at first glance might've passed for jewelry. Closer inspection, however, showed same to be strictly brass and glass baubles of negligible value. I harpooned the self-confessed thief with a glittering eye.

"These look mightily like gipsies' jewels to me," I said coldly.

"Well—" Rusty hesitated— "Yes, I did steal 'em from the gipsies," he admitted. "I went over to their camp last night, and took everything I could get hold of. I don't like gipsies. It was gipsies that stole me from my parents when I was a baby, and I've swore to be revenged on 'em."

Struck in the upper works by an idea I sidled out the door, leaving Honk to see that the young freebooter didn't carry off the office during my absence. A few minutes later, seated on the pop-pop, I was bounding o'er the hump-backed crossings in rapid flight to the westward. 'Twas easy to pretend engine trouble at the horse-traders' camp, and spend an hour or so probing into their private lives without them suspecting the same.

I decided finally that they were either the perfectly harmless and innocent nomads they seemed, or else varlets of deepest dye, and clever with it. The evidence tended to prove that they'd been misrepresented grossly, I must admit. Guarded inquiries established that they knew Rusty, but disavowed his words or actions. One honest-appearing old pioneer in a coonskin cap opined that the boy was "a nateral born liar," and he wouldn't put it past him to "pilfer things" if the opportunity presented.

I next sought the gipsy camp. Judicious questions here brought out the fact that they, too, were acquainted with Rusty the Rover, and deemed him a regular, young World-Beater. If he'd consent to it, they hoped to adopt him into the tribe, in fact. Oh, yes, certainly they knew he'd filched some bangles and what-not from them, but that was only the boy's way of joking.

Their dirty faces were wreathed in smiles at the drollery of it. He was a true son of Romany they declared.

Not exactly nonplused, but thoughtful, I whizzed back to the station. Honk had a high-colored tale to relate. He'd taken guest related in detail his adventures during a year's association with a band of counterfeiters who, it seemed, never stopped at murder, arson, or anything—as Rusty related it.

Inquiries concerning the more important

"I CAN PROVE I'M A ROBBER," HE DECLARED.

Rusty over to the Medicine House with him, and the two had contrived a meal on the electric cooker; a meal that had warmed the cockles of the young vagabond's heart. Whereupon he'd stuffed Honk full of extravagant stories about his wanderings and deeds of daring.

After that he'd gone out for a little stroll while Honk washed the dishes, taking with him (as we later discovered) several of Honk's neckties, our best set of teaspoons, an onyx stickpin and gunmetal watch (mine), three pipes, a briar and two cobs all well seasoned, and we're not yet certain just what else; things are still showing up missing from time to time.

Skeeter reported "no progress" that afternoon. My Bow Street runners seemed to lose interest in the case from this point on. Rusty hove in smiling in time for supper. We made a merry party at table. Our affair of the stolen Higginbotham child only elicited more wild and improbable statements from the young ruffian, too. It was really a problem to sift the wheat from the dross of his chatter, and I began to realize I'd have to devote more time and thought to the puzzle if we hoped to solve it soon. I decided to do that, and did devote my brain to it tirelessly for a couple of days.

And the solution to the whole baffling and mysterious tangle came, when it came, suddenly—like an icicle dropping from a cornice on one's head, as it were. For two days, as I said, the case simmered along without our seeming to get anywhere at all. True, several messages came from St. Louis —despatched between social engagements, I supposed, and these I replied to, by temporizing, promising much, and conveying little, as an expert finds it easy to do. Honk confessed himself beaten before this, and

had washed his hands of the whole matter. But then Honk will never be anything but a hopeless tyro in this field of endeavor.

I remember that it was a Thursday—or maybe it was a Monday. I know it seemed like Saturday at any rate, and the town clock had just struck five. Rousing myself by an effort, I recall making an abstruse calculation to the effect that 'twas only another hour till the six-o'clock whistle would blow—when things began to happen. First came the flyer from the East, which, pausing for a few minutes space in our fair commonwealth, discharged upon the platform three men. I saw them get off.

RUSTY, WE FOUND TO BE STILL ALIVE, BUT WEAK

One was a portly, iron-gray, pepper-and-salt-suited party of mature age, wearing a seal ring, a small, soft hat, and a look of perplexity. The other two were detectives, so it isn't necessary to describe them. All three approached me, and the portly party proffered his card.

I glanced at same. "Holworthy J. Higginbotham," it said in old English script. While my mouth was in the act of opening to emit the usual hollow phrases of greeting, there came two excited messengers bearing tidings from the front. One of these was Honk, who carried in his hand a handful of yellow curls which he thrust at me in hurriedly broken sentences.

"These — this hair," he gabbled, "was found down back of the roundhouse. It is — it is— it is—"

"So it is," I said unemotionally, turning to the other herald who was none other than my trusty assistant, Skeeter. "Well?" I growled.

"Why — why — you know Rusty," he panted. "Well, he's just about t' croak in th' old icehouse at th' end o' th' yards. Kin you come quick?"

In a few terse sentences I apprised the man Higginbotham of matters as they stood.

"We've found absolutely no trace of your child so far," I said. "No one has seen hair—er, that is, the kid seems to've vanished utterly. True there's a nondescript boy hereabouts who tells a fanciful

story of—but we don't credit it. It is this wretched boy who, my young friend here reports, is dangerously ill in the old icehouse. If I may be excused for a moment, p'raps I'd better amble down and look him over."

"We'll go with you," announced Multimillionaire Higginbotham, crooking a finger at his two henchmen.

And thus we all six hied us thither.

On the way the shingle-mills magnate positively identified the hair Honk brought as that of his heir—I hope I won't be accused, in a time so poignant, of making a play on the words "hair" and "heir."

All six of us arrived at the icehouse. Rusty, wan and wretched from retching, we found to be still alive, but weak. Half a dozen of my Bow Street runners were clustered around, and my eagle eye discerned in the background a various collection of bags and boxes which had a suspicious look about them. Beside the dying desperado was a brier pipe—our brier pipe, and strong enough to sit alone—half filled with tobacco of that malignant, soul-shriveling variety called "long green."

A further inspection disclosed that the bags and boxes round about contained more tobacco, plug chewing mainly, also crackers, bananas, and a diversified lot of commodities which had the appearance of having been consigned freight that had failed of delivery to its proper destination. And it further developed that the young rascals there were only waiting for a chance to confess all.

" 'Twuz Rusty 't made us do it," they chorused. "He organized us into a band o' robbers, 'n' he wuz th' leader. We wuz down here smokin' when he tuk sick. We—"

The robber chieftain raised his head then. His dim eyes rested on the iron-gray face of H. J. Higginbotham, multimill—But no matter.

"Hello, popper," he said feebly.

Down on his hunkers in the wet sawdust dropped the magnate and father. (A little croony music by the orchestra, here, please.)

"My boy! My little Williston! What does this mean?"

"Aw, I got tired of wearing velvet suits and curls like a girl," the boy muttered. "So I gave mama the slip, and started out for myself. I cut off my hair with a knife down there where they keep the engines, and then I swiped some clothes to wear in place of my velvet suit which I burned up. I'm going to stay here, and be a robber, and live with Honk and Horace. They eat out of the bowls on the table, and a feller don't have to wash his face and hands unless he wants to."

BULLETIN:

The Pittsburghers, father and son, and two hired Hawkshaws, departed for the East on the midnight train. Jove's in his celestial hall, and all's well with the world.

"What puzzles me," quoth Honk later, "is where that child got his wayward instincts. His mother's people were distinguished patriots, and—and—they fought and died for our country, you know, on the bloody field of—"

"Bunk!" said I briefly. "Bunk!"

The Sunny Side of the Track

IT was small Isaac's birthday, but no amount of hints had brought forth any suggestion of a celebration. At last he determined to know the worst, and went to his father, demanding:

"Pa, what you going to give me for my birthday present?"

Pa obligingly stopped his work and regarded his offspring beamingly.

"Birthday present? Well, now, what you want for a present? I tell you, Ikey; I'll ask your mother to wash a place on the window so you can see the trains go by."—*Harper's Magazine.*

"YES," boasted the overdressed individual, "I can make my clothes last. This hat is an example of my thrift. Bought it three years ago, had it blocked twice, and exchanged it last month for a new one in a railway restaurant."—*Railway and Locomotive Engineering.*

"CAN you run an engine?" asked Pat, a roundhouse attendant, of the yardmaster.

"No," he answered. "Can you?"

"Can Oi run an engine!" sniffed Pat in derision. "If there's anything Oi'd rather do all day long it is to run an engine. Huh, can Oi run an engine!"

"Suppose," suggested the yardmaster, "you get up and run that engine into the house."

"All right, Oi'll do that same," Pat bluffed, and he climbed into the cab, looked the ground over pretty well, spat on his hands, grabbed the biggest handle and pulled it wide open. "Zip!" she went into the roundhouse. Pat saw the bumpers ahead, and, guessing what would happen, reversed the lever clear back. Out she went—in again—out again. Then the yardmaster yelled: "I thought you said you could run an engine!"

But Pat had his answer ready. "Oi had her in three times. Why didn't you shut the door?"—*Baltimore Trolley News.*

ONE day when our old friend, Mr. McManus, supervisor of channel rails, says Edward K. Lynch, was making his usual inspection trip over some of the lines, he discovered three new railbolts lying alongside the track. He walked on for a block or two farther, looking for the foreman of the gang, with the intention of teaching him a lesson in economy. When the foreman stood before him, he asked:

"Didn't you receive instructions from me a few days ago to keep a careful eye open and guard against all waste of material?"

The foreman said he had.

"Well, then, what about these?" He pointed to the bolts.

"Did yez foind thim lyin' there?" asked the foreman.

"I did," said Mr. McManus, "right there!"

"What de ye think o' thot?" said the foreman. "Oi've had seven men lookin' fur thim fur th' last three hours!"—*New York Railways Employees' Magazine.*

FIRST Summer Boarder: "I couldn't sleep last night for the cold. How did you manage?"

Second Summer Boarder: "Fine. We put the railroad ticket, the hotel folder, and the proprietor's bill on the bed."—*Judge.*

IT happened aboard a diner on an Eastern road, and the hero of the sketch was the waiter, a coal-black, exceedingly polite person, whose manner alone was proof sufficient that he lived to make life brighter and fairer for his patrons.

"Waiter," said a lone traveler, as he sat himself down at one of the little tables, "bring me grapefruit, hot toast, coffee, and two poached eggs."

"Kunnel," stated the waiter, bending forward confidentially and speaking under his breath, "scuse me, suh, but effen I wuz you I'd tek somethin' else this mawnin' fur breakfast. I'm feared I can't reckermend the aigs."

"What's wrong with them—aren't they fresh, or what?" asked the white man.

"Well," said the waiter, "they mout be fresh so fur as I knows. But to tell you the truth, suh, we ain't got no aigs to-day."—*Saturday Evening Post.*

AN old lady was greatly frightened when the train thundered into the tunnel.

"Do you think," she asked the ticket-collector, "this tunnel is perfectly safe?"

"Don't be afraid, madam," replied the waggish collector. "Our company got you in this hole, and we're bound to see you through."—*The Royal Magazine.*

"WHERE am I?" he asked, trying in vain to rise from the stretcher on which he lay.

"Don't try to talk," said the doctor, who bent over him. "You were in a railroad wreck, and are severely injured."

"That puts me in a very embarrassing position," complained the victim.

"Embarrassing? What do you mean?"

"I am claim agent for the railroad company, and I shall have to fight my own case."—*Interborough Bulletin.*

AN interesting and true story about John I. Blair, pioneer railroad builder and promoter: He was traveling on one of the roads of which he was the principal owner and on which the employees received a fifty per-cent reduction on food purchased in the company's restaurants. Mr. Blair went into one of these and had a fifty-cent dinner. When he finished his meal he went to the young lady cashier, handed her a quarter, and started to leave the room. But she, not recognizing him, called:

"Here, mister, you do not belong to this road."

And Blair, with the quick humor for which he was famous, replied:

"No, miss, the road belongs to me."—*Baltimore and Ohio Employees' Magazine.*

"WILL you have my seat?" he inquired politely.

"On the ground that I am aged and decrepit?" the woman asked.

"No, indeed, madam."

"That I am young and beautiful, and possibly not averse to a flirtation?"

"Certainly not. That is—"

"Then it must be because you are a gentleman, in this respect differing from the fat person on the left and the scrawny specimen at the right. I am glad to learn your principles, sir, but here is my street. Good day."—*Boston Transcript.*

"THE Santa Fe not only runs trains fast, but starts them fast," said a young salesman.

"How's that?" asked his companion.

"Well, one day at Newton, my wife came down to the station to see me off. I leaned out of the window to kiss her good-by; the train started, and, would you believe me, I found myself kissing a strange woman on the platform at Emporia."—*Santa Fe Employees' Magazine.*

"TIME is money," said the engineer as he consulted his watch.

"Yes," mused the fireman, "mine figures up $91.83 to-day. I want two more trips this month for my average."—*Erie Railroad Employees' Magazine.*

AN abnormally fat man lumbered into a Pullman on a west-bound train, and set up a loud protest when he found that his berth was at the end of the car.

"I can't sleep a wink if I'm over the car-wheels. I won't close my eyes if you put me over the car-wheels, porter."

"Can't help it, sah," said the porter. "It's the one that was sold you, and it's the only one they is. You'll have to take a chair-car and set up if you don't take this."

The fat man finally decided to keep the berth, protesting to the last that he did not expect to close his eyes. Shortly his snores were heard above the rumble of the train, but it was not until the train had a long wait that the sounds issuing from the berth caused anything but amusement. In the silence, however, they got on the passenger's nerves, and by request the porter prodded him in the ribs.

"My land, sah!" demanded the porter. "If you makes noises like that when you's lyin' awake over the car-wheels, what would you do if you was sound asleep in the middle of the car?"—*Nyack (New York) Evening Star.*

"HENRY," a Jersey commuter's wife began thoughtfully, "I've been thinking a lot about you lately."

"What's up?"

"Since we moved here to Jersey and you've gone back and forth every day to the city, you have seen absolutely nothing of the children."

"I don't see how that can be helped," said Henry. "When I leave in the morning they are not up, and when I come back in the evening they're in bed."

"Yes," said the wife, "that is so, but you might at least send them a souvenir post-card now and then."—*Newark News.*

"AND you wouldn't begin a journey on Friday?"

"Not I."

"I can't understand how you can have faith in such a silly superstition."

"No superstition about it. Saturday's my pay-day."—*Minneapolis Journal.*

THE well-beloved bishop of a certain Southern State is so absent-minded that his family is always apprehensive for his welfare when he is away from home.

Not long ago, while making a journey by rail, the bishop was unable to find his ticket when the conductor asked for it.

"Never mind, bishop," said the conductor, who knew him well, "I'll get it on my second round."

However, when the conductor passed through the car again, the ticket was still missing.

"Oh, well, bishop, it will be all right if you never find it!" the conductor assured him.

"No, it won't, my friend," contradicted the bishop. "I've got to find that ticket. I want to know where I'm going."—*Youth's Companion.*

"WHEN you found you didn't have your fare, did the conductor make you get off and walk?" asked the inquisitive man.

"Only get off," responded the literal one. "He didn't seem to care whether I walked or sat down."—*Railroad Telegrapher.*

OLD TIMES WITH "MORSE" MEN.

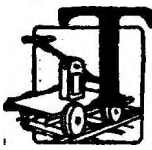
Ever Hear of the B. and O., American, American Rapid, A. & P., or Bankers' and Merchants' Telegraph Companies?

RATE WARS PROVED OPS' HARVEST.

The Western Union Company of To-Day Is Gould's American Union in Everything But Name—Baltimore and Ohio Railroad Was Once a Formidable Competitor of the Wire Companies.

BY "J. E. M.,"

Author of "Old Times on the Erie," and "Old Times on the 'Gould S. W.'"



TO-DAY, when the average person speaks of or thinks of a telegraph company or a telegram, he, or she, naturally associates it with either the familiar yellow forms of the Western Union Telegraph Company or the white-and-blue designs of the Postal Telegraph-Cable Company. These two companies have for so many years enjoyed such a practical monopoly in their particular field that even the memory of such old and at one time prominent companies as the American Telegraph Company, the American Union Telegraph Company, the Atlantic and Pacific Telegraph Company, the American Rapid Telegraph Company, the Mutual Union Telegraph Company, and even the more recent and widely known Baltimore and Ohio Telegraph Company—which for a time gave the Western Union a pretty stiff run for their money—is but a faint, shadowy recollection.

Gould Starts to Compete with W. U.

It is generally accepted as fact that the Western Union Telegraph Company has absorbed all of those concerns, but this is a mistake, for the Western Union itself was absorbed. It happened in this way. In 1880 the Vanderbilt family and their associates held the controlling interests in the Western Union Telegraph Company. For a long time Jay Gould had been making strenuous efforts to obtain a voice in the management of this company, but had been unsuccessful owing to the combined antagonism of the Vanderbilt faction. Indeed, he had not only been unsuccessful in obtaining a seat on the board of directors, but also had been unsuccessful in securing more than an insignificant number of the shares of the company—not enough to make his influence felt in the remotest degree.

Realizing at last that his efforts to gain recognition in this direction were futile, owing to the determined stand taken by the controlling interests to keep him out of the telegraph field as it then existed, he determined upon competition. So, together with the late Russell Sage and a few other men prominent in Wall Street financial circles, the American Union Telegraph Company was formed. This was probably in 1880.

The minority stock of the company was absorbed quickly by only a very few men

associated with Messrs. Gould and Sage, these two gentlemen retaining supreme control. There was plenty of money, so the work of construction was begun at once and was pushed rapidly. New offices were opened as fast as the wires were strung, and a bitter, aggressive campaign such as Jay Gould alone knew how to engineer resulted. Rates were cut right and left and every method known was employed to harass the older company.

Greatest Telegraph War in History.

Probably never in the history of the telegraph was there such cutting and slashing of rates. Twenty-five words for ten cents was the prevailing figure for telegrams from New York to points within a radius of three hundred miles, and other more distant points in proportion.

Joseph Stearns had but recently invented and perfected the duplex—the quadruplex came two or three years later—by which means two messages could be sent simultaneously over the same wire, thus vastly increasing the carrying capacity of that wire. Mr. Gould and the American Union were quick to recognize the advantage of this invention and immediately purchased it, together with several other inventions of lesser importance which greatly increased the possibilities of the telegraph.

These improvements, together with a more rapid service than had heretofore been known, the luring away from the older company of their very best telegraphic talent—both managers and operators—and the economy of operation which was made possible by the inventions purchased, soon told upon the Western Union and its leading stockholders, and a truce was called.

A conference of the leading spirits of both companies was held. The meeting was attended by such well-known financiers as Jay Gould, Russell Sage, Alonzo B. Cornell, "Deacon" White and Addison Cammack.

Complete Surrender of the Vanderbilts.

At this conference arrangements were made for a consolidation, but they were based solely on the demands of Mr. Gould, who held the whip hand and did not hesitate to crack the whip whenever necessary to let the Vanderbilt faction, which had so long and successfully kept him from the desired goal, know that he had them virtually where he wanted them.

At this time Mr. Gould wrested the control of the telegraph situation from his opponents, the American Union taking over the holdings of many of the Vanderbilt faction and placing Mr. Gould in control of the field. In the consolidation the Western Union was completely absorbed by the American Union, and nothing remained of it except its name, which, for policy's sake, Mr. Gould deemed it best to retain.

It was not long after the consolidation of these two great systems in 1881 or 1882 that the Mutual Union Telegraph Company, which at first had not been regarded as a formidable rival in the field, began to expand, and in a very short time was doing a tremendous business between such points as New York, St. Louis, Chicago, Cincinnati, Cleveland, Indianapolis, Detroit, Toledo, Buffalo and Pittsburgh. Indeed, their wires were taxed to the utmost, for their new and up-to-date apparatus and their business-like methods of doing business soon won for them many thousands of customers from the business classes.

The consolidated American-Western Union was compelled to sit up and take notice. A war of rates was inaugurated and waged bitterly for almost a year, when the superior money power back of the consolidation told and the Mutual Union gave up the ghost.

B. and O. Enters the Field.

The Baltimore and Ohio Telegraph Company, as its name indicates, was an offshoot or a subsidiary of the railroad system. Originally intended to handle the commercial business in the territory which its lines traversed, the telegraph department of the railroad, seeing the great possibilities in the telegraph field after the absorption by the Western Union of its most prominent and dangerous rivals, determined to enter the business in earnest. So a separate company was organized with Mr. David Homer Bates as president and general manager.

The general offices were at first located at No. 63 Broadway, afterward removing to the corner of Broadway and Canal Street. Of course every one knew that the telegraph company's stock was owned outright or controlled by the Baltimore and Ohio Railroad, which in turn was controlled by the Garrett family of Baltimore—of which Mr. Robert W. Garrett, son of John W. Garrett, the builder of the great railroad system, was the head.

The general branching-out of the Balti-

more and Ohio telegraph system began immediately after the great telegraphers' strike in 1883. Of course, the new concern immediately inaugurated a rate war, as did their predecessors, the Mutual Union, the American Union and others of less importance. They reduced rates from New York to such points as Boston, Buffalo, Pittsburgh, Washington, Philadelphia and Albany from "twenty-five and two," or twenty-five cents for the first ten words and two cents for each additional word, which was the prevailing rate with the other companies, to "ten and one," or ten cents for the first ten words or less and one cent for each additional word.

The Western Union, however, could not see their way clear to meet this great cut, but made a reduction of only one cent on the additional word-rate, or twenty-five cents for the first ten words or less and one cent for each additional word. However, in order to even things up for themselves they increased their rates to such points where there was no opposition.

These were gala days for the operator. I remember at one time there were no less than six separate and distinct telegraph companies in New York City. They were the Western Union, doing business at old "195"; the American Union, whose offices were located at No. 49 Broadway; the Mutual Union, with headquarters at No. 187 Broadway; the American Rapid Telegraph Company, at Broadway and Vesey Street; the Bankers and Merchants' Telegraph Company—now a part of the Postal system—and the Commercial Union, whose office was somewhere in the district between Wall Street and the Battery on Broadway.

Operators Held Six Jobs in Three Weeks.

Each of these companies was fighting the others tooth and nail, and the antagonism extended even to the operators and other employees. Operators—*good* operators—were extremely scarce. Each chief operator or manager had a scout or scouts out on the street, loafing about the doors of the opposition telegraph offices, trying to induce the competitors' operators to "desert."

I know of some operators who made it a boast that they had been employed by six telegraph companies in less than three weeks; and I have no reason to doubt their assertions, as I personally had a little experience in that line myself, having jumped from the Baltimore and Ohio to the Postal and from the Postal to the Western Union and back again to the B. and O. inside of ten days, each change adding a trifle to my salary.

Enter the Postal.

In 1884 the Postal Telegraph Company entered the field, opening offices at No. 183 Broadway. The local office was in charge of "Chris" Flood, who was afterward killed in a bicycle accident on the Brooklyn bridge while on his way to his office. Built originally by John W. Mackay, father of the present president and principal stockholder of the company, with the intention of selling the lines to the United States Government, the company had strung two copper wires—the first of this character, if I am not mistaken, to be stretched for any considerable distance—between New York and Chicago, opening offices at intermediate stations as they went along.

The Postal had acquired the patent rights of Professor Elisha Gray's "harmonic system" of telegraphy, whereby eight messages could be transmitted over the same wire simultaneously. The fundamental principles of this system were based upon sound waves. A "tuner," each sounder, or relay, was tuned to a certain note of the musical scale, and the sounder, or relay at the distant point, being exactly in tune with it, responded to the electrical impulses.

Great things were expected of this system, as in theory one wire would take the place of eight. The system was worked with some degree of success by the Postal for a year or more, but was finally abandoned when it was found that the cost of operation and maintenance was far greater than had been at first anticipated and that the mechanism of the apparatus was so extremely delicate that the slightest atmospheric disturbance put it out of commission.

When the Postal entered the field the competitors of the Western Union had dwindled to but one that really amounted to much. The smaller companies, such as the American Rapid, the Commercial Union and the Bankers and Merchants', being more local in their scope, and covering but a limited territory, could not very well be classed as real opposition. This single important exception was, of course, the Baltimore and Ohio. The Western Union had, in the meantime, absorbed the

Mutual Union, and it was generally understood that the American Rapid was under their control, although the actual consolidation did not take place for some months after the time of which I write.

Cable Rates Slashed to 12 Cents a Word.

The Commercial Cable had been opened for business in connection with the Postal's land lines, and the Baltimore and Ohio and the other smaller telegraph companies transferred their cable business to this new overseas line. The Commercial, or Mackay-Bennett, Cable established a uniform rate of twenty-five cents per word for cablegrams from New York City to most of the more important European centers, such as London, Paris, Berlin, etc.; and, by the way, this company never has deviated from this price. The rate *via* the Western Union cables, however, had been forty-two cents per word to these same points.

Immediately the Commercial company opened for business and announced its rate of twenty-five cents a word, the Western Union came across with a cut to these important European points of thirty cents per word, making their rate twelve cents per word against the Commercial's twenty-five. However, many large business houses patronized the Commercial at the higher rate, knowing full well that the Western Union rate at twelve cents was a losing game and merely adopted to "freeze out" the Commercial. They were also secure in the knowledge that if the Commercial should be compelled to pull down its flag to the Western Union through lack of sufficient support this latter company would immediately jump the rates to such a figure as to reimburse itself for what pecuniary loss they had sustained during their enforced cut.

Operators Could Pocket Half the Tolls.

This situation naturally opened up many opportunities for making "side" money by dishonest branch-office managers, operators and clerks. A regular "ring" was developed, and a meeting-place which answered every purpose of an up-to-date clearing-house was maintained on West Fourteenth Street not far from Broadway. The method pursued was as follows:

Almost invariably, wherever there was a Western Union office, there was found to be a Baltimore and Ohio telegraph office directly across the street, or just around the corner, or as near to the Western Union office as it was possible to obtain office room. Every transaction was cash in those days; there was no such thing as running a monthly telegraph bill, except in some very rare instances, and even those instances were limited to the land telegraphing only, the tolls on cablegrams invariably being paid for with cash on the nail.

Now we will suppose that the operators at the Baltimore and Ohio and the Western Union telegraph offices at a certain point had a mutual understanding. The man in the Baltimore and Ohio office would take in over his counter a cable message to be transmitted *via* the Commercial at the rate of twenty-five cents per word. Say that this cablegram contained ten words. The operator or clerk or manager, as the case may be, collected $2.50 for this cablegram, and after the customer had gone his way this employee would enclose the cablegram in an envelope addressed to his accomplice at the Western Union office, who would send the same cablegram over the lines of the Western Union for twelve cents per word, or for $1.20. Thus the two cleared $1.30 by the dishonest transaction.

Graft Was Worked Going and Coming.

This was not all, however. When the messenger boy returned from the Western Union from delivering the cablegram he invariably brought with him a number of land messages which the Western Union man had taken in over his counter at the rate of twenty-five and two, and which the man in the Baltimore and Ohio would transmit over his lines at the rate of ten and one. Every night from 8.30 to 9 o'clock the place of which I spoke above on West Fourteenth Street, the "clearing-house," was in session, and here operators, managers and clerks from all parts of the city congregated and evened up the proceeds of the day.

Somehow this method of graft did not appear to be so very much wrong in those days. At any rate, it was not regarded as it would be to-day, but was rather thought of as "legitimate graft." I have in mind while I write one who held a semi-official position with one of the companies, and who was a leader of a certain "ring." He attended these gatherings at West Fourteenth Street nightly and collected a certain percentage of the "rake-offs." Wo to

the operator, or clerk, or branch-office manager who attempted to "hold out" on him!

I remember one instance of a man's attempting this. Two days afterward that man was walking the streets; and, scarce as telegraphers were at that time, and badly as all the companies were in need of help, it was impossible for him to secure employment.

It Was Just the Job for This Man.

This same man who held the semi-official position of which I speak retired from the business when the Baltimore and Ohio consolidated with the Western Union and purchased an interest in a large mercantile concern. I have often heard him openly remark that the money with which he obtained his start was his share of the "dividends" which were declared nightly at the resort on West Fourteenth Street.

I have in mind another little incident connected with this "graft." A certain well-known operator, who shall remain nameless, was out of a position for a time and, meeting the semi-official who was the head of one of the "rings," asked him to use his influence to obtain him employment. Now this semi-official had no authority to employ men, but his word was usually taken in connection with any one in whom he was interested, and it was rare indeed that the man so recommended failed to obtain work. When this particular operator asked the semi-official for a job, the latter responded:

"Suppose I fix it for you to go to 'XY' office. There's fat pickings there—lots of cables. How much of the rake-off are you willing to give me?"

"Well, I dunno," replied the operator. "I'll give you whatever the present man is giving you."

"But," said the other, "he doesn't give me anything."

"That will be satisfactory to me!" exclaimed the operator gleefully. "I'll take that job."

Postal Acquires Smaller Companies.

Along in 1884-85 the Postal company acquired the lines of the Bankers and Merchants' Telegraph Company, of which Edward S. Stokes, millionaire proprietor of the famous Hoffman House, in New York City, was the president. Shortly afterward the Postal assumed control of the Commercial Union, which operated throughout the New England States, its poles, lines and other apparatus being of the latest and highest grade. The Bankers and Merchants' lines extended south from New York to Philadelphia, Baltimore and Washington, where they made a connection with the Southern Telegraph Company, of which Mr. Joseph W. Kates was general manager, with headquarters in Richmond, Virginia.

The Southern's system extended down the Atlantic coast-line, tapping North and South Carolina and Georgia and the rich cotton country in that vicinity, which had always been a great patron of the telegraph. The Bankers and Merchants' also had lines extending west to Pittsburgh, Cincinnati and Cleveland, but I do not believe that they touched as far west as Chicago.

Shortly after this, or some time in 1885, the Postal company took over the lines of the Southern Telegraph Company, incorporating this latter concern as an integral part of its own system. It retained Mr. Kates, who was a pioneer in the field, as general superintendent of the Postal's southern division, with headquarters at Richmond, Virginia, and jurisdiction over all the lines of the company south of Washington, District of Columbia. Mr. Kates continued in this position for many years and carried the respect and esteem of all who knew him, not alone in the telegraph fraternity, but the business world at large. He is, I believe, now living in Richmond at a ripe old age.

B. and O. Expands in the Southwest.

The Baltimore and Ohio people meanwhile had been pushing their wires throughout the Southwest. Reaching Cincinnati over their own railroad lines, they entered St. Louis over the right-of-way of the old Ohio and Mississippi Railroad, which is now a part of the Baltimore and Ohio Southwestern. From St. Louis the wires went south on the east bank of the Mississippi River over the old Cairo Short Line Railroad to Cairo, Illinois, where they crossed the river through a cable to Bird's Point, Missouri, where they took the Texas and St. Louis Railroad, afterward the St. Louis, Arkansas and Texas and now the St. Louis Southwestern—the Cotton Belt—to Arkansas and Texas points. The B. and O. obtained the telegraphic rights of this, at

that time, narrow-gage road. These rights were very valuable, as otherwise it would have been a difficult matter to construct a telegraph line through that section of the country owing to the nature of the territory traversed, it being largely swampy land where the maintenance of a telegraph line, even after once built, would have been almost prohibitive. The only other entrances to this rich telegraphic field were over the rights-of-way of the Gould-controlled roads—the Iron Mountain and the "Katy," and of course that was not to be thought of.

From the time that the Baltimore and Ohio Telegraph Company entered the telegraph field as a regular business competitor of the Western Union until the day that it consolidated with the latter concern, its wires were taxed to their utmost to take care of the great volume of business which was offered them; but the finances of the telegraph company were so intermingled with those of the railroad that it is a question to-day whether the telegraph end of the combination was a paying or a losing investment.

Sad Day When the Rivals Amalgamated.

It was in the summer of 1887 that the Baltimore and Ohio gave up the ghost and amalgamated with the Western Union. And a sad day it was, too, for the telegraphers throughout the country, many of whom were so deeply interested in the success of the B. and O. that they really regarded it as belonging to them, and they were ready at any time to fight for the old familiar trade-mark of the blue Maltese cross.

Within two weeks after the Western Union took over its rival the dismantling of the Baltimore and Ohio Telegraph Company's offices was practically completed, the branches were closed throughout the country and the wires run into the Western Union offices. The local main office of the company, which had been moved from No. 63 Broadway to Broadway and Canal Street, was among the first to be dismantled and closed. Manager McLaren, who had held that position from the time when the company began doing business in New York City, retired permanently, saying that when the B. and O. went he went too, never to return.

Mr. McLaren, or "Mac," as he was affectionately called among the boys, was possessed of a very acute sense of humor, and many are the amusing incidents which have taken place around his desk—or "the throne," as we called it.

One of Mac's rules was that when, after pay-day, an operator failed to report for duty for a day or two, he should come to the throne and explain his absence. After the explanation Mac's stereotyped expression was, on forgiving the delinquent and sending him back to his wire:

"Well, it's all right this time, but don't let it happen again."

One morning, two or three days after pay-day, one of the absentees came back to the office and sauntered up to the throne. Mac looked him over and said:

"Well, Buck; where have you been?"

"Good morning, Mac," replied Buck. "It's this way. I had twins up at my house on Monday."

"Huh!" grunted Mac. "It's all right this time, but don't let it happen again."

I never have learned whether Buck has been guilty of this misdemeanor since or not.

The old Baltimore and Ohio Telegraph Company, it is safe to say, employed the very cream of the profession, including such well-known talent in the New York office as the late Frank Earley, "Bart" O'Reilly, "Pony" Moore, "Roxy" Moore of the *New York Herald* staff, and many others who were, in their day, the top-notchers of the business.

Hundreds of telegraphers throughout the country were thrown out of employment by reason of the B. and O.'s consolidation with the Western Union—operators, managers, chief operators and wire chiefs alike—and for a time it was mighty rough sledding for some of us.

Was a Blow to the Postal.

This consolidation, coming unexpectedly as it did, was a very severe blow to the Postal, and put that company back several years in its work of extension and improvement. The Postal had enjoyed a very close traffic working-agreement with the Baltimore and Ohio, exchanging business with it for points where it did not reach and receiving in return the business from the B. and O. which the latter could not handle, but addressed to points where the Postal company had offices. This interchange of business was, of course, lost when the consolidation took effect. The

Postal was compelled to turn business of this character over to the Western Union and to pay the latter's price for handling it.

Besides this, in official Postal telegraphic circles it had come to be generally understood that the Baltimore and Ohio would eventually become their property, and the readjustment of the situation became extremely hard. Here at one blow were shattered the hopes of Mr. Mackay and his friends of acquiring valuable lines to be added to their growing system. In consequence they were compelled to build thousands and thousands of miles of new telegraph lines throughout the country, a task which occupied many months—nay, years—to accomplish. With characteristic energy, however, the Postal accepted its fate and at once began the extension of its lines to those fields which the B. and O. had operated and which now belonged exclusively to the Western Union.

THE REPAIR SHOPS.

By CHARLES R. ANGELL.

SHADOWY demons flitting,
Weaving a mystic spell
In the smoke of a thousand torches
That glow like the fires of hell!

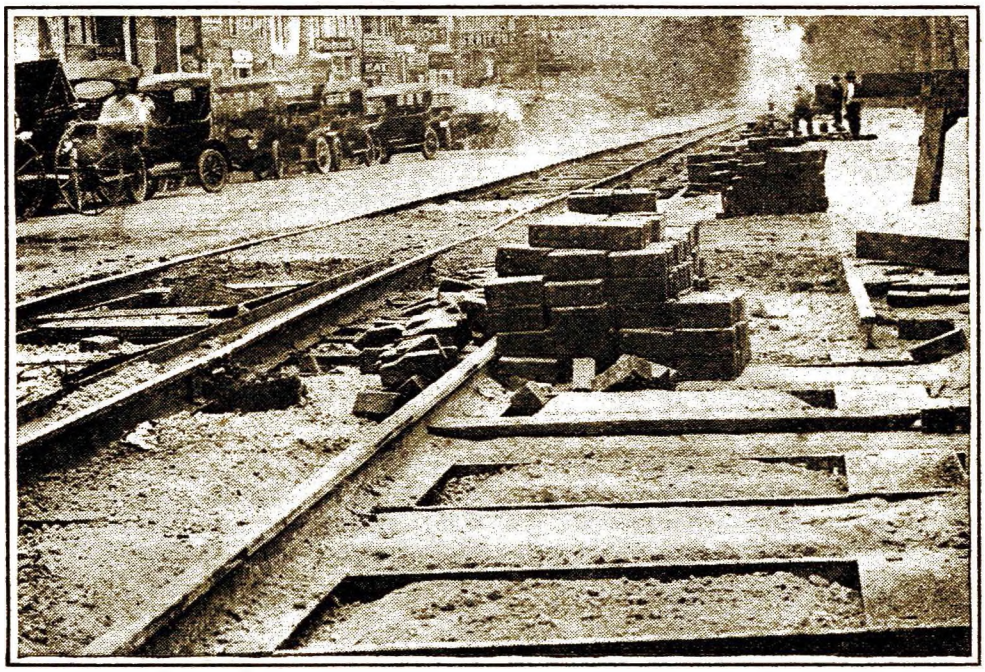
TO the song of the clanging hammers
And the hum of the busy drills,
To the rattling strains of the pulley chains
And the clamor the anvil spills,
Panting and straining and sweating,
Counting the day the spoils,
Waging a fight in the ranks of Might,
The brawn of the system toils.

COMES the call of a broken driver,
And the calling is not in vain,
For the pieces meet to the welder's heat,
And the driver is whole again.
Shaping a crooked piston,
Cursing the smoke that coils
In a blackened twist through the steam's hot mist,
The brawn of the system toils.

TO the hiss of the white-hot rivet
That leaps from the forge's gleam,
While the hammers boom like the crack o' doom
To the sound of the planer's scream,
Wielding the heavy sledges,
Braced for the quick recoils,
Like a fantom band in a fantom land
The brawn of the system toils.

SHADOWY demons flitting,
Weaving a mystic spell
In the smoke of a thousand torches
That glow like the fires of hell!

LAYING TRACK IN CONCRETE.



THESE STEEL TIES, EMBEDDED IN CONCRETE, WILL LAST FOREVER, BARRING EARTHQUAKES. THIS TYPE OF TIE IS EASIER TO HANDLE AND QUICKER TO INSTALL THAN THE WOODEN TIE. THE PICTURE WAS TAKEN ON THE LINE OF THE CLEVELAND AND SOUTHWESTERN AND COLUMBUS RAILWAY.

IN THIS VIEW THE STEEL TIES ARE NEARLY READY TO BE CONCRETED INTO PLACE. THE PLATES, RUNNING LONGITUDINALLY WITH THE RAILS, GIVE THEM SUPPORT NOT AFFORDED BY THE OLD TYPE OF TIE. THIS PHOTOGRAPH SHOWS THE CLEVELAND RAILWAY COMPANY'S RIGHT-OF-WAY AT BROOKLYN BRIDGE.

INSPIRATION ON THE RAIL.

Many Leaders of Thought Find the Drone of the Steel Cars an Incentive to Intellectual Work.

BY NEWTON A. FUESSLE.

AILROAD men are not the only ones who perform their duties in flight. There are many men of entirely different callings who find inspiration in the song of wheels on rails, and who do a great deal of their work while speeding from city to city.

Men like President Wilson, William H. Taft, Theodore Roosevelt, and William Jennings Bryan, while in the thick of political campaigns frequently dictate important speeches to their secretaries as they fly across the leagues in their "specials." Advertising men of different agencies, many of whom travel almost incessantly to keep in close touch with their clients, have often been known to dictate the complete details of great publicity campaigns while rushing from New York to Chicago, Detroit, Cleveland, or Cincinnati.

The drawing-room compartment of many a Pullman sleeper is turned into a workshop the moment its occupants get aboard. Writing-tables are rigged up, and often typewriters clatter far into the night as the journey proceeds.

Playwrights are sometimes required to recast whole plays while speeding to the scene of the productions. Channing Pollack and Rennold Wolf, authors of Raymond Hitchcock's recent musical comedy, "The Beauty Shop," are said to have practically rewritten the entire libretto in a single all-night session on the way from New York to Detroit.

Rehearsed Opera on the Cars.

One of the big opera companies a short time ago sang its way over miles of country in final rehearsal for a production in Boston as their special whirled to its destination.

The late Stanley Waterloo, whose novel, "The Story of Ab," put him in the front rank of writers of prehistoric folk, once told me that by far his most high-class work came under conditions of travel by rail. Will Levington Comfort, who is nowhere more at home than in a railway coach or abaft the funnel of a steamer's deck, wrote quite a bit of his romantic novel, "Routledge Rides Alone," while speeding from the Pacific coast to Chicago on his return from war-correspondent service in China.

Richard Le Gallienne, the poet, now and then writes the first draft of a lyric while traveling from his home in Rowayton, Connecticut, to New York. So, too, with the late Cy Warman, poet of the rail. Warman found the rush of the train on which he traveled "paradise enow" for purposes of inspiration.

Made Train a Hotel on Wheels.

Opie Read, novelist of the South, recounts a singular episode of the days of his editing of newspapers in the old days. Once things were going badly. The purchase of paper and printers' ink and the payment of his employees' wages were taxing his resources to the limit, so much so that the maintenance of a suitable abode had become a thorn in his side.

Then a brilliant idea occurred to him. He had an exchange-advertising contract with a local railroad. He found that it would be possible for him to take out sleeper accommodations as well as transportation in exchange for advertising space in his paper.

And so, until the fiscal horizon brightened, Opie Read went to bed in a sleeping-car at about ten-thirty at night in his home town, and rode and slept until around two-thirty next morning, when he changed trains and went to bed again on another sleeper, which brought him back to his editorial desk in time for the succeeding day's work. Often, too, Mr. Read, propped up with pillows in his berth, would compose his editorials before composing himself for sleep.

JERRY'S CALF.

BY FLOYD T. WOOD.

Playing Nursemaid to Infant Livestock Was Not Owen's Long Suit, But the G. F. A. Said, "Must."

"NOWADAYS," observed Rorry Morris, "there's nothing happens on a railroad except work." Rorry had just come in from a hard trip, and the unpleasantness of it was still sticking in his memory.

"Not entirely," Frank Wilson spoke up. "Sometimes there's a few high-spots of romance and excitement to sort of lighten the tonnage. Did I ever tell you muts about Jerry's calf, or the siege of Bassano?"

We all said "No."

"All right, then," said Frank. "Sit down and be good, and when I finish you can say who's right, Rorry or I.

"I was sitting in the waiting-room of the station trying to scrape up an acquaintance with Jerry Owen, the new agent. Jerry had only been with us a day or two. He seemed rather strange at the business; he told me afterward that he had never been an agent before. Some burg Bassano was, too; one depot, one coal-chute, three box-car shacks—one for the coalmen, one for the section-men, and one for us wipers—and a long log building that was house, store, and post-office combined.

"There wasn't what you could call a refining influence in the place—no women, chickens, cows, churches; not even a pig. There was plenty of snow, though; it was the middle of February, and everything was buried. The nearest farmer was at least three miles out, but away back north along the Red Deer River there was a big settlement of ranchers; so the C. P. R. kept an agent here for their benefit.

"One of these ranchers came breezing in now—a big, whiskered chap, all bundled up in a dogskin coat. He stuck his head in the ticket window, and spake thusly:

"'Say, mate, has my calf reached this here densely populated burg yet? I had a letter from Ellis & Co., last week, saying same would go forward by first train. I dunno as I figured much on that first-train spiel, but 'lowing them four or five more, that calf should ought to be here now.'

"This rube was Jerry's first customer; he had jumped up in considerable of a hurry and grabbed a bunch of papers.

"'Your name, please,' he said politely.

"The gent glared at him pretty mean; it didn't need any great detective to get wise to the fact that he had been sampling some of the red liquor the P. M. used to keep in his back-room for medical purposes only.

"'What's my name got to do with this here calf?' he said finally. 'I ain't adopting it. Do you want to know, or does the calf?'

"Jerry explained about way-bills, bills of lading, and so on. That seemed to mollify the farmer some, although he still acted touchy.

"'Oh, all right,' he said. 'If that's the way it is, I don't mind giving you the story of my life: William Ormond French, born 1875 in Waverly, Iowa; Scotch parents, poor, but mostly honest; present address, Section 10, Township 31, Range 12; own seventeen horses, forty-six cattle, three pigs, two dogs; no children, but the wife says—'

"He ran out of breath here, and Jerry edged into the conversation.

"'That's quite sufficient, Mr. French, thank you, quite sufficient; we really didn't need so many details.'

"I could see Jerry was pretty nervous; he told me afterward he was afraid of any one showing the effects of liquor. He

pulled a couple of sheets out of his bundle of records.

"'Here we are,' he said. 'Mr. W. O. French, Bassano—one calf. Your property will be down on to-day's way-freight, Mr. French; she'll be along in an hour or so. You'll wait, I suppose.'

"'Nacherally. Think I come in twenty-five miles for nothing?' said that individual sarcastically.

"'I come in for my calf, and I want my calf. You hustle that way-freight along, or I might easy get peeved and bust something.'

"He banged a horny fist on the ledge and glared at Jerry.

"Jerry jumped as though some one had shot at him.

"'I'll see if I can hurry them up a little, Mr. French,' he said nervously. 'It won't be long for you to wait, I'm sure.'

"French went out and slammed the door. I saw Jerry jump again; then he came out to me mopping his forehead.

"'Are all the farmers round here as abrupt as this Mr. French?' he asked me.

"'Oh, he's all right,' I said. 'He probably felt sick from the long, cold drive in and took a few shots of McPherson's medicine. Mebbe his hand shook and he got an overdose.'

"'Awful stuff, this booze,' said Jerry. 'It steals away a man's brains and his money and his courtesy, and his wife goes around barefoot; but I can stand that, all right, if the consumers around here don't feel obliged to come over here and holler at me like this party did. They make me nervous!'

"In about an hour the way-freight drifts along, and I helped the boys unload a calf—not a bad-looking little feller, either. We shoved him in the baggage and freight-room and tied him up. French didn't come back for some time; the boys had finished their work and pulled out of town before he came rolling in. I was sitting near the window, reading. He was pretty full. I think Jerry had seen him coming, 'cause he had locked the door leading into his office.

"He stopped and glared at me.

"'Huh!' he said. 'You work for this outfit, too? S' my calf here yit?'

"'Ask the agent,' I sparred back, and he went over to the window. Jerry beat him to it; he was standing there with the papers all ready.

"'All right, Mr. French,' he said politely. 'The calf is here and all O. K. No charges. One heifer calf; sign here, please.'

"French grabbed the papers, and I seen him spelling out some words, using his finger for a pointer. Suddenly he let out a big, wide cuss-word, rolled the papers in a wad, and heaved them at Jerry. Jerry ducked, but reached up and caught 'em neatly.

"'Out on first!' I chirped up; but they was too interested in each other to hear me.

"'What's the matter, Mr. French?' queried Jerry weakly. 'What sex was the calf you ordered?'

"'Sect!' blares French. 'Say, you little white-collared shrimp, you pestiferious agent of a one-horse railroad! Don't try none of your cheap jokes on me. Sect! How do I know? He may be any darn thing. I suspicion he's something; most calves generally take all they can get. What I want is the bull calf I bought from Ellis & Co., and I want him darn quick, if not sooner.'

"Jerry had his papers smoothed out again, but he was standing away back from the window, not taking any more chances from that farmer's talons.

"'You misunderstood me, Mr. French,' he said, his voice pretty wabbly. 'I meant, was it a male or a female animal? The bill here is very plain; it specifies one heifer calf. I'm awfully sorry, but I guess the shippers must have made a mistake.

"'I'll look the matter up for you, and we should have no trouble in fixing it up. You know you shouldn't blame the railroad for bringing what they gave them to carry. You better come back in about a week.'

"French's flow of language was something scandalous; I thought at first the station was liable to catch fire. But after a while he seemed to feel relieved, and banged out and went away. Jerry wasn't sorry to lose him, either.

"'That blame old ruffian ought to be locked up,' he said to me. 'It ain't any of my business to get him a new calf, but I've got no ability along the white-hope line, and the snow's too deep for running.'

"'Are you perfectly sure just what kind of a calf this is?'" I remarked. 'Come on out and we'll take a look at it.'

"It was dark now, so Jerry came along with the lamp. The poor little feller was

cold and lonesome and gaunt-looking. He stuck his nose in my hands, nuzzled around and tried to get hold of my finger.

"'He's hungry,' I announced. 'Also, this is a bull calf.'

"'How do you know?' said Jerry. 'The bill is very plain—one heifer calf.'

"'Oh, darn the bill!' I says wearily. 'I was hatched on a farm; you better beat it over to McPherson's and tell William O. French she is a he-calf, notwithstanding the bill.'

"Jerry took my word for it and headed for the store; he came back after a few minutes looking sad.

"'Mac says French started home fifteen minutes ago; also, he tells me that French said he was coming back in a week, and if I don't have the proper calf waiting for him he's going to burn down the station.'

"'Oh, well, never mind,' I said. 'It ain't your depot. The main thing for you to consider now is that you've got to be cow-mother until he comes. This calf animal is getting cold and hungry; unless you get him in here where it's warm and rustle up something for him to Fletcherize, you'll have nothing but cold veal in the morning.'

"It was time for me to be getting in the hay, so I sauntered over to our castle, leaving Jerry and the calf to their own private troubles.

"When I drifted back next morning I find calfy tied to a table in Jerry's office. Jerry was asleep. The place looked as though somebody had slipped in a couple of barrels of milk and lammed them with a torpedo. I took a look at the message file; I knew Jerry always kept a copy of all the messages he sent or received. There was quite a tidy little bunch for one night.

"No. 1 read:

"General Freight-Agent, Calgary:
"Beg to advise have one bull-heifer calf on hand. Owner will not be in for a week. Kindly wire instructions.
"OWEN.

"No. 2:

"J. OWEN, Agent, Bassano:
"Not interested in compound calves. Working for a railroad, not a side-show. Feed it.
"WILSON, G. F. A.

"No. 3:

"General Freight-Agent, Calgary:
"No farming experience. What do calves eat? This consignment bawling scandalous. Rush reply.
"OWEN.

"No. 4:

"J. OWEN, Agent, Bassano:
"Farming experience not necessary; try brains. Feed it the same as you got when you were young. Don't wish any further communications to-night.
"WILSON, G. F. A.

"No. 5:

Chief Despatcher, Calgary:
"No fresh milk in Bassano. Will condensed satisfy calf? Important; please reply.
"OWEN.

"No. 6:

"J. OWEN, Agent, Bassano:
"Try it and then ask the calf.
"L. R. C. DESPATCHER.

"When I started to laugh Jerry woke up. He was rather worried-looking; also some dirty. It was no trouble to see he had been mixed up in that milk explosion.

"'What you been trying to do?' I asked. 'Have a milk bath, or were you and the calf putting on a four-round wrestling-match?'

"Jerry grinned a little.

"'We sure had a sweet time around here last night, all right,' he said. "I took some condensed milk and stirred it up in a pail with a little water, and tried to induce this animal here to eat the same. There was absolutely nothing doing. He was quite willing to chew off my clothes, and he butted the wind out of me three or four times, but the milk was on the black-list right.

"'I got sore finally and rammed his head down in the pail, figuring he'd have to drink or choke. That didn't work, either. He got all excited, and knocked me down and walked on me; then he got the pail around his neck and threw milk all over the scenery, including me as part of the scenery. You can see that for yourself.'

"'Yes,' I said. 'I can see. Did you give him your finger to help him to start to drink, and did you warm the mixture?'

"Jerry looked at me with a grieved expression.

"'I wish you would have come across with some of your valuable knowledge a little sooner. It would have saved me a lot of trouble—also the calf.'

"Well, to hurry along, I finally took pity on the both of them, and after considerable skirmishing I got calfy to empty his pail. Jerry wanted me to take him over to our shack and be godmother the rest of the week, but the idea didn't appeal to me.

"It stayed stormy and bitter cold; there was only the one stove in the station, so Jerry and the calf just naturally had to live together. This was great dope for the calf, but it didn't seem to make such a hit with Jerry. Before the week was up he was near desperate. McPherson sold for cash only; Jerry had bought near all the canned milk he had, and his funds were getting low.

"Also, calfy used to get lonesome nights, and when Jerry was trying to sleep he would get busy and make a noise like an orphan asylum. I could hear him clear over in our car, nearly a block away; so it must have been sweet music for Jerry's dreams with him right alongside of the noise factory. Also, he got loose one day and ate up a couple of pairs of Jerry's socks and the sleeves and pant-legs of his best suit. Evidently he liked the clothes the best, although, just to show he wasn't playing favorites, he took a few sample bites out of most of the office stationery.

"That stunt near broke Jerry's heart; the next day he rapped out another message:

"General Freight Agent, Calgary:

"Re me and that calf. Who will pay milk and damage bills $18? Expect owner in tomorrow.

"OWEN.

He showed me his answer in the afternoon:

"J. OWEN, Agent, Bassano:

"Will expect you to collect storage charges and expense bill from owner as per schedule. Best regards to the calf.

"WILSON, G. F. A.

"Jerry looked peeved.

"'That's all right,' he said, 'for him to tell me to collect from the owner. I'll bet he don't figure how this wild and woolly French person will act when I show him a bill for eighteen dollars expenses. I wrote him there was a bull on the bill or it wouldn't have happened.'

"I saw a chance to be funny.

"'It wasn't a bull,' I said. 'It was a heifer.'

"But Jerry never smiled.

"'Do you think this William O. French will get mean?" he asked me earnestly.

"'He sure will,' I said, more to bother Jerry than anything else. 'If I were you I'd get out some artillery and practise up.'

"Jerry didn't buy any gun, but he spent the most of the afternoon fixing up the shutters on the office windows. Also, he put some extension cords on his telegraph machines so he could put them on the floor under his desk. I was laughing up my sleeve. I figured Jerry was having heart-trouble for nothing; it developed that I wasn't near as wise as I thought I was.

"The next afternoon French came stalking in. Jerry had seen him coming, and he locked his office door and slid down the grill over the ticket-window opening. French sure looked cross when he come in; he stuck his head right against the bars and opened up.

"'Say, feller,' he says, 'you're a bright, shining specimen of an agent, ain't you? Was you born that way, or has it growed on you gradually? McPherson tells me that calf that came last week was mine all the time, and you read a pesky piece of paper instead of looking at the calf. I've a good mind to sue you and this railroad for damages.'

"He hit the ledge a sudden whack.

"'Come through, now, with that calf, and no more shenanigans.'

"Jerry was pretty scairt, but I saw him looking over at his pile of milk-tins and his frazzled suit, and it must have give him some extra courage. He bucked up and retorted:

"'I'm not responsible at all; the mistake was at the other end. Also, I've been having more trouble taking care of that cussed animal than I ever had in one week before in my life. You pay me eighteen dollars for feed and damages, and you can have the blame thing and welcome. I won't say anything about storage charges; I'll be too glad to get rid of him and get a night's sleep. I haven't had any for four days.'

"I couldn't see French's face, but I heard his mouth open. He gave a sort of a wheezy gasp. Jerry backed away where French couldn't reach him.

"'Say!' French began, his voice heavy with sarcasm. 'Do you think I'm a fool just because you are? I wouldn't pay you eighteen cents, let alone eighteen dollars;

and if that calf ain't out here when I fetch the team over I'm going to just nacherally clean up the works around here. Did yo' get that? I guess you figure I'm a feeble-minded invalid riding up and down these here prairies for the good of my health. Well, I ain't; see!'

"He grabbed the bars and rattled them viciously. Jerry jumped.

"'Ha!' said French. 'I see you're a coward as well as a fool. I'll be back before long, don't you fret.'

"He started for the door, but turned and finished:

"'And I'm bringing a gun.'

"He went out.

"I could see Jerry peeking out after him, and then he come sliding out and locked the outside door. If Jerry could have seen it that way he could have gone out in the snow and lost himself, he was that white.

"Even now I wasn't figuring on anything but a bunch of hot air, so I thought I would stay and see it out. We closed up the shutters, and Jerry coupled up his extension cords and put the instruments on the floor. Calfy was snaked out in the baggage-room and tied up in a corner.

"It was pretty dark in the station now, and still—just like the quiet spell ahead of a big storm. Jerry switched in his key and started ticking a message to Calgary. I could read the Morse pretty well through so much hanging around the station, so I made out the most of it:

"General Freight Agent, Calgary:

"Re me and that calf again. Owner here, but refuses to pay feed or damage bill. Gone for reenforcements and siege guns. Answer. Rush.

"OWEN.

"Jerry had served a term or two with some militia corps, so in the present excitement he fell naturally into war-talk. It seemed a long time before he got an answer, but I don't really suppose it was much over ten minutes. The boss in Calgary must have fallen in with Jerry's mood, for this is what came:

"J. OWEN, Private, Bassano:

"Hold the fort, also the calf. Capture owner and talk him to death. That will be easy for you. Your honor is at stake, also your eighteen dollars.

"WILSON, General Commanding.

"'Darn funny, ain't he?' said Jerry. 'I wish he was here, and maybe he wouldn't be so fresh.'

"Just then we heard heavy steps on the platform. Somebody kicked the baggage-room door.

"'Open up here, you ossified runt,' yelled French, 'and give me my property! I won't stand no more monkeying.'

"We kept quiet.

"'Open up!' he yelled again; and I'll be struck by lightning if he didn't open up and send two or three bullets smashing through the door.

"You can just bet I had never figured that crazy rube would go that far, or I would have been on my way long before when the going was good. I got down under the desk to keep Jerry company; he looked sort of lonesome. We could hear the calf tromping around and blatting something fierce. Jerry grabbed his key again.

"Chief Des. and G. F. A., Calgary:

"Enemy has opened fire. Has plenty of ammunition and seems to mean business. In no position here to stand bombardment. Orders, please.

"OWEN.

"The boys must have been sitting right on the wire, for this came back immediately:

"J. OWEN, Private, Bassano:

"Honor is dearer than life. Remember the Maine, also the Alamo.

"L. R. and WILSON, General Commanding.

"Jerry swore.

"'Listen to the comedy,' he said. 'Ain't they funny?'

"Just then a bullet came smashing through the office window and plugged into the clock. The breaking glass made an awful racket. Jerry and I got so far down on the floor we must have looked like a couple of cracks upside down. I'll bet a caterpillar could have crawled over us without ever noticing the bump.

"'Yip! Yip! Yip! Hooray!' yelled French, sending another reminder through another window.

"'Say, Jerry,' I ventured, 'discretion is the better part of valor. Ain't there a cellar in this castle with a hole in it? I don't mind dying for my country, but I hate to die for a bull-calf.'

"Jerry didn't answer; maybe he couldn't; but he lifted up one arm a little and the key talked again:

"Calgary:

"Enemy battering at our gates. Windows all busted. Also clock. Situation acute. I would sooner surrender calf than be shot. Help.

"OWEN.

"All the time he was sending this French was kicking at the waiting-room door. He was a fair-to-middling kicker, too; you could hear the panels cracking, and the whole blame wall shook. 'Tween spells he would send a bullet or two through the door; he plugged the stove-pipe and some pictures of a herd of steamboats, and the racket seemed to please him.

"'Open up!' he yelled. 'You lanky, whitewashed son of a lop-eared coyote! Open up before I lose my temper and start something!'

"'Say, Jerry,' I said, 'it would be tough if that farmer would get mad, wouldn't it?'

"I guess the gents in Calgary must have just got wised up that something was really on down in our parts, for their answer came, sharp and quick:

"J. OWEN, Bassano:

"Will hold you personally liable for damages to company's property. Give the man his—

"Just then there was a wild crash in the waiting-room. We knew French had got tired of kicking at the door and had broken in one of the windows. Jerry and I beat it out in the baggage-room; that left us still two doors to the good. Neither one of us fancied being prisoners of war to a crazy man.

"I slipped up the bolt and shoved open one of the outside doors — the one that opened on the front platform. There was a train just going by—No. 13, a through train. She wasn't a really fast train, though; she never went through much over thirty miles an hour. Jerry shoved me to one side and stepped right on, just as easy as a post-graduate shack.

"After Jerry quit me I felt sort of lonesome, so I moseyed over to the shack to write some letters. Next morning, just out of idle curiosity, I measured my footprints in the snow. They averaged close on to fourteen feet. As I remember it, I didn't hurry any, either.

"Jerry never showed up in that neck of the woods again; the last I heard of him he was engaged in the peaceful and gentlemanly pastime of raising ducks."

Frank got up.

"Well," he said, "that's the end of that story. I heard Mother Smith's bean-bell some time ago, so unless you figure on getting in on these home-grown biscuit-shooters' black-list, we'd better be hiking."

Nobody said anything for a moment; there didn't really seem to be much to say.

"You win," Rorry ventured at last in a weak voice. "But say, Mr. George Washington Wilson, what about the calf?"

Frank turned.

"Boys, that's the sad part of the story. I aimed to leave that out, not having any desire to be a gloom agent. The calf was dead—deader than a bunch of day before yesterday's orders. He quit this vale of tears and bum coal during French's bombardment of the baggage-room door. The coroner said calfy had a head-on with a bullet."

THE RAILROAD OF THE FUTURE.

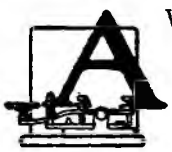
A Prophetic Vision of America's Progress in A.D. 2416, as Seen by Warren Noble, Noted Engineering Authority.

CONSERVATION TO BE THE KEY-NOTE.

Railroads Will Run on Viaducts over Cities, Terminals Being Located in the Air—Mail to Be Transported in Special Automatic Monorail Trains—Noiseless Cities, Roofed with Glass—Aerial Transatlantic Service.

As related by Mr. Noble to

GEORGE ALLAN ENGLAND.



A WORLD of miracles and astounding developments, with huge, block-shaped, glass-roofed cities, stupendous viaducts and deep tunnels, with complete mastery of earth, sea, and sky, and with man everywhere absolutely dominating his environment—such is the world that Warren Noble painted before my mental vision, the other day, as we smoked many black cigars and let our imaginations riot all over the universe.

Imaginations? No, I err. Perhaps I did a bit of imagining; but Noble sleuthed facts to their ultimate lairs, dragged them forth, and exhibited them in their last analysis. His mind, keen as a razor-edge, ruthlessly cut down many of my suggestions. Noble is interested only in facts.

That is why his predictions bear more weight than even the most ingenious dreams of the fiction-writer. From the facts of the present he can construct the facts of the future.

Let me paint this fact-world of the year 2416 before your eyes.

We began, of course, with transportation, undoubtedly the greatest material factor in any civilization. Transportation, then as now, is going to constitute a tremendous problem. Civilization advances only as fast as its methods of transportation advance; the two go hand in hand. In the world of five hundred years from now, all passenger traffic will enter the cities far above the surface and work down, instead of arriving on or below the surface and working up. The railways—for there will still be railways—will be located on the surface only when outside the metropolitan areas.

Aerial Passenger Service.

At some distance from the cities, these lines will soar aloft on huge viaducts. The terminals, as also the aero-line landing-stages, will be on the roofs of the cities—whereof more anon—and from these terminals and stages the passengers will descend to their homes or offices on swift and noiseless elevators or moving inclines. A sufficiently striking idea, is it not, to satisfy Jules Verne, H. G. Wells, or any other prophet?

"How about freight traffic?" I inquired, reaching for another of Noble's excellent smokes.

"That, of course, like all heavy hauling," he answered, as he stretched himself out more at ease on his hotel bed and fixed his eyes on the ceiling, "will continue to be done on the surface. Near the cities it will burrow underground, and then the freight will be brought up from the freight terminals.

"There will never be any chance whatever of aerial freight service. Its cost would be absolutely prohibitive."

We spoke of costs, the prime factor in all mechanical development. Noble does not believe that the cost of freight shipments will be much reduced, if at all. As for passenger traffic, he thinks it will greatly increase in cost; but this cost will be amply justified by increased speed and comfort. Though freight service will always be slow, the methods of distribution will be vastly improved.

One radical change in railroads will be the introduction of tremendously heavier permanent way, with a much wider gage. The six-foot gage will probably come to be a universal standard all over the world, resulting in great economies and improvements of service.

Automatic Monorail Trains for Mail.

"And the monorail?" I suggested.

"Will never be used for freight service, at any rate," he replied. "One trouble with monorails is that the capital expenditure is too high."

I pointed out that stability might be attained, and that monorail cars might ride more easily than the ordinary type, but he countered with the objection that in monorail service the traction is less. Loss of traction spells increase of cost—and that's the answer.

"There may, however," Noble thoughtfully added, "be separate monorail roads, electrically operated and given over exclusively to mail service. I go further; there probably will be such roads. They will doubtless be overhead roads, with automatic trains not operated by engineers, but running under electric control, at—let us say—five-minute intervals.

"Thus there will be no mail delays. The speeds will reach two to three hundred miles an hour, and the trains will consist of groups of cars which can be picked up or dropped, while running, by the 'slip-coach' system already used in England. This slip-coach arrangement, by the way, will also be employed for the regular passenger service. This will vastly lessen the running time and the consumption of energy, as serious losses of time and energy are caused by stopping and starting at intermediate stations."

Rolling-Stock Will Change But Little.

The ordinary rolling-stock of the railways of A.D. 2416 will not differ much from that of to-day, save in minor improvements looking toward greater safety and comfort. All traction, of course, will be electric.

Accidents will never be entirely eliminated, but will certainly be reduced to a minimum by increased efficiency and by automatic stopping devices. When an accident does occur, however, at the high speeds of the future—"good *night!*"

The average speed for passenger service will be about one hundred miles an hour, with possibly some exceptional service even faster. Freight service will not be much more speedy than now, except when handling perishable goods. The farming operations of the distant future will be far more intensified than to-day, and "pick-up" systems will bring farm products to the city with wonderful precision and rapidity.

The passenger and freight trains of the future will continue to be run by engineers, and not automatically, as in the case of mail trains. Of course, under the conditions of speed that seem certain to obtain, two engineers will be employed on every train, with control in duplicate. This idea, of course, is by no means novel. It is likely to be adopted within the next few years, the item of cost being all that even now prohibits its introduction.

Noiseless Cities in the Future.

Where subways are used for freight traffic in cities, these subways will be taken down two or three hundred feet below the present level. The tremendous surface loads of the future will require this to be done, and also the imperative demand for silence.

Everything, in the future, will tend toward silence, as the sensitiveness of the human race increases. Even a century from now noise will be considered a barbarity. Quiet cities, above all, will be a prime necessity of life.

"So, then," I interjected, "in A.D. 2416

the roar of city traffic will no longer be heard?"

"Absolutely not," affirmed Noble. "The logical progress of all mechanism is toward efficiency. Noise means inefficiency in everything."

"Due to lost motion?"

"Precisely. Noise means vibration, which consumes energy. Dissipation of energy, in noise, means lack of energy for useful purposes. It never will be tolerated in the scientific, efficient civilization of five hundred years from now."

I pondered all this, and then put another question:

"How will the swift, heavy trains of that day be controlled in stopping? Will the system of braking be different?"

Braking-System to Be Different.

"Very likely. Of course, friction braking will not disappear, but the control of it is bound to be electrical. Also, friction braking may be supplemented by electrical braking," added the consulting engineer. "That is to say, it can be, and probably will be, effected by the generation of electricity from the kinetic energy of the moving train."

"And might not such electricity be transformed to do some useful work?" I asked.

"It might, but I hardly think it will be. You see, the supply will be too unsteady, too indeterminate; and then again, too, the question of cost militates against any such scheme. The expense of saving, transforming, and storing such electricity would be so great as to make it not worth while."

We passed, by a natural transition, from the subject of railroads to that of water and aerial transportation. The liner of the future, according to Noble, will be vastly larger than anything known to-day, running well up toward four thousand feet or more. It will be perfectly clean above-deck; that is to say, there will be neither masts nor funnels projecting to offer resistance. It will be driven by internal combustion engines; but of this subject let us speak later, under the head of "Power."

Aerial transportation will have become a trite commonplace centuries before 2416. Transatlantic service by aero lines will become a mere matter of course. This development, in fact, already stands on the threshold of the actual.

The planes will be vastly larger than anything we have to-day, and the bodies will be constructed like those of submarines. Interior air-pressure will be maintained in these bodies similar to that of the air at the earth's surface, for the convenience and comfort of the passengers, so that without any difficulty whatsoever the air-ships of the future can travel at altitudes of eight to ten thousand feet. Higher travel than this is not to be anticipated, generally speaking, as it would involve troublesome power problems.

"And how about dirigibles?" I queried.

"Nothing doing!" answered Noble. "They're impracticable for very high speeds. No; planes will do the work, and do it cheaper and better."

"And what will be the average running-time to Europe?"

"About fifteen hours. There will be regular packets every three or four hours to London, Paris, Buenos Aires, and other large cities. Night packets to Europe will be well patronized by those who don't care for the trip and can't afford to lose time.

"Many lines will be established; in fact, the whole globe will be netted with them. Swift passenger planes will be coming and going constantly from every quarter, and mankind will simply forget that such an obstacle as distance ever hampered communication. In those days, of course, there will be no unexplored areas to visit. The entire surface of the earth will be known and mapped. The terrestrial unknown will have absolutely disappeared.

Vast Block-Cities.

"Of course, you understand," Noble continued thoughtfully, "that when I speak of New York, London, Paris, or any other great city of the remote future—and their names will be legion—I have in mind a very different proposition from the weather-exposed, hit-or-miss, noisy, dangerous, and troublesome affairs we call cities to-day. A medieval city was no more insanitary, unscientific, and inconvenient, as compared with one of 1916, than our present cities will seem, in retrospect, to the men of 2416."

"And what will be the main distinguishing features?" I asked.

"Height and the roof."

"So the cities of the future will be vastly taller, and will be enclosed?"

"Precisely," Noble affirmed with con-

WARREN NOBLE, AN ENGINEERING AUTHORITY WHO MAKES SOME REMARKABLE PROPHECIES BASED UPON SCIENTIFIC PROGRESS

fidence. "The necessity for business concentration and for the physical delivery of securities will make land very much more valuable in cities than at present."

"Provided, of course," I objected, "that an entirely different social system doesn't in the mean time completely alter business, as we know it, and substitute collectivism for competition."

"That may happen; but assuming that we still retain competition, then land values will greatly increase, and with this increase will come a tremendous development of sky-scrapers. Ease of communication will require them to be connected at all floors by means of bridges, and also underground by tunnels.

"These buildings will run up fifteen hundred feet or more; and all of them in one area will be of the same height, not of conflicting heights, as to-day. Of course, the government will far exceed in powers our present government, and will control all building laws. It will regulate heights and other dimensions and specifications. Thus the city of the future will be a vast cube, wonderfully interknit."

"There will be no end of new devices?"

"Naturally. One of the most important will be electric selectors, on which tenants can plug in and thus locate any other tenant at will. Elevators, too, will be vastly improved in speed and efficiency. And that reminds me; do you know that already some two per cent of all power used in transportation is expended vertically?"

I didn't know it, and said so.

"It's a fact," declared Noble. "And this percentage in future is likely to become very much larger. But to return to our muttons—our 2416 sky-scrapers, that is. These huge piles will be far safer and more stable than now; in fact, quite proof against storm, earthquakes, or any natural force, because of being all joined together and also all tied to the roof of the city. Thus they will be supported all the way up, right to the roof."

Glass-Roofed Towns.

"The roof? You really mean to say the cities of the future will be roofed over?"

"Absolutely!" declared Noble, with conviction. "The huge city-cubes will be entirely covered with a glass roof."

"Removable?"

"No; permanent. Arrangements of shades will guard against excessive heat or sunlight. Rain and wet streets will be things of the past, as much as open sewers are with us. Mud, snow, and slush will no longer discommode the men of that era. There will be arrangements for melting snow on the roof and draining it off. And, of course, there will be ventilation by means of huge fans, supplemented by natural drafts, which can be changed according to the direction of the wind.

"Roadways and thoroughfares will be established on the city roof. It seems obvious to me that this will make an ideal place for motoring, and much of the local traffic of the city will be carried there. The glass and steel construction should make an excellent roadbed. The routing of vehicles, of course, will be over the buildings forming the pillars which support the roof.

"As a matter of fact, it is probable that in the city of the far future there will be four or possibly five traffic levels, all connected together both by elevators and also by inclines. Vehicles will pass from level to level by both means as easily as passengers.

"Moving roadways will probably convey them up or down with expedition."

With the assurance of a master-mind which quite clearly foresees the inevitable, Noble sketched in for me some salient features of the cities of 2416. The first requisite will be an absolutely fireproof construction. Conflagrations will have become catastrophes as remote in those days as an incursion of wolves would seem to-day on Fifth Avenue.

Good-by to Fire-Insurance!

Everything will be built of glass and metal. Wood will be entirely discarded. Even furniture will be metallic—no doubt treated by new processes to imitate wood, rattan, and so forth. Other new processes will bring aluminum and magnesium alloys into use for all domestic purposes. It will be a bad era for fire-insurance companies. They will all have gone into the discard long before the year 2416.

Glass, constantly improving, will become almost non-breakable. It will be nearly as durable and tough as metal. Noise, as we have already seen, will be abolished. Pavements will be constructed of some shock-deadening material. Horse traffic will long since have disappeared, thank Heaven! and motor traffic will neither be permitted to honk nor smoke—it will, in fact, be entirely electric. Many streets will have moving pavements and sidewalks, with ingenious transfer-stations where passengers and vehicles can change direction or level.

"How about the railway terminals?" I queried.

Mr. Noble promptly replied:

"Freight will come in through subways to huge depots and then work upward," answered Noble. "I have already indicated this. Passengers and mails will arrive on the city roof and be distributed downward."

"That is to say, the great passenger terminals, the Grand Centrals of the future, will be on the roof?"

R. R. Stations 1,500 Feet in Air.

"Yes, that is bound to be the arrangement. I repeat my belief that there will be huge railway stations fifteen hundred or more feet aloft, and also vast landing stages for the aerial traffic. Every city roof will be a center for converging lines of traffic.

"Trains will be constantly coming and going at high speeds and with wonderfully quick stops. They will rush over the gigantic spans of the viaducts that will stride 'cross country till they sink to the ground level; and overhead the dwellers of the future will behold swift-speeding air-craft swooping down to rest, or springing aloft for their regulation runs at vast altitudes."

The prospect opened out an inspiring picture to my mental vision. I pondered it a few minutes, then fired another question:

"What will be the motive force of all this tremendous activity?"

"Electricity," answered Noble, "supplemented by internal combustion engines."

"Gas engines?"

"Yes. Of course, coal may have disappeared long before 2416, but that won't make any difference. There will be plenty of gas, nevertheless — gas to burn, so to speak. Ocean-liners, for instance, will be driven by producer-gas engines, making their own gas on board."

"Yes," I put in; "but if the coal is all gone, what source of supply will be available for gas-production?"

"Waste products of the soil. Corn-husks and stalks will be transformed into gas, which will be condensed and stored for use whenever needed."

"You mean, we shall have blocks of solid gas?"

"Practically that. They will be articles of commerce then as much as bricks are now. Of course, I may be wrong about the disappearance of the coal supply. New fields may be discovered, especially

at the poles, which will indefinitely continue the output.

"In that event, power-plants will be established at the mines, running with engines that burn the coal-dust itself to produce power, instead of burning the coal to make steam in the present wasteful manner. This power will be transformed into electricity, and will be transmitted long distances at a very high voltage, probably as high as two hundred thousand volts."

We passed to the subject of ship-propulsion. For a long time I have cherished a pet project of my own—ships built with long tubes lengthwise below the water-line, in which tubes Archimedean screws, swiftly revolving, would (in my imagination) propel the ships at dizzy speeds. Noble, with a bland smile, very promptly knocked my idea into a cocked hat.

"The plan has innumerable objections," said he. "No; the ship-propulsion of the future will continue to be, as now, by means of regulation screws. Nothing better can be devised. The screw is an ideal mechanical device for applying thrust to water. But the screws of the future will all be driven by high-power turbines.

Turbine Ships for Export Freight.

"I do not look for any wonderful gain in speed, as that would mean a tremendous increase in cost. Resistance increases roughly as the cube of the speed, you see. But turbine engines will afford great economies of space for freight — and nothing but freight will be carried on the ships of A.D. 2416. All passenger traffic, of course —or nearly all—will be aerial."

According to Noble, the matter of coal exhaustion is, after all, of minor importance. The natural resources of the world, in the shape of water-power, will never fail to meet every demand for power-production. Tide-motors and air-motors will play but a minor part; water-power alone will suffice for every need. The direct energy of the world's water supply, falling from the water-sheds to the ocean, will be adequate for every purpose of lighting and transportation.

For some time I have been nursing another pet idea—the wireless transmission of power. Noble, however, destroyed my hope in a jiffy.

"Nothing to that!" he decisively exclaimed. "I see no chance whatever of such transmission of electrical energy becoming a commercially practicable fact. It would be too costly, as its efficiency must of necessity be very low. Then again, if energy were universally distributed through space, there would be no way of protecting the rights of the legitimate consumers as against the incursions of power-thieves. All kinds of people would 'cut in' and steal power—and there you are."

"Yes; but wouldn't power be free to all, under the conditions of the year 2416?"

Wireless Power Transmission a Dream.

"No. Taxation could never be so adjusted as to make such an arrangement fair to all. One man might use a million horse-power, while another might use only ten. Of course, such men could be proportionally taxed; but how about the 'wireless-tappers' who would steal power and evade taxes? No; the wireless transmission of power for commercial uses is highly improbable."

This suggested an idea. I asked:

"Something the same objection might be put up against wireless telephony. Would it not destroy privacy?"

"It surely would," answered Noble. "And for that exact reason I don't look for any very extensive development of it for a community system. The wireless telephone for general use, like the wireless transmission of power that our futurist novelists like to talk about, will be more honored in the breach than in the observance five hundred years from now."

Universal Communication.

I granted that wireless telephony and power transmission wouldn't work, provided private ownership still persists in the year 2416—which I don't believe it will. This led to a discussion of wire-transmitted speech. And here Noble was enthusiastically certain vast improvements would be made. Just in passing, I must say that Noble is no dreamer, but a doer. Any novelist can spin loftier air-castles and evolve greater wonders than he on paper; but Noble's ideas are built on logical foundations. That's what makes his account of the future civilization so interesting.

However, I digress. To resume:

"So, then, there will be tremendous improvements in telephony?"

"There surely will. Greatly perfected connections will do away with all vexatious delays. Telephoning will be as easy, simple, and direct as personal speech. Delays are to-day caused not so much at the switch-boards as by the 'tie-up' of wires. We shall have multiple systems, and also telephone circuits capable of handling a greater number of variations.

"Several messages will travel over the same wire at the same time, going in the same or in opposite directions. There will be no conflict of messages. Of course, all wires will be placed underground, in conduits, safely removed from weather interference. Messages will be selected out and properly delivered. There will be no danger of Jack's message to Sally being overheard, for instance, by Margaret. Another thing you want to remember, long-distance transmission at special, high rates will entirely disappear."

"How so?"

"There will be a universal rate all over the world. Just as a two-cent stamp to-day carries a letter to Hoboken or to Alaska for the same price, so in the year 2416 you can telephone Hong-Kong as cheaply as you can Yonkers."

"Hong-Kong?" I queried in some surprise. "You mean that there will be telephone communication all over the world?"

Can Phone around the World Then.

"Precisely that," affirmed Noble, aiming an arrow of smoke at the chandelier. "In those days you can call up Tibet 2345 or Patagonia 6789 just as quickly and easily—and as cheaply, too—as you now call up the RAILROAD MAN'S MAGAZINE. This universal system, like the telegraph system of the world, will be owned by the governments of the different countries. All these governments will pay subsidies to these systems."

I, as a socialist, took heart at this prophecy. I immediately edged in with a leading question:

"And will the service be free?"

"I hardly think so. No; the subscribers will still have to pay, though the rate will be low. Incidentally, every room of every house, in those days, will be fitted with a telephone. The telephone will be as much a matter of course then as windows are to-day.

"And that reminds me of something I meant to say when we were discussing city-building. Every community will have garbage-conveyors, like sewers, to carry all garbage to central stations, where it will be used for generating producer-gas for light and power. The gas produced by a city's garbage will drive electric-lighting plants. Thus the community's waste products of all kinds will help keep the community well lighted at a minimum cost. To-day we tow our garbage out to sea and dump it—a total waste of great resources. The civilization of the future will be wiser than that and more sanely economical."

Abolishing Night.

"Good idea," said I. "All lighting will be electric?"

"Yes, using some kind of electric vacuum system. The lighting tubes will be installed along the cornices of buildings and rooms, and will give indirect light from invisible sources. Great increases of efficiency in lighting devices will enable us to use nothing but the indirect system—far superior to the direct and much less trying to the eyes.

"There will also be luminous walls and streets. Pavements, sidewalks, walls, and everything may be made to glow. And this light will be entirely cold."

"A more economical form?"

"Yes," answered Noble. "More energy will be used for light and less for heat—practically none at all for heat in the lighting systems. The city dweller will always have plenty of light. Work can be carried on right through the twenty-four hours. Life, in fact, will probably cease to differentiate day and night to a considerable extent."

"You mean that in the cities of the future there will be no bad weather, no rain, snow, mud, cold, or darkness?"

The scientist nodded.

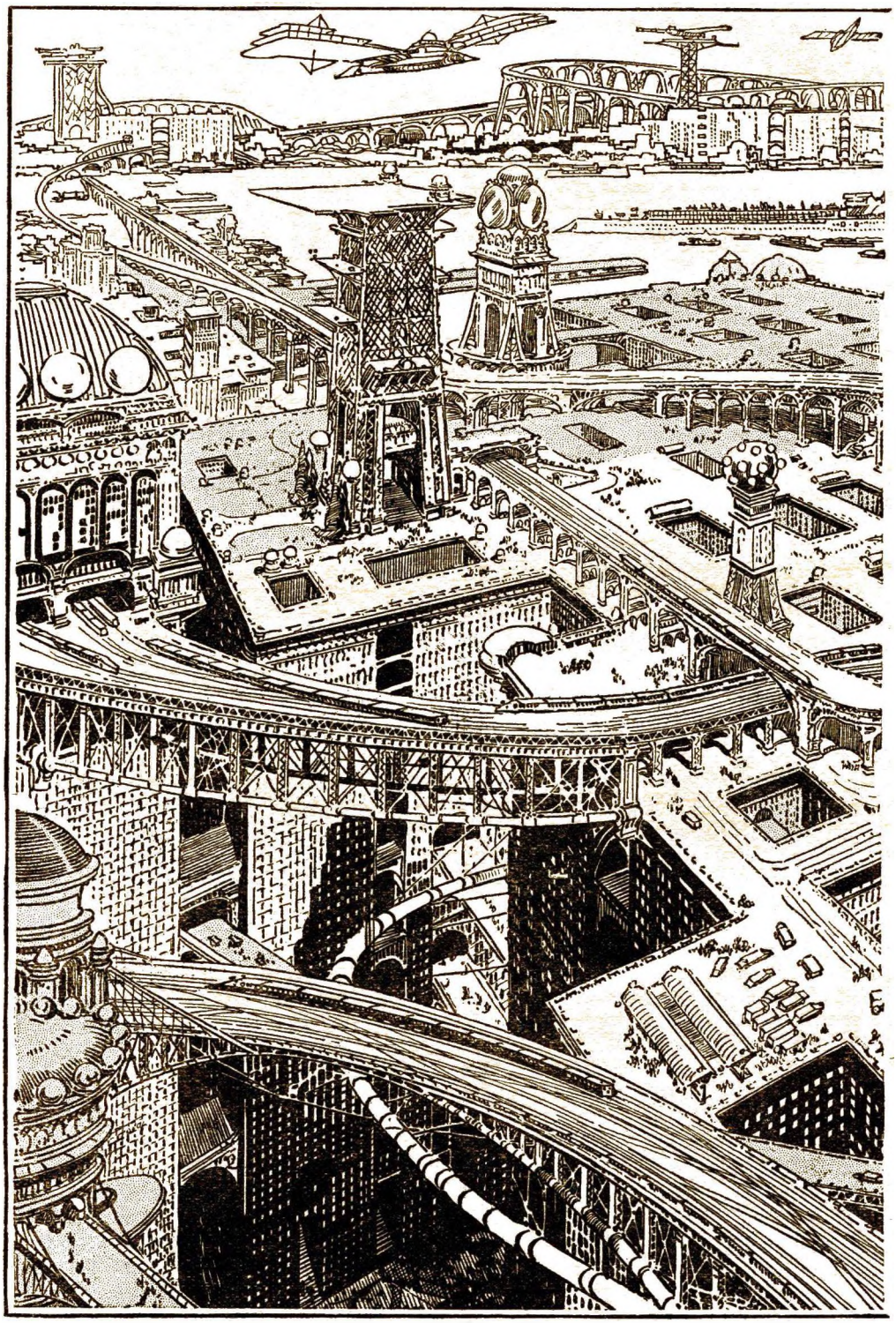
"No night at all?"

"No night."

No Universal Language.

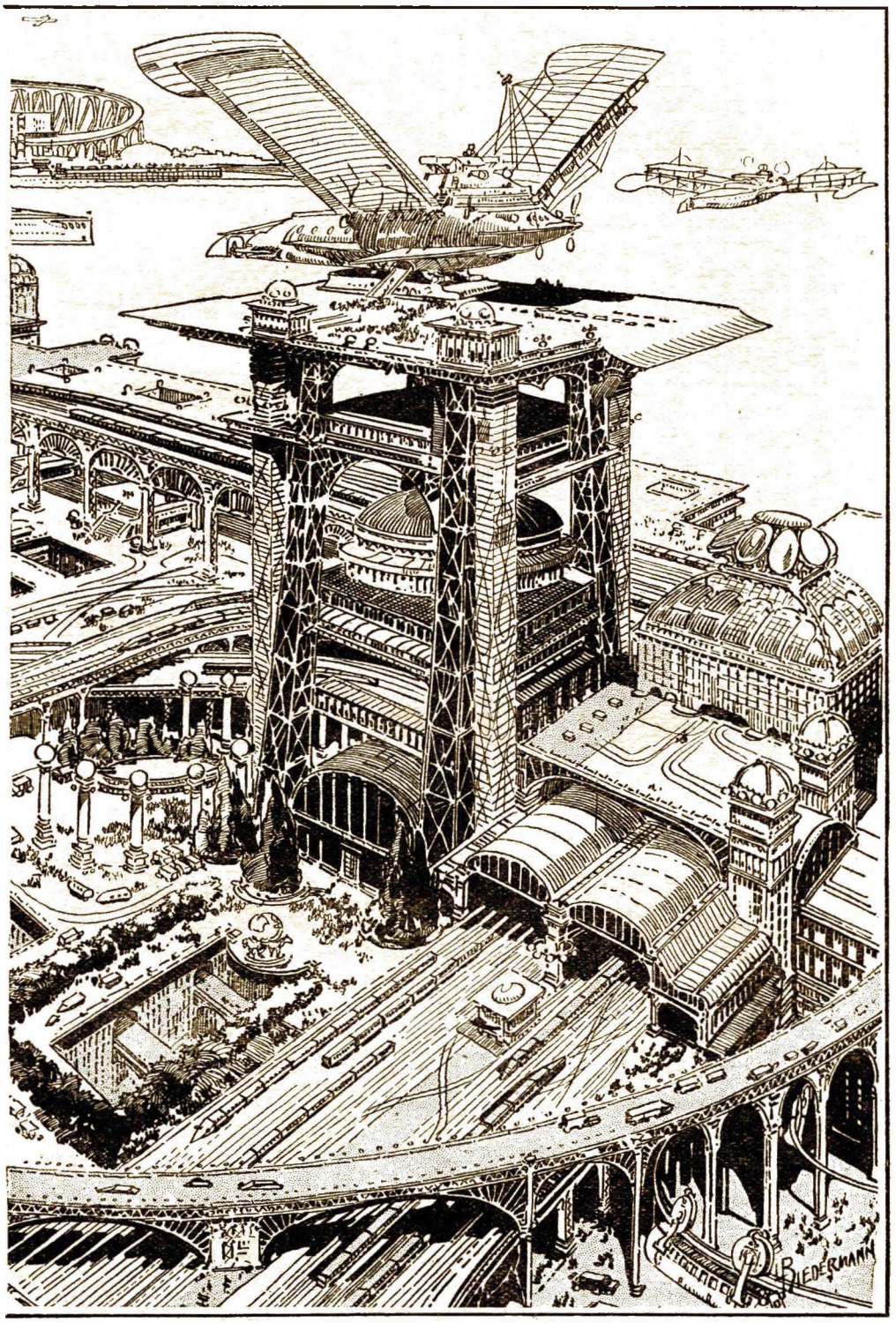
"What," I asked, "will be the effect of all these strange innovations on the human race? For instance, will universal telephony introduce a universal language? And will the extension of machinery enfeeble mankind? And will—"

"Hold on! One thing at a time!" Noble interrupted, smiling with amusement. "In regard to the universal lan-



SUCH A VIEW OF A GIGANTIC FUTURE METROPOLIS MAY APPEAR FANTASTIC—

"ALL PASSENGER-TRAFFIC WILL ENTER ON HUGE VIADUCTS. THE TERMINALS, AS ALSO THE AERO-LINE LANDING-STAGES, WILL BE ON THE ROOFS."



—BUT IT IS CLEARLY FORESHADOWED BY OUR PRESENT SCIENTIFIC ADVANCE.

"FREIGHT-TRAFFIC WILL CONTINUE TO MOVE ON THE SURFACE. NEAR CITIES IT WILL BURROW UNDERGROUND AND THE GOODS WILL BE HOISTED TO THE STREET LEVEL."

guage proposition, no, I don't take any stock in that. I don't expect to see Esperanto drive the great modern languages into the discard. They will persist, just as the principal races will persist, indefinitely.

"I hardly think there will be a world federation of nations, except possibly for trade purposes or communication, or something of that sort; certainly no central world government, with the various nations as states in the league. All the larger nations of to-day will be extant in 2416.

"If any language at all takes precedence, it will undoubtedly be English, because that seems the best tongue for business purposes; and business efficiency, brevity, 'pep,' will be the order of the day."

"Now," I queried, "as regards the physical characteristics of mankind, will the superior civilization of that age weaken the human race?"

"That is hard to say. One thing seems certain: there will always be the necessity for a certain amount of hand labor. That can never be totally eliminated, though all laborious tasks will be rendered more facile. In the building trades, in excavating and the like, men must always use their muscles. Still, in many lines of work, physical exertion is bound to be greatly diminished."

"So then," I suggested, "people will have to take exercise voluntarily to keep from degenerating?"

"It looks that way. As our knowledge of natural forces increases, the necessity of walking—for instance—will diminish. Men will have more leisure for exercise, which will be taken under ideal conditions.

Natural Forces Will Diminish Exercise.

"Every city will have public exercise-halls, or parks, or something of that sort, with health-giving, disease-destroying rays constantly shining there. These will be open to the public, free of charge; everybody can go there for exercise and rest. The light-rays, or electric vibrations, or whatever they may be, will destroy micro-organisms, repair bodily damage, and stimulate growth.

"Less exercise, under these conditions, will be required for the same effect than is now required. In other words, natural forces will give us a kind of superior, artificial existence. You can bathe in health-emanations—turn on the switch and watch your muscles grow, or get rid of rheumatism or anything you please."

"Fine!" I approved. "That would just suit me. Your conclusion, then, is that the men of five hundred years hence will still be strong and active?"

"I believe so. The race of the future will conserve its energies for useful purposes only. *Waste* of human resources or human life will be the great crime of crimes. Men will be very busy, I think; only the busy man of then will be a totally different kind of busy man from that of to-day. Intellect will be exalted. And if certain pathological discoveries are pursued, there is every reason to beileve that practically all diseases will be wiped out, the period of life greatly extended, and the vigor of youth remain unimpaired from early years until a very advanced age."

Infinite Progress.

"And will there be no end to the process of race-improvement and world-betterment?" I asked.

"None," affirmed Noble.

"Personally, I believe the time must come when nothing more can be thought of to invent and no more improvements can be made; in short, when men will stop inventing because everything has been invented."

Noble smiled and shook his head in negation.

"I think you're wrong," he answered. "That's not borne out by the facts. Men a hundred years ago thought they could see the end of the process, but they hadn't an inkling of the twentieth century. To-day we stand merely on the edge of achievement. No, there will never be an end of improvement. New processes, new devices, new ways of doing everything—it's endless.

"All human progress, in material ways, works along the lines of reducing waste and increasing simplicity and efficiency. I see no termination of that process."

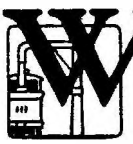
Noble glanced at his watch, sat up, and reached for his hat.

"Excuse me, but I must be going," said he. "Delving into the world of 2416, I'm late already for an appointment in the year 1916." Thus abruptly we left the epoch of five hundred years from now and returned to the present.

HOW BIG A MAN IS THE BOSS?

Railroad Presidents Average about 5 Feet 11 Inches in Height and Weigh 186 Pounds—Are Topped by Leaders in Other Lines.

BY THADDEUS S. DAYTON.



"WHAT does Jim Hill look like?" asked a new brakeman on the Great Northern.

"Well, speaking judicially and comparatively," answered the freight-conductor, "I should say that he favors Julius Cæsar more than any man I know, except that he's a good deal heavier-set."

"Gosh!" exclaimed the brakeman. "I didn't think he was as big a man as that!"

"He's no Jess Willard as far as size is concerned," retorted the conductor. "Being over six foot tall and weighing two hundred don't get you the president's job nowadays, so you'd better figure on continuing to hike out with the rear flag for some time to come."

"But the big man—the one who's physically big and has a brain to correspond, I mean—stands a better chance to get up to the top in any business than the little one," spoke up a clerk from the general freight-office who was riding over the division in the caboose studying freight-handling at first hand.

"Maybe so, maybe so," answered the conductor. "But how about Harriman and Hawley and a lot of others? They were little men compared to any of us here."

Big Man Has Better Chance in Railroading.

"They were exceptions," responded the clerk, "and I can prove that the big man has the better chance in railroading—provided, of course, he's got the brain-power. This is a heavy train we're trailing after, but we're rolling along rapidly and easily. If it wasn't for that big engine up ahead we'd be standing still or making a hard fight to get up the grade.

"I've been reading a book by a college professor who has been making a study of the subject," continued the clerk. "One chapter treats of the physique of executives. This man wrote to a hundred of the leading railroad executives, president in most cases, but a number of general managers of the larger systems were included in his inquiries.

"He got answers from 55 of them. That was a pretty good average, considering the questions he asked. Imagine any of us having the nerve to inquire of Mr. Hill or Mr. Kruttschnitt or Mr. Hannaford or of any of those high officials how old they were, how much they weighed, how tall, married or unmarried, if married at what age, how many children, and so on. But he got away with it. These scientists must be a patient, persistent and nervy lot.

Average Age Was 55 1-2 Years.

"Well, when this college professor got all his answers together he tabulated them. The result was very interesting. It showed that these 55 big railroaders averaged 5 feet 10 9-10 inches in height, and that their average weight was 186 3-10 pounds. The average age of these men was 55 1-2 years. Only one was unmarried. The others married when they were between 26 and 27. There was an average of about four children to each family."

"That's all right as far as it goes, but it don't prove much," remarked the conductor, who was about five feet six and weighed around 140. "Suppose this man had had answers from every one he wrote to. The result might have been different."

"The prof. was pretty near right, just the same," retorted the clerk. "Let me finish my story.

"You'll all agree with me that it takes as much brains to be president or general

manager of a railroad as it does to be the chief executive of any other line of business. This college sharp didn't confine his investigations to railroad men. He made similar inquiries of about 2,500 other big bosses or men who had become more or less distinguished in many lines of work. In fact, his list and the scope of his inquiry covered practically every important group of leaders in America.

"Ranked according to height, this college sharp found that railroad presidents stood seventh in the list. Reformers led with an average height of 5 feet 11 4-10 inches. Then came superintendents of street-cleaning, wardens, governors, chiefs of police and socialist organizers. University presidents were within one-tenth of an inch as tall as the presidents of railroads.

"Roundhouse foremen ranked thirty-fourth in the list. They averaged 5 feet 9 3-10 inches in stature. Roundhouse foremen, however, are taller than anti-saloon league officials, lecturers, manufacturers, labor organizers, publishers and musicians. The height of musicians averaged 5 feet 5 6-10 inches."

The freight conductor leaned forward with interest in his eyes.

Rank Tenth in Weight.

"Do you remember what the average weight of musicians was?" he inquired.

The general office clerk took some typewritten sheets from his pocket.

"Almost 162 pounds," he answered after running his eye down a column of figures.

"It's an easier life than railroading," remarked the conductor. "I've always wanted to be a musician—to play a violin in a theater orchestra and see the show every night."

"As to weight, railroad presidents rank tenth," continued the man from the freight office, consulting his figures. "Superintendents of street-cleaning top the list with an average of 216 7-10 pounds apiece. Chiefs of police run 202 4-10 pounds each. Then come wardens, presidents of fraternal orders—they average 190 4-10 pounds—fire-department chiefs, Y. M. C. A. secretaries—188 6-10 pounds—bank presidents, about two pounds less; factory superintendents and presidents of labor organizations. These average exactly the same as the railroad presidents—186 3-10 pounds apiece—but they are not as tall within half an inch. Roundhouse foremen are twenty-first in the list with an average heft of 177 pounds."

How Height and Heft Help.

"Well, what does all that amount to?" asked the conductor, somewhat nettled at science apparently having lessened his chances of fame.

"Greatness depends on size," said the big brakeman, getting up and stretching himself proudly.

"No, that's too hasty a conclusion," replied the general office man. "Eminence in any line does not depend on how tall a man or how much he weighs. What these figures do show, however, is that superiority in height and weight have a tendency to favor one in the contest for executive positions. A big man has a certain advantage in meeting people in a give-and-take way. Executives, it appears, are taller and heavier than other men, as a rule. Looking at them as engines, they appear to have more energy—in other words, to be higher-powered."

"Well, maybe so," replied the conductor as the train began to slow down, "but I'm the boss of this crew, even if I am the smallest one of the bunch."

THE GAP.

BY OLIN L. LYMAN.

LIFE'S a dark cloud, you say?
Yet from the skies afar
Beckons the cheering ray
Of an impelling star.

Set as the lamp of God,
Golden with hope it gleams:
Link of the soul and sod;
Bridge it with deeds and dreams!

Tales *from the* Knights *of the* Railroad Round-Table

"COMMENDED FOR BRAVERY."

BY FRANK READE.

WE were sitting around the switch-shanty. Business in the "bull-ring" was at a standstill. As a result, reminiscences of olden days were in order. Among the dozen sitting around on boxes and benches, more than half had filled positions in railway service of much greater importance, from a railway standpoint, than that of pulling pins in a main-line yard, though how they had descended the scale we probably never would know. On this sunny afternoon we were spinning yarns of ancient railroading that made the cub switchmen gasp in wonder.

Tale after tale had been told, until it came to old Jerry, with his gray hair and close-cropped mustache. In response to repeated requests he removed his corn-cob from his mouth and gave us the following:

"What I'm telling you happened a long time ago, in the early eighties, on the D. and R. G., when she was a narrow-gage, with more kinks and curves than any other pike in the country.

"I was braking for old man Richards, the crankiest conductor on the road, though we managed to hit off pretty well together. I had been holding down the hind end for him for about eight months.

"We were working on the middle division, from White River to Emery Junction, and usually when we reached the west end we made a trip over the Summit to Circle Creek with a train of coal or through freight, which would be consolidated with west-bound trains at Circle Creek, after which we would bring back a string of empties.

"It was a nice afternoon when we made this particular trip, so Richards had his two little daughters in the caboose. They were always crazy for a ride. Everything went all right from Emery to the Summit.

"In those days, freights were using straight air. You all know that when an air-hose breaks, you've lost your grip on the train, and it's up to the crew to snub her up with clubs on the hand-brakes—either that or look out for a soft place to jump.

"At the Summit we began to crawl under the train and take up dead levers, so that the air would get a good grip on the brakes, as it sure was some grade down the west slope, and about as crooked as a snake.

"After lying on our backs under each car in the string of about twenty-five, the next move was to inspect each hose-coupling and to plug up the leaks and, as we started to take up the slack, allowing about four or five cars to the man.

"It took three hog engines to bring the train to the Summit—a double-header ahead and a pusher behind the caboose. When we reached the top we would cut off the head engine and the pusher, and drop the train down to Circle Creek with the road engine.

"The entire train was made up of box-cars, which was in our favor, for, as a rule, about half of a train would be gondolas of coal, loaded so heavy that the hand-brakes would hardly check them up on the level, to say nothing of a stiff grade.

Our engineer on this occasion was Dickson, one of the best on the road, but crazy as a loon, though a finer hoghead with air couldn't be found. Everything looked right for a dandy trip.

"We had a former peanut-butcher braking ahead. He had only made a few trips, and I had been breaking him in on hill-work until he was beginning to hold his end up in pretty good shape, because you'll realize that a man has to be an artist to know just when to slack up on a brake so that he won't heat a brake-shoe or slide a wheel.

"I was in the 'swing,' while the old man was holding down about five brakes on the hind end, and we got the signal to let 'em go. Everything went smooth for about a quarter of a mile, when *bang!* went the air-hose right behind the engine-tank, and then twenty-five cars began to streak down that mountain like a shot out of a gun, with Dickson squealing for brakes at every turn of the wheel.

"It was eight miles to Circle Creek, by rail, and about three miles in an air-line. We hadn't gone two hundred yards before every car was swaying like a drunken sailor. Talk about cinching brakes. Every man, including the fireman, was putting every ounce of his weight on his brake-club, and about half the wheels were sliding. Still the train seemed to gain momentum with every minute. And the worst place of all—Dead Man's Curve—was only three miles away.

"There had been plenty of runaways on that old mountain, and Dead Man's Curve was the scene of many a wreck. The grade at this particular point had been cut into the side of the mountain so far that it left a broad ledge between the track and the cañon, about fifty feet wide and several hundred yards long, so that there was not the same danger from a derailment here as there would be at any other point, because the cars had a place to land if they left the rails. But most of the grade was straight up, on the hill side of the track, and straight down, about a thousand feet, on the cañon side, with a narrow ledge along the track, just about wide enough for a footpath, and occasionally wide enough for a section-gang to take off a hand-car.

"I was too busy clubbing up brakes to notice what the balance of the crew were doing, but when we struck a piece of straight track, I missed the head man and saw the fireman making an effort to crawl down a side ladder. I couldn't stand near the edge of the car, so I crawled over and looked ahead. I was just in time to see the head man drop from his ladder onto a wide spot. When he landed, it reminded me of a sack of bran hitting the ground. He struck and bounced about twice, then lay still. How he came through it is a puzzle to me, as several of his bones were broken, and he was in bad shape generally. He quit and went back to the peanut-butcher business when he recovered, having had a lifetime fill of freight-work.

"The fireman wasn't far behind him in trying to land. He managed to escape with a broken leg, a lot of bruises, and six months in the hospital. I began to see that it was every one for himself, so I started to do some tall thinking. I concluded the best plan would be to work my way back to the hind end, and take a chance with the old man in unhooking the caboose.

"The train seemed to be going faster than ever, but I managed it. I waited for the train to string out on a straight piece of track, and then by moving as fast as I could and making big jumps from one car to another I reached the hind end just in time to see the caboose cut off, about fifty feet behind the train, with Richards on the front platform snubbing at the break.

"He saw me, and shook his head, throwing one arm back toward the caboose. I knew that he had cut her off to save the children, and he told me afterward that it cut him like a knife when he saw me on that hind car. It takes a whole lot longer to tell this than it actually took to happen. When I saw my chance dropping behind with the caboose, I streaked it back up ahead. We were just then about hitting Dead Man's Curve, and I looked for some of those cars on the hind end to snap off like a cracker on a whip.

"The engine and the train took that curve like a circus outfit, all except the last car, which derailed a pair of trucks and bumped along on the ties for about fifty yards. Then the coupling broke and she toppled over the bluff.

"Looking up ahead I saw crazy Dickson leaning about half out of the cab, hatless, his long, black hair flying. When he saw me, he waved his hand. I was scared stiff and, knowing of nothing else to do, I waved back. Then the darn fool blew the whistle to release the brakes.

"I don't believe I was really frightened until then, when I began to see a faint chance that we might make it down the hill, for the track was getting straighter, and the safety switch was about two hundred yards above Circle Creek. The switch was always turned for the safety track, and all trains would have to stop and throw it for the main line. The safety track was straight, and went up a stiff grade alongside Circle Creek about half a mile, ending up against the mountain itself.

"Well, we made it to the safety switch all right at about a forty-mile gait. I could see that train wasn't going to slow up enough for me to take a chance jumping off, so I began making tracks for the hind end again as fast as I could. You see, I wanted to be as far as possible from the head end when the smash-up came. It took about half a minute for the big thing to begin, and it seemed to me that every time that I jumped from one car to another I could feel the car that I had just left crash into the scrap-heap.

"But that part of it was all imagination, because when it was all over, there were five cars behind me that still held the rails, and I was two cars from the hind end. The balance of the train and the engine was piled about fifty feet high. The circus was all over, and I didn't even have a scratch.

"The first thing I saw was a hobo sitting up on the side of the hill, black as ebony, and looking like he was dazed. He had been riding in a car of coke when the smash-up came, and the top of his car broke upward, shooting him up the hill. He had hardly a bruise on him.

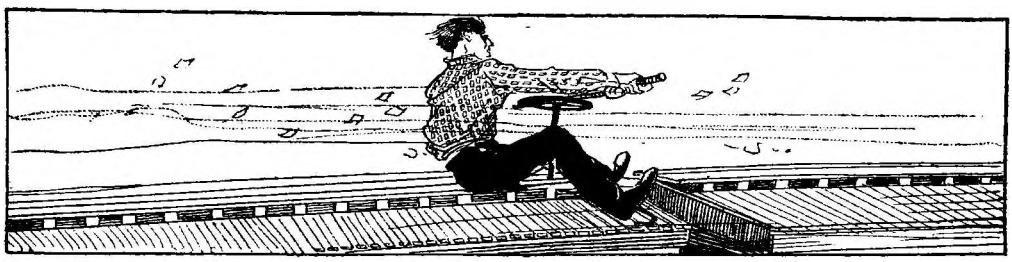
"I was too busy to talk to him, but hurried up ahead to see if I could do anything for Dickson, who might possibly be still alive. I had but little hopes, as fifteen or more box-cars were piled on top of the engine. Just as I got up to the scrap-heap I heard him holler to me and, looking across the creek, I saw him sitting on the bank. There was not a thing the matter with him except a good wetting.

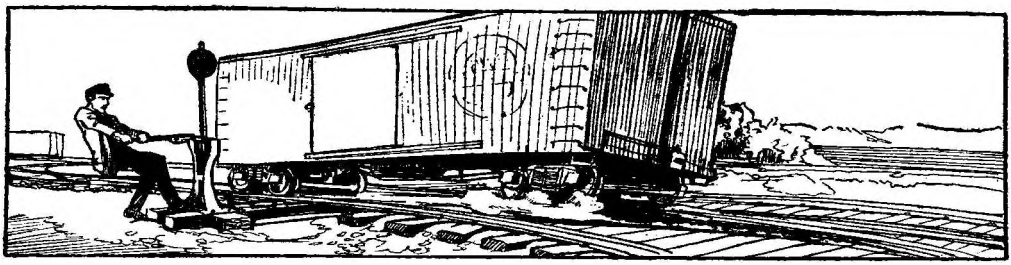
"'Say,' he says, 'give me the makings; mine got wet in the creek.' And I was so tickled that I waded across to give him what he wanted.

"I found that he had jumped into the water at the last minute. His only damage was a skinned elbow.

"It wasn't but a few minutes until Richards came sliding down the hill with his dinky caboose, and when he saw me he grabbed me like I was his long-lost boy. The tears were running down his face. He was so choked that he couldn't talk.

"There isn't any more to tell, except that the general super, old Randolph, came out with a bulletin commending Dickson and myself for our bravery in staying with our train, while the truth of the matter was that I was too scared to jump and Dickson was too crazy to even know that he was in danger."





AN ADVENTURE IN HARD LUCK.

BY EARL E. ZOCH.

"THE time we didn't have anything to show for twelve hours of the hardest work I ever put in," began the brakeman, "was the sweetest hard-luck story I've ever seen or heard.

"The day-force at D——, on the 'Soo,' were a generous bunch of cusses in leaving something for us to do. They didn't want us to feel slighted, I suppose, so they left us both the north and south yards, with only one clear track in each. The ham operator had three from each way coming before midnight on the line-up with No. 2, the south time-freight, ordered at seven o'clock.

"A sweet night's work with only one engine working, you would say; but it didn't bother us much, for it was all work then, anyhow. The switch foreman had a reputation all over the system for speed, and we all liked him, for he could get the work done quicker and better than any one else, and did more than his share besides.

"We got No. 2 out on time, more by head work than switching. Old No. 321 couldn't move quick on account of a poor fire. So the tallow-pot said; but the hogger seemed more headstrong than usual. Second No. 2 we had started by seven-thirty.

"Then the trouble began! When dropping a crummie—we never ran around anything we could drop—Bill Langly, the 'snake,' following the engine, forgot to throw the switch until the crummie was on the point; then he twisted it over. He got it over all right, but in between the trucks. I was riding her, and took the bump-route on the ties.

"We worked over an hour getting that piece of wood and iron on again, and, meanwhile, the first extra from the south had piled in. Her eighty fire-buggies nearly filled the only south track clear. To add to the fun a light rain came up about this time, and soaked us through before we could get our rubber goods on.

"Johnny Brown, the foreman, never did get real mad at any one. Still, he asked Bill, very sarcasticlike, if Bill would just as soon move a mite faster when making a drop. Bill, of course, being at fault, got bucky, which didn't help matters any.

"The hogger yelled that he needed water, and that took another half-hour. About this time, to help matters along, the second extra from the south called up for a track. Johnny told him to come up the main line and back into the north yard, the only place left with any moving room.

"We got second No. 2 started all right about ten o'clock, when the extra from the north called up for a track, and after see-sawing back and forth we got a track cleared for them. We finished second No. 2 just as her engine came down the race-track. Her hogger must have been asleep, for he ran through the lead switch. After considerable trouble we got second No. 2 out, about an hour late, leaving one clear track in the whole yard.

"The second extra wandered in with about seventy cars, and the third from the north filled the race-track, due to the head shack's decision that he knew where we wanted them. The third extra from the south tied up on the main line, having no other place to go. We hauled their engines to the roundhouse, and hurried back to lunch about two bells.

"The first thing after dinner was to clear the main line. The extra had only about five cars of company coal, so we dropped them toward the horn—I should have said we intended to drop them. Old No. 321 cleared the frog nicely, going at a great rate, but then she acted as if she decided the horn-track was better, and jumped off the lead toward the horn.

"Bill, not having much time, had thrown the points before he noticed No. 321 leave the track. Those five cars of coal and a couple of box-cars rambled over the switch, slammed against the tank, and shoved it around, making a perfect right-angle of the engine. Johnson, the fireboy, had jumped as soon as No. 321 left the track, but the hogger sat still on the seat-box while she wiggled and twisted around. He said afterward he was too scared to jump.

"Old No. 321 stood upright, her wheels buried in the gravel and cinders, with the lead and horn-tracks drawn together. The yardmaster called up the roundhouse to get the big hook out, but they told him to go to blazes and get it himself.

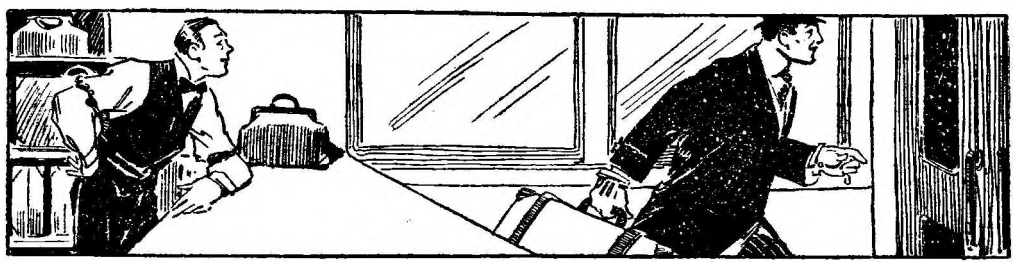
"The hogger, fireboy, and Johnny strolled up to the motive-power plant for another engine, got the wrecker out, and brought it around the main line, where we left the wrecker while we took one car at a time from behind No. 321. We only had about three car-lengths of room to put them into clear on a run-around, built about a year previous for just such an accident. By that time it was getting close to six o'clock, and we didn't care whether we did any more or not.

"At seven o'clock when the day snakes relieved us, Johnny looked around, and the only line-up he gave them was verbal.

"'This is one h—l of a yard, fellows,' he says. 'You can do what you want to with them cars, but *I'm* going home. I put in thirteen years of hard labor last night, and I've served my time.'

"That was the first and last time I ever heard Johnny swear, although it wasn't really swearing, only strong language of disgust; but if any snake could put up with that night's work without blowing up in some way—and it rained all night besides—he deserves a medal as big as the whole universe. I know, because I'm not given to cussin' as a rule; but that night, as Bill told me later, I swore for over half an hour without repeating myself. You see, I was on the top of the last box-car when they hit that tank."

And the brakeman pulled up his sleeve, showing a big scar, where he had fallen between the cars, hitting the coupler on the way down.



A NEW BAGGAGE SWINDLE.

BY FRANK M. O'BRIEN.

"I RAN against a new swindle the other day," said a Pennsylvania railroad detective. "At least, it was new to me, although it's so simple that it ought to have been thought of long ago.

"A well-dressed man went to the parcel-checking room in our New York station.

"'I've lost the check for my suit-case,' he said to the attendant. 'It's that one over there on the right, just back of that alligator bag. Is there any way I can get it? I'm in a hurry to get back home in Jersey, as I'm going to be married to-night.'

"The attendant was duly sympathetic.

"'Tell me what's in the suit-case,' he said, 'and if it's yours you can have it.'

"The man who was going to get married scratched his head, but he was prompt enough with a reply.

"'Let's see,' he said. 'There was a suit of clothes, and a shirt, and a couple of collars, and my shaving stuff, and a tooth-brush, and I guess some socks and a couple of handkerchiefs.'

"The parcel man by this time had the case open and was poking about to inventory the contents.

"'What kind of a shirt was it?' he asked.

"'It has a purple stripe in it,' said the man.

"'This must be yours, then,' admitted the parcel-checker, and he passed the suit-case over.

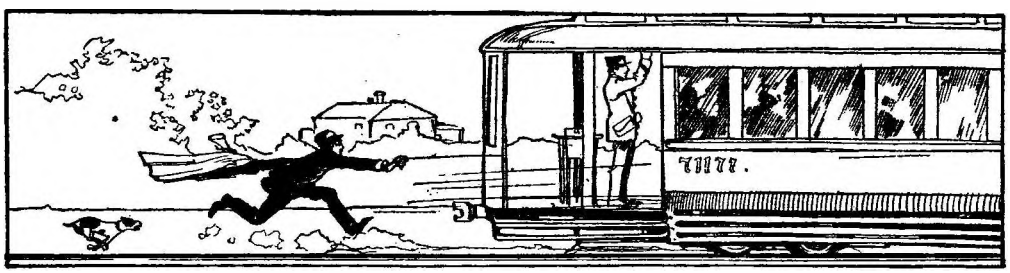
"The man who was to be married thanked him cordially and hurried off. Two hours later the station rang with the mad cries of the real owner of the suit-case, who was told, when he presented his check, that the case was gone.

"How did the crook do it? It was easy. He picked out a suit-case of the average type, the kind that is carried by the average man, and when the parcel man asked him to describe the contents he named just the things that are carried by the average man on the average trip—a suit, a shirt, collars, shaving things, tooth-brush, socks, and handkerchiefs. He didn't guess that the shirt had a purple stripe in it. He knew that, because his sharp eye was at work the instant the attendant opened the case and he got a flash at the stripe.

"If the case had proved to contain different things—why, then, it wouldn't have been his suit-case, and he would have pointed out another like it, for men's suit-cases have a habit of running to the same general size and color. And he might have conned the attendant into opening suit-cases until he got one with the average man's outfit in it.

"This crook turned the same trick on nearly every big parcel stand in New York. When we finally landed him we found that he had sold a dozen bags and suit-cases to one 'fence.' It was a particularly mean kind of thievery, because nearly every bag and suit-case contains personal papers, sometimes valuable papers, and the thief usually destroys them.

"But the game will never be worked again in the Pennsylvania parcel stands. Now, when a man pleads that he has lost his check, he must give a minute description of everything in the bag before the bag is opened. If he cannot do that—when, for instance, he did not pack the bag himself—he must furnish an indemnity bond to the railroad before he is permitted to take the bag away."



SEVEN TIMES OUT.

BY "TY."

I HAVE forgotten the exact date (said the old fireman), and it doesn't really matter, anyway; but it was some time in the early part of February, 1914. I was bucking the spare-board at East Fitchburg, Massachusetts. Business had been booming, but was in the slough of despond for the time being. Engine crews were being used very slowly; so when a smoke caught a good job, he'd nurse it.

From eight A.M. to three in the afternoon of this day only two firemen had been used, which left me nine times out.

"Two in seven hours," I thought. "Worlds of time for me to scoot home, blossom into my glad rags, take the lady to a show, and fly back on the theater-train. They'll never even miss me."

This stunt goes, though not allowed; the sin is getting caught—getting jumped. In the latter case you amble up-stage and "say why" to "Old Stormy," whereat this high-brow personage proceeds to fizzle at the gills and climb down your throat with a load of superheated wrath, after which you reap a crop of brownies; then wander forth a madder but a wiser prodigal of sorrow-face line.

I made no confidences, but hit the trail on No. 70 for Boston. Arriving at this latter hamlet, I piled joyously down the pike, ferried across the bay, and mounted one of the B. R. B. & L.'s Purple Fliers for Revere.

It was about a quarter of six when I hit the old homestead and began falling into the disguise, which same was a pip. A derby tile, standing dickey, noisy tie, new suit, white scarf, gloves, and patent-leather brogans.

For scratching up and entertaining genteel raiment you've got to hand it to the railroad tallow-pot, when he cuts loose. He's a bear. He has more ideas for fashionable attire than a Broadway style-shop. He likes to wrastle himself into flamboyant array as well as the next one; but he don't always like to get caught at it, for if he met some of the boys coming down the line in their war togs, they'd probably sink his Kelly over his exalted dome and otherwise mutilate his person just to keep him from getting a swell head.

But anyway, tossing my raglan over my arm, I ambled forth to call on my Irish Rose prior to festivities on the White Way.

After coaxing the young lady some five or six seconds, I stepped out to phone about the tickets. It was just after reserving the pasteboards that I had a hunch. I am no way superstitious, but I do believe in hunches. I never used to, that is until once when a big hoghead—but that's another story.

I followed this hunch to the extent that I called the roundhouse on the long-distance just to find out how things were going back in the corn-belt.

After slipping a little salve to the toll operator (I'm strong for salve, I am) I asked her to please put *this* one across to the effect that the call-*ee* doesn't butt wise to the out-of-town part of it. She said she'd quit her gilded job for me; so it was all right.

At five minutes past six East Fitchburg roundhouse answered. Here's the wire chat:

"*He*'lo-o!" says I. "East Fitch?"

"Yes-s'r!" wafts back. "Whaja want?"

"Well," says I, "this is Ty. Now-w, about how many times out—"

"Oh-h, yeah, yeah!" come along. "Sure! Ye-ah! *Was j'st a goin' to call you, ol' man!* J'st goin' to. Why, er, now—now, le'me see—Sure, we want you down here at *eight-fifteen!* — eight-fifteen — Ride a c'uple ingins to Readville—Boston Local, 2365—"

"Wha-a-*zat?*" I bawls, muckling a fresh strangle on the receiver, and slopping up against the side of the booth.

"—Nice easy job f'r yuh, Ty—" the voice keeps rambling along.

"*Whoa!*" I yells, beginning to shed sweat. "Daw-guhnit, man, hold on! One bell! *Lis'en!* f'r the love of Mike. I—I—er—I *can't get there at eight-fifteen!* I'm sick— No, no! I mean— Aw-w, did—shoot it, don't you understan'? I—I—I—"

"Understan'? Sick? Can't get down here in two hours?" squawks friend Bab, for it was he. "Whaja mean—can't get here? Where in Tophet are yuh, anyhow? Har-r-h?"

Now, old head, you savvy sure enough that I wanted that job a heap. I wear a crown when it comes to convoying defunct pigs. I can wrastle a goat's fire, "three scoops a hook," when I have to, but you don't see me in my full beauty till I sashay past the gallery in the rôle of escort to a shop-stripped goat.

Easy money—that's riding engines on continuous time. Turning down grease-plugs and squirting black gudgin oil into their works is the hardest thing you do. The rest of the time you ride in the band-wagon and play rummy with the crew.

But anyhow, good jobs were a long ways between calls, while I needed the ducats.

"Well-l, you see," I enlightens Uncle Bab, waxing lucid; "you see, I—I—why, it's just like this. Aw, you know—"

But Bab said he didn't, and I knew he was looking into the mouth-piece over the

top of his spectacles. He said some other things, too.

"Now, what t'—"

I choked, gurgled; then got desperate.

"*All right!*" I bawled. "All right! I'll be there—somehow!"

I finished off sort of gaspy. And flowed forth, forgetting to hang up.

My starched dickey is wilted like a rag; but not me. I am the livest living example of a railroad smoke you ever did see.

I skidded around a corner, side-swiped the returns of a shopping expedition, cut across a fat man's bow, and got right down to business. I tacked onto the car-track, took a hitch on my trousers, and started down the avenue without any perceptible delay whatsoever. I'd forgot this comely queen of mine (apologies to the lady), the show, the gay scenery—lost sight of it all. I had just *two hours and seven minutes* and four seconds to connect *five* times, travel *fifty-six* long, cold miles, and show up at *eight-fifteen*. John Hay had nothing on me in his sun-chasing stunt.

A narrow-gage train had just left the station; but I overtook it somewhere down on the marsh. I then offered prayer and entered into cogitation concerning the possibilities of getting a hitch for Fitchburg, anyhow.

No. 79 was already on her way. No. 505 was next; but she didn't make Fitchburg till nine o'clock—forty-five minutes too late. No. 19, the National Express job, was my only hope. She left at six-forty-one, and was due in Fitchburg at six minutes past eight.

There was, however, an iron-bound, rib-robbed rule which barred deadheads, and others, except the train-crew, of course, from riding this high-flier.

I crossed the ferry, galloped up the stairs of the L station, bolted through a closing door, and rumbled into the North Station at six-thirty-five. There was no time to linger on ceremony, so I cavorted through the waiting-room like I might be more or less ahead of a mad female *pugwalapus*, and proceeded to "le'p" up the stairs to the railroad offices, where I burst into the super's sanctum and sagged over the gate.

I had been nursing a forlorn idea that I might nab somebody in, even at that late hour.

I did. And at once spoke a tale of wo into the ear of a genial-appearing gent, who eyed me suspiciously from behind a roll-top desk.

"So *you're* a fireman?" says he, looking up and down my fantastic display of personal adornment sort of humorous.

I admitted that I was a limb of that he element of railroading, as *much* as appearances were against me at present; and showed my pass.

I got the permit; then chased No. 19's tail-end half way to Tower A, out over Draw 1, before I wrapped my digits around the grab-iron.

"What's the idea?" says the con, after giving my credentials the once-over. "Got a date?"

"You j'st betcha I got a date!" says I. "Eight-fifteen. Escort a couple iron ho'ses to Readville, *via* Concord Junction, via Walpole Junction. And if I don't make it, I'll get shot at sunrise. Got caught cold, trying to promote joy-works outside the one-mile limit.

"Well," says he, "if Sun-Down Bill up ahead there does his duty to-night, we'll make Fitchburg on time. We usually do."

I then relaxed onto the plush, and fell to meditating concerning what sort of formidable line of convincing conversation I was going to spring on that Daisy of mine the next time we met. I've had two medals, and a black eye, for my explaining abilities. I'm a pretty good liar, but my memory isn't quite good enough so's I can qualify with the first-water field.

It was exactly six minutes past eight when old No. 19 plugged into Fitchburg. I got under way some time before she stopped at all. I lit, I bounced, and hit the trail for the square in one animated effusion of movements.

Along about this time I spotted my car fading in the distance—bound for the East Fitchburg yards, which same is over a mile and a half below this fair city—and I had less than nine minutes to make the last lap of this marathorn I am entered in.

Once more I shed my dignity, hitched up my trousers, girded my coat-tails, and set off down Main Street. Oh, man, but I showed those rubes some action—more real, live, operative endowment than they'd seen before in a month of paydays.

By neglecting all the high spots, just barely tickling the low ones, and exercising my vocal powers frequent and melodious, I finally attracted the attention of the nickel-chaser on the electric wagon; also about

seven-eights of the local and suburban population, who lined up along the speedway and shouted encouragement and advice.

It was exactly eight-fifteen when I catapulted triumphantly into headquarters, and presented myself for duty.

Did the assemblage sit up and take notice? They did.

" Well, here I am!" says I.

" So I see," admits the Babs gent, looking at me over the tops of them confounded specs. " Are you going to leave us?"

And his gaze goes up and down my length of gorgeous array.

" Leave you!" I bellowed. " What do you mean—leave you?" I'm goin' to ride those there engines—"

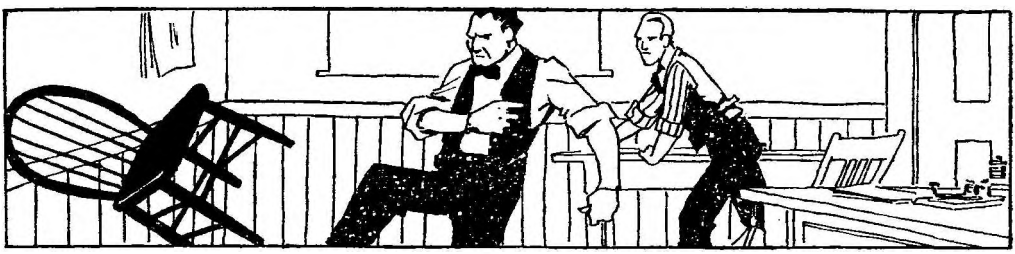
But the way he was looking at me caused me to shut off and drift, while my eyes swung to the list of names chalked on the spare-board. *Mine wasn't crossed off at all!* It was some new smoke, High, who had been called. *I* was seven times out yet.

That toll operator, or some of them, had plugged me in just as the engine-house was trying to get the despatcher's office to notify the call boy when I butted in and asked about "Ty," and all the time they thought I was High. Of course, they routed him out later on a short call, and jumped on him for having to be notified the second time.

But High covered the job.

Did I explain the distressing circumstances to fair Amelia?

I never got the chance.



THE C. D. CHANGED HIS MIND.

BY E. S. GEORGE.

"WHAT! The Balboa Limited an hour late? What's the matter, anyway?" fiercely demanded the chief despatcher as he glanced over the train-sheet immediately upon his arrival at the office.

" She came on to the division twenty-five minutes late, and it was either half an hour on No. 12 or a minute or two on her; and the blue book says—"

" Blue book be blowed! You know the super has been raising the deuce regarding that train being late — and you sit there like a numskull and lay her out for meets!" savagely interrupted the chief. " For the love of Mike, take a tumble to yourself, and see if you can't stretch a point or two in using a little gray matter in seeing that she makes up some of that lost time!"

There was a very conspicuous silence all over the office. Not one of us had a single word to say regarding the pros and cons of baseball, shows, or anything else, contrary to our usual morning custom. Instead, we all seemed to get the idea that perhaps it would be a good stunt instantly to get at our numerous duties of keeping the trains from bumping into one another, and the other routine business of a despatcher's office.

The fierce jacking-up the chief gave the office-boy for being late, the letter he dictated so fast that Ben Pitman himself could not have taken it and the resulting well-chosen, sarcastic remarks he unburdened himself of when a transcription was given him that had about as much resemblance to what he had said as an August day in Death Valley resembles winter in the frozen north, and the very pointed way

he lined up the operators, left no doubt in the minds of the most optimistic of us that the old gent was surely on the rampage. We were somewhat accustomed to his three-o'clock grouches, but to have him arrive in the morning with one on was occasion for grave misgivings as to what would be happening by afternoon.

There is no act in railroading that will more surely and quickly invoke the presentation of "the can" than butting in when a despatcher is sending a train-order. The youngster who had been sent out to a flag-station called Headly about ten days before either never did know this, or else had surely forgotten it, for that is exactly what he was attempting to do as I was changing some of the meets in an endeavor to comply with the old man's orders regarding using a few brains in getting the "pride of the pike" over the road.

The old man had evidently bawled every one out to his satisfaction, as he was sitting at his desk taking it all in. Knowing the consequences, especially with the chief in his present mood, I put up with the boy's ignorance for a few minutes, thinking that surely he would soon take a tumble to himself; but as he persisted, I finally turned to the old man and ventured the observation:

"If horning in ever got a fellow anywhere, that dub at Headly surely is on the high road to success."

"Let me take a fall out of that gink," snarled the boss as he cut his instrument in and called the lad.

"Say, freshie, this is the C. D. You head in, and stay headed in until you are called!" he shot over the wire at such a rate that but very few of the best of us could follow. The simpleton no more knew what was being said than if the message had been in Chinese. I almost forgot that I was supposed to be peeved as I watched the boss out of one eye while the "ham" began sending in an amateurish manner:

M-a-n b-a-d-l-y h-u-r-t b-e-t-t-e-r h-a-v-e f-a-s-t t-r-a-i-n p-i-c-k h-i-m u-p—

"That mush-brained sap-head! Telling me what to do!" bellowed the C. D.

For several moments the atmosphere fairly sizzled. "Stop the Balboa, eh, for some snipe! Orders me to stop our fastest train to pick up a snipe! I guess he won't die in two hours waiting for No. 11. Tell that muddled-headed fool he's canned, and to get off the job right now and go back to counter-jumping or herding sheep."

I had given up raising the chump after trying several minutes, and was in the midst of another train-order when again I was interrupted. More to see what effect it would have on the old man than any other reason, I allowed the ham to begin sending in a slow laborious hand. This was his message:

F-l-a-g-g-e-d f-l-i-e-r. I-n-j-u-r-e-d m-a-n a-b-o-a-r-d.

The frenzied chief kicked his chair clear across the room as he jumped to his feet, choked, sputtered, and swore as only a railroader can. But suddenly he stopped as he listened, his flushed face instantly turned to a deathly white. The ham continued to send:

S-o-m-e c-o-l-l-e-g-e c-h-a-p m-i-s-s-e-d s-t-a-k-e c-u-t h-i-s l-e-g. T-h-i-n-k h-e i-s a-l-l i-n.

"My Heaven! My own boy!" hoarsely whispered the old man as he limply sank into his chair.

We then remembered that his son was out in that vicinity with an engineering party getting experience during his vacation.

The Balboa had orders at the next station to bring only one coach with the injured boy.

"Boys," the old man began in a tremulous voice when he returned to his desk after a week's absence, "the two hours' delay waiting for No. 11 would have finished Charley. I want it understood that no train, not even the president's special, is to run by an injured man as long as I am in charge of this office."

No one spoke for a moment until I very seriously said:

"I guess I had better quit, chief, for I never did send that message to the dub that he was canned."

"If you had sent it there would have been no canning done; I would have murdered you in cold blood," laughed the chief. "That lad comes into this office to learn the business, and every one of you had better look out for your job, for never did I know of a ham with better prospects."

WAR ADDS TO PHILLIPS' CODE.

THE war has made a number of additions to that first aid to brass-pounders, Phillips' Code. Abbreviations appearing in a supplement issued by the Associated Press for the guidance of its operators are as follows:

Acf—Aircraft.
Asfx—Asphyxiate.
Asfd—Asphyxiated.
Asfg—Asphyxiating.
Asfn—Asphyxiation.
Bjt—Belligerent.
Bjcy—Belligerency.
Cnt—Count.
Cmy—Commissary.
Chlr—Chancellor.
Cz—Cruise.
Czd—Cruised.
Czg—Cruising.
Czr—Cruiser.
Etnh—Entrench.
Etnm—Entrenchment.
Etgl—Entangle.
Etgd—Entangled.
Etgm—Entanglement.
Fht—Fight.
Fhtg—Fighting.
Fntr—Frontier.
Hyp—Hydroplane.
Hyap—Hydroaeroplane.
Itv—Intervene.
Itvn—Intervention.
Kcp—Conscript.
Kcpn—Conscription.
Mutn—Munition.
Nql—Neutral.
Nqy—Neutrality.
Pmr—Premier.
Pnu—Pneumonia.
Psur—Pressure.
Smj—Submerge.
Smjd—Submerged.
Smjg—Submerging.
Subm—Submarine.
Tpb—Torpedoboat.
Tpdo—Torpedo.
Tpod—Torpedoed.
Tpog—Torpedoing.
Wf—Wife.
Zpn—Zeppelin.

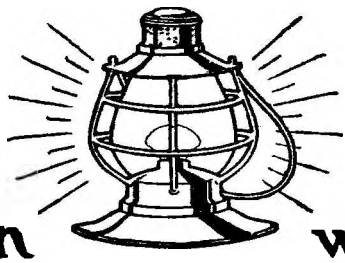
Other authorities have suggested the following additions, which have met with the approval of press associations as well as of E. E. Bruckner, the expert who revised the current edition of Mr. Phillips' manual:

Bul—Bulgaria.
Buln—Bulgarian.
Dap—Disappear.
Dapd—Disappeared.
Dapg—Disappearing.
Dapc—Disappearance.
Ddl—Dardanelles.
Hod—Holland.
Ita—Italy.
Itan—Italian.
Mex—Mexico.
Mexc—Mexico City.
Stam—Statement.
Vsl—Vessel.
Adlty—Admiralty.
De—Defense.
Dve—Defensive.
Dhg—Discharge.
Dhgd—Discharged.
Dhgg—Discharging.
Dhgs—Discharges.
Indf—Indefinite.
Indfy—Indefinitely.
Iprn—Imprison.
Iprm—Imprisonment.
Ksr—Kaiser.
Ofe—Offense.
Ofv—Offensive.
Oprn—Operation.
Rpz—Repulse.
Rpzd—Repulsed.
Rpzg—Repulsing.
Srv—Survive.
Srvd—Survived.
Srvg—Surviving.
Srvr—Survivor.
Sup—Supply.
Supd—Supplied.
Supg—Supplying.
Sups—Supplies.
Tsd—Translated.
Tsg—Translating.
Tsl—Translate.
Tsn—Translation.
Uofy—Unofficially.
Uofl—Unofficial.
Usfy—Unsatisfactory.
Zap—Seaport.

Further changes suggested by Mr. Bruckner are:

Kpn—Comprehension (now competition).
Kptn—Competition.
Dmj—Damage (and its derivatives).
Pnk—Precinct.
Rel—Reelect.
Reld—Reelected.
Reln—Reelection (and other derivatives).

By the Light of the Lantern



Ask us what you want to know

WE want to be as useful as possible to our readers, but, because of the great popularity of this department, we are obliged to impose certain restrictions. It is limited to the answering of questions of an informative, technical, or historical nature concerning the railroad business and allied occupations only. We cannot answer requests for positions or give information regarding employment. All letters should be signed with the full name of the writer, as an indication of his good faith. We will print only his initials. The editor begs that readers sending in questions will not be disappointed if the answers do not appear as early as expected. It frequently takes weeks to secure correct answers, owing to the complexity of the questions. All questions are answered free of charge. The editor earnestly requests his readers to bring immediately to his attention any errors they may find in this department. He reserves the right to refrain from answering any question.

W. M. H., New York, New York. — The G-15 class locomotives of the Erie Railroad numbered 950 to 960 and 971 to 974, inclusive, are of the ten-wheel or 4-6-0 type. The rated tractive power of these engines is 23,500 pounds. The diameter of the drivers is 68 inches, and the cylinders are 19 by 26 inches. Engine No. 970 is known as the G-15-A class. The diameter of the drivers is 68 inches, and the cylinders are 21 by 26 inches. The rated tractive effort of this engine is 26,520 pounds.

H. K., Brooklyn, New York. — A number of roads, including the Pennsylvania, where the system of apprentice instruction is in use, include the preparation of young men for the telegraph service. We cannot give you particulars in regard to whom application should be made, but a personal application at the nearest division superintendent's office would no doubt secure you any further particulars you wish.

(2) The Official Railway Equipment Register is published monthly at the Railway Equipment and Publication Company, 75 Church Street, New York, New York.

DOES the top part of a wheel of a locomotive run faster than the bottom part?

(2) Does the crosshead move in the guides when a locomotive is in motion?—J. F. B., Omaha, Nebraska.

(1) There are two motions of all wheels that are in contact with rails on the earth—the peripheral motion, which is equal at all points equally removed from the center of the axle, and the motion of the wheel through space, which may be called an irregular motion, having its highest velocity at the part farthest removed from contact. At the point of contact that part of the wheel is absolutely at rest for an infinitesimal moment of time, and taking a new flight through space, increases in speed as it reaches the top, and diminishes as it reaches the bottom.

(2) Yes, except at the two extreme points of motion, where it comes to an absolute rest.

S. D., Hopewell, Virginia.—The editor would be glad indeed to settle the argument as to which road was the first to have safety signals; but you would have to tell him what you or your friend would consider the first safety signals before drawing him into your discussion. If you have in mind what has been termed by the American Railway Association as the "telegraph block system" would inform you that it was first introduced into this country in 1875 by the Pennsylvania Railroad.

Telegraphic signaling, the indications being given by magnetic needles, was in use in England as early as 1842, and signaling by electric bells was in use on the South Eastern Railway of England in 1851. What has been designated as the commencement of block signaling in this country was what was called "the pole-and-ball signal" used on the Newcastle and Frenchtown Railroad in 1832. The signals appear to have been used for conveying information from one end of the line to the other rather than for a block.

When the train was just starting from Newcastle, the man in charge at that point raised the ball to the top of the pole. The man at the next station, seeing the white ball raised by the first man, raised his ball to half the height of his pole. The men at the other stations, each on the lookout with his telescope, which was placed in the guides provided for the purpose on the side of the pole, also raised their balls to half-mast, thus conveying the information throughout the line that the train had started.

When the train reached the first station the man would immediately raise his ball to the top of the pole, as a signal, both ways, that the train had reached him, lowering his ball when the train reached the next man ahead; this being repeated successively at each of the four stations.

When a train, having passed one station, did not arrive at the next, or was seen to be in trouble in any way, the man at the station next nearer Newcastle would lower his white ball and substitute a black ball, kept at hand for the purpose. The black ball would rise to the top of his pole as a signal to be successively transmitted to Newcastle, and a relief-train would be despatched to the assistance of the regular train.

M. J., S., New Milford, New York.—The McGraw-Hill Book Company, 239 West Thirty-Ninth Street, New York, have a number of excellent books on track and maintenance-of-way subjects.

W. E. T., Cleveland, Ohio.—The Detroit, Toledo and Ironton Railroad operates 422 miles; 63 locomotives; 3,415 freight-cars; 20 passenger-cars, and 107 miscellaneous cars. The shops on this road are located at the following points in the State of Ohio: Jackson, Springfield, Ironton, Lima, and Napoleon; also Delray, Michigan.

B. H., New York, New York.—The offices of the J. G. White Engineering Corporation are located at 43 Exchange Place, New York, New York.

J. M. M., Cincinnati, Ohio.—Nearly all up-to-date books on locomotive construction, operation, or repairs contain chapters dealing with compound engines. We know of no work dealing with this subject alone. If you will communicate with the concern referred to in answer (b) to A. W. H., Scotia, California, in this issue, they will probably recommend to you the best there is on the subject.

I HAVE a fine gun that has begun to wear off. Can you tell me what to do to blue steel it again?—M. P. S., Bertha, Minnesota.

The bluing of gun-barrels is effected by heating evenly in a muffle until the desired blue color is raised, the barrel being first made clean and bright with emery cloth, leaving no marks of grease or dirt upon the metal when the bluing takes place. Then it is allowed to cool in the air. It requires considerable experience to obtain an even, clear blue, and we therefore suggest that the following process be employed; it will produce equally as good results:

Dissolve two parts of crystallized chlorid of iron; two parts of solid chlorid of antimony; one part of gallic acid in four or five parts of water; apply with a small sponge and let dry in air. Repeat this two or three times, then wash with water, and dry. Rubbing with boiled linseed oil will deepen the shade. Repeat this operation until satisfied with the result.

K. T. P., Bellingham, Washington.—In calculating the tractive power of a three-cylinder Shay-geared locomotive the following formula is used:

$$\frac{T=d^2 \times S \times G \times 1.5 \times .75P}{D}$$

Where T=Tractive force in pounds
D=Diameter of cylinders, in inches
S=Stroke of piston, in inches
G=Ratio of gearing
1.5=Multiple to account for the third cylinder
.75P=75 per cent of the boiler pressure, which is assumed to be the effective pressure of the steam in cylinders.

Example—Find the tractive power of a Shay locomotive, having three cylinders 10 inches in diameter, 10 inches stroke, 180 lb. boiler pressure, gear ratio 2.05, driving wheels 28 inches diameter.

$$\frac{10^2 \times 10 \times 2.05 \times 1.5 \times (.75 \times 180 = 14825 \text{ lbs.}}{28}$$

The result is obtained by squaring the diameter of the cylinders, in inches, multiplied by the stroke, in inches, multiplied by the gear ratio, multiplied by 1.5, multiplied by 75 per cent of the boiler pressure and divided by the diameter of the drivers, in inches, thus:

10 x 10=100 x 10=1000
1000 x 2.05=2050
2050 x 1.5=3075
3075 x 135=415125
415125 ÷ 28=14825 lbs.

The same method is used to calculate the tractive power of the two-cylinder Shay locomotives, except the multiple 1.5 is omitted.

E. N. D., Boston, Massachusetts.—In overcoming what is known as the angularity of the main rod in adjusting the Southern valve-gear, it may be truly said that there is less difficulty in adjusting the valve-gear on a locomotive equipped with this type of valve-gear than on any kind of gearing. The movable parts are fewer in number, and all lend themselves to massiveness in construction. The three main points are the eccentric crank, the eccentric rod, and the valve-rod.

It may be taken as a foregone conclusion that the eccentric crank is correct. This is, properly speaking, a part of the constructing engineer's work, and is almost invariably correctly adjusted. A variation in the openings of the valve may be readily adjusted by shortening or lengthening the valve-rod as the requirements of the case may demand; that is, if the variation is simply on the valve-opening more at the one end of the piston-stroke than at the other.

If the variation should be that there is more valve-opening on the forward motion than on the back motion, this may be rectified by shortening or lengthening the eccentric rod to meet the requirements of the situation. This will meet almost all the variations that may arise, but it should be noted that the reach-rod is of the proper length; that is, when the reverse lever is on the center the link-block should be in the center of the link. Any considerable variation in this regard will be almost impossible to overcome.

Not infrequently the back motion may be slightly distorted in order that the valves may be perfectly adjusted to meet the requirements of the exact point at which the locomotive will be doing its greatest amount of work. Hence, the cut-off point is of importance, and should be adjusted with precision even if the extreme points should show some slight variation. This is common to all kinds of valve-gears, and especially so on the Stephenson valve-gear.

The angularity of the main rod need not be too seriously considered. The correctness of the valve-openings are the points to be aimed at, and the intermediary variations will take care of themselves. There is a complexity in all movements where a reciprocal motion is changed into a linear motion that may almost be said to be past finding out, but the adjustable rods referred to can readily be changed in their length to make up for any involved eccentricity of movement.

W. C., Minneapolis, Minnesota.—The advantage in changing a compound locomotive into a simple locomotive is especially used in starting the locomotive. After the inertia has been overcome the gearing is then used to change into a compound engine, otherwise there would be no advantage in the use of the compound appliances. This is the particular advantage in the Mallet compound, where an immense force can be used in starting or in overcoming a difficult grade, while, on a track comparatively level, the compound appliances are used and an economical use of steam, and consequently of fuel and water, made possible.

K. G., Austin, Chicago, Illinois.—The clanking sound that you refer to in the running of a locomotive may be safely set down as arising from the loose joints of the connecting-rods. The solid ends of the connecting-rods of many types of locomotives, more especially of freight-locomotives, soon gather what is known as lost motion, and in course of time make as much noise as a blacksmith's shop.

There has been a good deal of this noise waking the echoes in recent years, but with better times it is being amended. It should not be amended; it should be abolished altogether, but in poor times, when it is difficult to make ends meet, it is common practise to keep the passenger locomotives in fairly good repair, and let the freight-engines go as long as they can turn a wheel. Hence the clanking sound at the end of each passionate stroke of the overworked piston and loose connecting-rod.

A. W. H., Scotia, California.—Left main driving-pin is broken off. How would you block the pistons and valve to be able to work the other side so as to make the nearest siding and not block the main line?

Take down all side rods, both sides, and main rod on the disabled side, or carry it in guides. Secure valve centrally on seat, block crosshead, and remove cylinder cocks. Some types of engines are so constructed that crosshead bars will not clear pin on the forward driver with crosshead blocked.

With this type of engine you will have to sling the forward pair of drivers and carry them clear of rail. To do this, run both wheels up on wedges, block between pedestal-binder and oil cellar and on top of frame under spring saddle to relieve weight; get off the wedges, and counterbalances will turn wheels so that pins will be on top eighths. As an extra precaution you may chain around spokes and across above frame-rail, but it is not necessary.

Securely block the crosshead at the back end of the guides where the construction of the engine will permit, or at the front end when necessary. We block at the rear end when possible, so that if the blocking should accidentally give way and the crosshead move, the front cylinder-head will be damaged in preference to the back head, as the cost of replacing it is far less.

Block the crosshead at the travel-mark at the rear end of the guide-bars, in that manner preventing the cylinder packing-ring from getting down into the counterbore and causing delay in making repairs at the terminal; secure the crosshead by placing a block of wood between crosshead and guide-block to hold it at the travel-mark, then last block to lower guide-bar between crosshead and front guide-block or the back cylinder-head.

This applies to the "Locomotive" type crosshead and the "Underhung" type of crosshead; but where you have the "Alligator" type crosshead, and desire to block the crosshead ahead, loosen one of the guide-bolts with the "plow-bolt" head, which holds the lower guide-bar to yoke; drive the bolt up so head will be about three-fourths of an inch above the bar; cut the block about one-half inch longer than the distance from bolthead to crosshead; sink bolthead into end of blocking, and lash the blocking down on guide-bar; this will prevent the bolt from working out and hold the crosshead secure.

Whenever crosshead is blocked, remove both cylinder-cocks or fasten them open, except when the steam edge of valve-seat is broken, so that steam will be present in cylinder, in which case you will remove the cylinder-cock at end

where piston-head rests and block the cylinder-cock open at end of cylinder, where steam is present, to allow condensation to pass out of cylinder—this is to protect cylinder, especially in freezing weather.

(b) Where can I obtain a good book on locomotive breakdowns?

Write the Angus Sinclair Company, 114 Liberty Street, New York, New York.

W. E. S., Chicago, Illinois.—The principal causes of a hot pump are: An excessive rate of piston-speed maintained for an unreasonable length of time, lack of lubrication in the air-cylinder, gummed-up air-passages, insufficient lift of air-valves, defective or leaky air-valves, or leaky piston-rings.

In the event of an overheated air-pump the proper course to pursue depends somewhat upon the circumstances under which the overheating occurs. If it is possible to reduce the speed of the pump without incurring the liability of a loss of train-control, it should be done, and in all cases the air cylinder should be kept well lubricated.

When a piston-rod moves faster in one direction than in the other, it indicates a defective air-valve or partly closed air-passage, provided that there is no blow through the steam portion, but in the larger-capacity air-pumps the uneven stroke is sometimes due to defective air-piston packing-rings.

F. W., Nashville, Tennessee.—The exact location of eccentric keys before wheels are put under the engine is a difficult operation to beginners, but after some practise it may be accomplished with a degree of exactness that leaves little to be desired. A common method in some shops is to have a board 1½ inches by 10 inches and about three feet in length, with a half-circle the size of the largest axle, say 9 inches, cut out in the middle, a V-clamp on the side of the board to fasten it on the axle.

This clamp may be raised or lowered so as to bring the top of the board to the center of any size of axle. A small spirit-level is inserted at one end, so that if the line from the center of the drivers to the center of the link-block is level, the board should be leveled. If the center line of motion is not level then a plumb-bob should be used and the board fastened to the exact angle of inclination. The plumb-bob frame can be marked for the proper incline for different classes of engines.

The board should be clamped on the axle securely against the eccentric. The crank-pin should be placed on the dead center, forward or back, by plumbing the crank-pin on the opposite side.

Put the eccentric plumb on the shaft, up or down, according to forward or back motion. This brings the valve on the middle of the seat; then give it the proper angular advance toward the crank-pin measured on top of the board which is the center of the axle, and mark the keyway.

The proper amount of advance, of course, depends on the outside lap of the valve and the amount of lead that is desired to be given. If the lap is ¾ inch, and we wish to set the valve with ⅛ lead, we advance ⅞ inch provided both rocker-arms are the same length. When the length of the rocker-arms is variable, as in the case referred to, it is a very simple calculation to ascertain the amount of variation necessary. For example, as 12 is to 13 so is ⅞ to 91-96, or any other variation in the length of the rocker-arms.

The same course is taken in regard to the other three eccentrics, and it will be found that if these means and methods are carefully used and applied, the results will be exact. It should be borne in mind, however, that the first or even second attempts are rarely exactly successful. Skill in these fine calculations and careful markings does not come to even the most skilled mechanic over night. It comes from experience, which brings a mastery in all art.

W. H. J., Colver, Pennsylvania.—See answer to A. W. H., Scotia, California, in this issue. We could not publish a complete list of all the air-brake books on the market. The company referred to has a number of books on the air-brake and they would undertake to supply you with any book published on railroad subjects.

H. J., Alcester, South Dakota.—Is there a resident school of signal engineering, or is there another school besides the Department of Railroad Signaling of Chicago, Illinois?

We know of no such school. The American Commerce Association, the Rookery, Chicago, Illinois, also has a correspondence course in railroad signal engineering.

(b) Give the names of some of the presidents of the great Eastern railroads.

Samuel Rae, Pennsylvania Railroad; F. D. Underwood, Erie Railroad; A. H. Smith, New York Central; Daniel Willard, Baltimore and Ohio Railroad; Howard Elliott, New York, New Haven and Hartford Railroad; J. H. Hustis, Boston and Maine Railroad.

E. F., Chicago, Illinois.—The fact that many engineers and firemen are seen wearing glasses is no proof that their eyesight is particularly defective. Good eyesight is a necessary qualification in the applicants seeking employment for these positions. Tests are usually made by using letters of the alphabet printed in different sizes, and the eyes are tested separately at a certain distance

from the printed placards, and a positive distinguishing of the letters is necessary to pass the examination.

Tests for color-blindness are also made by the use of colored yarns and other devices to prove the applicant's ability to distinguish the various indications of signals, *et cetera*. After the test is successfully passed, there is no regulation prohibiting the use of glasses and goggles, which are frequently worn as a protection.

In a case of defective vision other excellent qualifications will not make up for this important shortcoming. You are sure of a fair trial, and you cannot cross a bridge until you come to it. Go and be examined.

J. E. B., Durant, Mississippi.—From the latest statistics available and as of June 30, 1912, the following is a summary of the various classifications of all the cars in service in the United States. The figures, of course, refer to steam railways:

IN PASSENGER SERVICE:	
First-class.	22,418
Second-class.	5,543
Combination.	5,806
Emigrant.	89
Dining.	1,133
Parlor.	699
Sleeping.	673
Baggage, express and postal.	12,766
All other cars.	2,363
Total in passenger service.	51,490
IN COMPANY SERVICE:	
Officers and pay.	789
Gravel.	25,798
Derrick.	1,792
Caboose.	28,481
Other road cars.	58,775
Total company service.	115,635
IN FREIGHT SERVICE:	
Box.	1,004,030
Flat.	150,898
Stock.	76,536
Coal.	855,112
Tank.	7,836
Refrigerator.	30,693
Other cars.	90,444
Total in freight service.	2,215,549
Total all cars in service.	2,382,674
Total locomotives in service.	63,510

W. A. H., Excelsior Springs, Missouri.—We wish that we could be of more assistance to you, but can only suggest that you communicate with the *Sunset Magazine*, San Francisco, California.

C. B., Ottawa, Canada.—In a locomotive is there any reason why the entire tube space should not be taken up by the superheater? Would any advantage be gained thereby, and could a 20 x 26-inch cylinder be enlarged to 20½ inches by the addition of a superheater?

If the entire tube space was given up to the use of the superheater flues, the water-heating surface would be very greatly reduced, and the steaming qualities of the engine would be very much impaired; besides, the outer sheet of the barrel of the boiler would be rapidly destroyed. The idea is utterly impractical. The cylinders of a locomotive may be slightly increased by the use of superheated steam, but a matter of this kind may be very safely left in the hands of the constructing engineers, who are furnished with the results of experimental tests of real value, and their decisions may be safely followed.

(b) How many miles of track and how many miles of automatic signals has the Chicago, Rock Island and Pacific Railway?

The road referred to operates 8,041 miles. At the close of 1915 1,087 miles were eqipped with automatic block signals.

(c) Where can I secure a book containing condensed profiles of the different railway systems?

We do not believe there is such a book published, and if there were, there would be little or no call for it. The Official Guide of the Railways, published monthly in New York, contains maps of nearly all the railroads in North America.

(d) Why is aluminum not used more in the construction of locomotives?

Because of its extreme weakness. The best kinds of steel have a tensile resistance of over 75,000 pounds per square inch; aluminum, annealed, as low as 14,000 pounds per square inch.

(e) We cannot answer some of your other questions with any degree of certainty. The number of times a locomotive takes water between certain points depends entirely upon the amount of evaporation, which is variable according to the service. The evaporation of 30 pounds of water per square foot of grate per hour would, of course, necessitate replenishing much less frequently than would the evaporation of 100 pounds of water, even if the tank be considerably smaller.

M. F. H., Fort Smith, Arkansas.—Can you give a table showing how to figure the number of cubic feet of gas in a 530 or 580 receiver at so much per atmosphere?

A table such as you describe is not of sufficient general interest for publication in this department. We assume that you have reference to a receiver or holder of 530 or 580 cubic feet capacity. A volume of gas diminishes in the same ratio as the pressure upon it is increased if the temperature is unchanged.

The formula for cubical capacity is as follows: Square the diameter, multiply by .7854 and multiply this product by the length, which equals the cubical contents at one atmosphere. For each atmosphere increase in pressure add the original cubical contents of the receiver. For instance, if the contents are 530 cubic feet at one atmosphere, they will be 1,060 cubic feet at two atmospheres,

1,590 cubic feet at three, *et cetera*. The above formula is of sufficient exactness for all ordinary purposes.

H. M., Brooklyn, New York.—The Georgia and Florida Railroad operates 350 miles; 30 locomotives; 654 cars. The Coal and Coke Railroad operates 197 miles; 30 locomotives, and 2,204 cars. The Sandy Valley and Elkhorn Railway is owned and operated by the Baltimore and Ohio Railroad; the equipment of the road is 2,000 freight-cars. The line extends 30 miles from Shelby Junction to a point beyond Jenkins in the State of Kentucky.

W. H. B., Washington, District of Columbia.—Mr. H. H. Westinghouse is connected with both the Westinghouse Electric and Manufacturing Company and the Westinghouse Air-Brake Company. At the present time he is president of the latter corporation. He is a brother of the late George Westinghouse and not a son, as you state. Charles Francis Adams was president of the Westinghouse Electric and Manufacturing Company from 1904 to 1907, inclusive.

R. E. S., St. James, Minnesota.—On the Chicago, St. Paul, Minneapolis and Omaha Railway Mr. George Boyce is superintendent of telegraph and signals, with headquarters at St. Paul, Minnesota. The signal engineer of the Northern Pacific Railway is Mr. C. A. Christofferson, with offices at St. Paul, Minnesota. Mr. J. C. Mill is signal engineer of the Chicago, Milwaukee and St. Paul Railway; headquarters, Milwaukee, Wisconsin.

H. M., Brooklyn, New York.—The rolling-stock of the Denver and Rio Grande Railroad consists of 619 locomotives, 17,655 freight-cars, 417 passenger-cars, and 169 miscellaneous cars. The Missouri, Kansas and Texas Lines operates 608 locomotives, 24,375 freight-cars, 463 passenger-cars, and 800 miscellaneous cars. The Michigan Central Railroad has 750 locomotives, 24,602 freight-cars, 541 passenger-cars, and 1,234 miscellaneous cars.

The rolling-stock of the Long Island Railroad consists of 199 locomotives, 1,809 passenger cars, and 319 miscellaneos cars. The New York Central Railroad operates 3,293 locomotives, 131,458 freight-cars, 3,163 passenger-cars, and 7,065 miscellaneous cars.

R. J. Pr., Jr., Fond du Lac, Wisconsin.—The Safeguard Automatic Water-Gage is an excellent device, and reliable in every way. It is one of the few devices of its kind that has stood the test of varying kinds of conditions and waters, and may be safely relied upon. As to comparison with other kinds of water-gages, we do not care to venture opinions as to the relative merits of devices. Very eminent authorities differ on such subjects, and we are not looking for controversies, but prefer to speak well of every mechanical device that has met the requirements of the service for which it was designed.

The manufacturers of the device to which you refer constitute one of the oldest and most reliable concerns in this country manufacturing boiler appliances, and we are confident that any claims they make for their products are exaggerated but little, if at all.

W. T., Gas City, Indiana.—Communicate with the book company referred to in our answer to M. J. S., New Milford, New York, in this issue.

J. B., Syracuse, New York.—"The Motion-Picture Handbook," by Richardson, and "The Handbook for Motion Picture and Stereoptican Operators," by Jenkins and Depue, are both good books on the subjects to which you refer. Messrs. Munn and Company, Woolworth Building, New York, can supply both these books.

(b) From the description you gave us we were not able to find the road to which you referred. Can you tell us the name of the company? We shall be glad to supply the information you wish for if we know exactly the road you have in mind.

J. E. B., Alhambra, California.—We assume that the car lettered I-C-C-44 which you observed on a siding in your city is one of the number being used to convey those members of the staff of the Interstate Commerce Commission that are conducting the examinations for the reports of the commission concerning the physical valuation of the various roads.

C. F., New York, New York.—We know of no concern having large colored reproductions of American locomotives for sale.

H. D. T., Greeley, Colorado.—The educational association that you refer to cannot honestly guarantee you a position. Common sense should teach the students that while many graduates from such institutions do secure employment through such sources, all labor or service, or whatever it may be called, depends largely on the law of supply and demand. If applications for certain classes of skilled employees come to the association, and men are ready to fill the places, positions may in this way be secured; but if the applications do not come in sufficient numbers to meet the supply, a certain number must depend on their own resources, and it is very rarely that the demand exceeds the supply. It is generally the other way.

This is not meant as a reflection on the institutions referred to. We believe that the promoters

are doing the best they can, as a means of self-preservation. You should get all the knowledge that you can by every honorable means, and walk by faith rather than by sight.

M. D. S., Albion, California. — Apprentices, helpers, and others may be employed on some roads at sixteen years of age. College students are not, as a rule, particularly preferred; but a good education is a decided advantage as they advance in railroad work. Applicants are not rejected because they are not graduates of a grammar or high school.

As we have repeatedly stated, each railroad has its own regulations, and application blanks may readily be secured at division headquarters either at the master mechanic's or superintendent's offices. The railroads entering Oakland and San Francisco, California, are the Southern Pacific; Atchison, Topeka and Santa Fe; Western Pacific; Oakland, Antioch and Eastern; Northwestern Pacific; Ocean Shore, and the Pacific Electric.

R. C. B., Norwich, Connecticut.—We suggest that you communicate with Mr. F. E. Cook, superintendent of the Pullman Company, New York, or with Mr. J. L. A. Baldwin, district superintendent of the same company at Boston, Massachusetts. Either of these gentlemen would probably supply you with the information you desire.

J. W., Chicago, Illinois.—Don't understand your question. Not sufficiently explicit. Surely you could not expect us to publish a complete catechism as used by the roads in the progressive examination of firemen. Glad to hear from you at any time, but be reasonable.

F. W., Canton, Ohio.—The Pacific Electric Railway operates an interurban electric system centering at Los Angeles and extending into the counties of San Bernardino, Riverside, and Orange. It serves the cities of San Bernardino, Pasadena, Riverside, and a number of other cities in the State of California. The rolling-stock consists of 57 electric locomotives, 681 motor-cars, 1 steam locomotive, and 1,282 cars without electric equipment. The company operates 1,047 miles.

It is controlled through ownership of the capital stock by the Southern Pacific Company. We are unable to answer your other questions in regard to this road for the reason that you do not state what branch of service you have reference to.

L. G. F., Long Island City, New York.—A block-signaling system giving the indications in the cab would be of unquestionable value, but we really could not venture an opinion in regard to your device. The merits of an invention cannot be assured without test. That there is still room for improvements in the matter of signaling is undoubted.

A CORRECTION.

SEVERAL readers have drawn our attention to an error that inadventently appeared in answer to R. E. H., Manila, Philippine Islands, in the April issue of this department. In answering this question in regard to the fastest regular passenger run we stated that it was on the Philadelphia and Reading between Camden and Atlantic City, New Jersey. We quoted a reported speed record over this stretch of road instead of the fast summer schedules, which approximate sixty miles per hour.

This run is recognized as the fastest in the United States, although there may be a few instances in which a run is made faster for a comparatively short distance. If there are any trains scheduled seventy-five miles per hour, we would like to be shown.

Our readers will understand that in handling a large number of questions covering such a diversity of subjects an error will sometimes creep in, and when we are wrong, we are always ready to admit it. Incidentally, the editor of this department frankly admits that speed records are his bugaboo. None of these things are official, and the greater portion of them are based on rumor and hearsay, and the so-called authorities are rarely, if ever, in accord. When a question refers to a regular schedule it is different, and hence we admit our error in this instance.

THE N. AND W. IS DRY, TOO.

IN reply to an inquiry, we informed the readers of this department that the Pennsylvania sold no intoxicants, but that the Norfolk and Western did. We are pleased to learn direct from a high official of the Norfolk and Western that that system discontinued the sale of liquor upon their diners in November, 1914. The official's letter follows:

> I note from your April, 1916, issue of the RAILROAD MAN'S MAGAZINE, under the head of "By the Light of the Lantern," three inquiries made by W. H., Portsmouth, Ohio: Does the Pennsylvania Railroad sell intoxicants on any of their trains? Does the N. and W. Railway sell intoxicating drinks on any of their trains? Has the Pennsylvania Railroad closed their café in their station at New York City?
>
> I shall thank you to notify W. H., Portsmouth, Ohio, that the Norfolk and Western Railway does not sell intoxicating drinks on any of their diners, and has not done so since November, 1914.
>
> Yours truly,
> W. H. HAYES,
> Superintendent Dining-Cars,
> Norfolk and Western Railway Company.
> Roanoke, Virginia.

Telegraphic and Telephonic

IF there is anything you want to know about the telegraph, telephone, or radio telegraphy—if you have an operating problem that puzzles you—if you want to discuss a question of theory—write the RAILROAD MAN'S MAGAZINE. We have engaged a technical expert who is one of the leading authorities of the country on these subjects. Ask him. He knows!

O. L. W., Hopson, Tennessee.—The *Railroad Telegrapher* is published by the Order of Railroad Telegraphers at St. Louis, Missouri. Other Telegraph magazines published in this country are—the *American Telegrapher,* Chicago, Illinois, and *Telegraph and Telephone Age,* New York.

G. K. M., Detroit, Michigan.—There still is a good, healthy demand for telegraph operators at salaries as high as have been paid at any time in the past. You might communicate with Mr. J. J. Ross, Superintendent of Telegraphs, Michigan Central Railway Company, Detroit, Michigan, and with Mr. W. M. Hayes, Superintendent of Telegraph, Pere Marquette Railway Company, Detroit, Michigan, asking for an interview or for an examination as to your qualifications.

J. S. W., Peoria, Illinois.—A very good book for beginners is "Telegraphy for Beginners," published by Spon and Chamberlain, 123 Liberty Street, New York. More advanced works on the telegraph are published by The McGraw, Hill Book Company, 239 West Thirty-Ninth Street, New York.

W. L. M., Denver, Colorado.—If the pair of four-ohm magnets and the 150-ohm magnets are the same size, mounting the 150-ohm magnets in the 4-ohm sounder-frame will make that instrument available for main-line work. When used in the main line the 150-ohm sounder does not work as satisfactorily as a regular 150-ohm relay, due to the fact that the sounder armature is comparatively heavy. This necessitates frequent adjustment as line-current values change, especially in wet weather. Under ordinary circumstances, however, the reconstructed instrument will work very well.

J. W., Neshanic Station, New Jersey.—The gravity cell consists of a glass jar about ten inches high and about eight inches in diameter, in the bottom of which is deposited about three pounds of sulphate of copper (bluestone) in the form of crystals. Imbedded in the crystals a "star" of sheet-copper with an insulated wire attached to it forms the negative element of the battery.

The positive element consists of a section of zinc in crow-foot form which is suspended from the top of the jar by means of a cross-piece, or a hook engaging the edge of the jar. When the elements are thus assembled, the jar is filled to within an inch of the top with rainwater.

The chemical action which produces electric current commences as soon as the wire connected with the copper element and the wire leading from the zinc element are joined together outside of the jar. The electromotive force of the gravity cell is about one volt. Outside of the jar the current flows in a direction from "copper" to "zinc."

(2) The "ohm" is the unit of electrical resistance. This information is not of much value unless associated with the further information that the "volt" is the unit of electrical force or pressure, and that the "ampere" is the unit of electrical current strength. A piece of number ten B. & S. gage copper wire one thousand feet in length has a resistance of one ohm.

If a cell of battery, having no internal resistance, with a force of one volt has its terminals connected or joined together by a section of number ten copper wire 1,000 feet long, a current of one ampere will flow through the circuit thus formed. If the section of wire were 2,000 feet long, then one-half ampere would flow through the circuit.

R. M. A., Meridian, Mississippi.—It depends considerably upon what use you desire to make of the periscope, how it should be constructed. Toy periscopes which very well demonstrate the principles of this device are on the market, and consist of a pasteboard tube about four feet in length and about three inches in diameter. At one end of the tube a round mirror three inches in diameter is hinged, and provided with a tail-piece fashioned somewhat like the lid of a sirup-jug. A string attached to the extremity of the tail-piece provides the necessary adjustment of the mirror. At the opposite end of the tube a second mirror is so placed that it presents reflections of images appearing on the upper end, or adjustable mirror.

(2) If you desire to procure a wireless-telegraph set capable of operating over a distance of four hundred miles, you will have better success,

with considerably less expense, if you purchase the necessary apparatus from manufacturers, rather than attempt to make home-made instruments. You do not state whether the party with whom you wish to communicate already has the requisite equipment. If you will write this department stating what instruments you now possess, we can then tell you what additional apparatus you will require and what it will cost.

(3) You can purchase a pair of telephones, including two transmitters and two receivers ready for use, for the sum of five dollars. These are commercial instruments. At this price they are cheaper than you could possibly make an outfit for.

(4) In order to run the small motor with current from regular 110-volt mains you may have to rewind the field magnets with number twenty-four double cotton-covered wire. You might try it, however, by connecting one wire of the lighting-circuit to one terminal of the motor and insert a 32 candle-power carbon lamp in series with the other wire, connecting that also to the motor. Be sure you fuse the circuit with five-ampere fuses where you tap onto the lighting circuit. One lamp thus inserted gives one ampere of current in the circuit.

M. H., Worcester, Massachusetts.—Modern telegraph cables used in interior wiring have an enamel coating over each copper conductor, over which is wrapped two layers of twisted silk. The insulated conductors are then enclosed in a lead sheath. When cables are connected to terminal bars it is necessary to cut away twelve inches or more of the lead covering, so that the individual conductors may be "pig-tailed."

Unsaturated cotton sleeves are pulled over each conductor in order to prevent accidental contact of conducting surfaces. While the cable-head, or pig-tail, is being prepared a layer of unsaturated cotton tape five-eighths inch wide is wrapped around the conductors in place of the lead which has been removed, after which the head is immersed in boiling beeswax, and when dry given two coats of shellac and a coat of asphaltum paint.

R. M. K., Toledo, Ohio.—Selectors practically the same in design and operation as those employed to-day were in service on some Western railroads as early as the year 1888. In the early nineties Gill selectors were quite extensively employed in the telegraph service of the Great Northern Railroad.

D. B., Everett, Massachusetts.—Yes, many telegraphers are reported to have learned to telegraph within a period of six months well enough to hold a light position. Several railroads have telegraph schools, notably the Pennsylvania Railroad. You might communicate with the superintendent of telegraph of the Boston and Maine Railroad, Boston, Massachusetts, who will very likely be glad to give you detailed information as to prospects in your territory.

W. L. K., Chicago, Illinois.—What is known as compound wire is made up of a number sixteen-gage steel core surrounded by a copper sleeve, the overall gage being number fourteen. This wires weighs ninety-nine pounds per mile. Its tensile strength is about double that of a number eight iron wire, and its conductivity is somewhat higher than that of the number eight iron.

F. G. S., Keokuk, Iowa.—A diplex telegraph system is one wherein two telegrams may be sent over a wire, both in one direction. A duplex system is one providing double transmission simultaneously, one message in each direction.

A. L. P., Washington, District of Columbia.—A fifteen-minute telephone conversation between New York and Seattle, Washington, costs $106.50.

A. R. K., Ogdensburg, New York.—In the wireless telegraph service the Continental code is used. In THE RAILROAD MAN'S MAGAZINE for December, 1915, you will find illustrations and descriptions of practically all telegraph alphabets in use.

R. F. S., Minneapolis, Minnesota.—There are many telegraphers from the United States employed in Canada. During the past year quite a number of American operators have secured employment with Canadian companies.

T. J. K., Toronto, Ontario.—See the answer to J. W. in this issue. Ohm's Law concerns the factors "resistance in ohms" (R), "current in amperes" (I), and "electromotive force in volts" (E). The resistance of a circuit may be determined by dividing the number of volts applied by the number of amperes flowing. The strength of the current in amperes flowing in a circuit may be determined by dividing the number of volts applied by the number of ohms resistance of the circuit. The number of volts applied to a circuit may be determined by multiplying the number of amperes flowing by the number of ohms resistance of the circuit. Thus if the value of any two factors is known, the value of the third may be determined by means of Ohm's Law as above explained.

JOHN H., Dallas, Texas.—A "flip-down" is the term used when the local circuits controlling the sending and receiving instruments of a duplex set are switched to an operating-table situated in a part of the operating-room remote from the duplex set proper. By means of flip-down circuits all duplex and quadruplex apparatus may be located in one part of the office or

in a "multiplex" room, and the local circuits controlling this apparatus may be switched to any operating-table desired.

H. H. L., Savannah, Georgia.—When the word "balance" is used in connection with duplex or quadruplex operation, it signifies that the resistance of the artificial-line coils is to be "balanced" against the resistance of the main-line wire stretching between the two terminal stations. A number nine copper wire five hundred miles long has a resistance of about 2,000 ohms. When a wire of this character is duplexed or quadruplexed the artificial-line resistance-coils situated at each end of the line must be so adjusted that they will have in each case a resistance equal to that of the main-line wire.

W. D. D., Kansas City, Missouri.—The air-line distance between Sayville, Long Island, and Nauen, Germany, is 3,262 miles.

G. K. B., Vancouver, British Columbia.—The number of vibrations in air which produce sound phenomena range from sixteen per second to about 40,000 per second. The lowest musical note produced is the result of thirty-two vibrations per second; man's conversational voice, 128 per second; woman's conversational voice, 256 to 512 per second; the highest soprano voice, 2,000 per second; the shrill cry of a bat, 30,000 per second, and the highest audible sound, 40,000 per second.

B. W. P., St. Paul, Minnesota.—The city of Chicago has 410,000 telephones, handled by 6,000 exchange operators. The average number of calls per day is said to be about 2,400,000.

R. L. C., Portland, Maine.—Ralph Thompson, an operator in the main office, New York, of one of the commercial telegraph companies, during the year 1915 handled 125,094 telegrams in 2,029 hours, an average of sixty-one messages per hour for the year, during which time he made only one error.

G. M. N., Birmingham, Alabama.—Thirty-foot poles with six-inch tops cost about $2.25 each.

S. S. D., Cedar Rapids, Iowa.—The "concentration" system you inquire about is employed at the present time in the large main offices of the Postal Telegraph Company throughout the country. All branch-office wires and short-way lines are connected at the main office to a cord-and-plug switchboard similar to that used in central telephone exchanges.

The act of opening the key at the branch office releases the armature of a signal relay at the main office which causes a small red lamp to light up, thereby attracting the attention of the main-office monitor operator, who "plugs in" an idle operator to answer the call. When the call is answered by inserting the operator's cord in the calling-jack, the red light is automatically extinguished.

S. M. T., Baltimore, Maryland.—Single main-line telegraph circuits require an electromotive force of about one hundred and fifty volts; quadruplex circuits require three hundred and fifty volts of each polarity at each end of the circuit; duplexes require two hundred and fifty volts of each polarity at each end of the circuit; printer duplexes require about three hundred and fifty volts of each polarity at each end of the circuit. The Atlantic cables are operated on fifty volts.

R. E. D., Ottawa, Ontario.—Where a sixty-circle alternating current is found to be flowing through the lead sheath of an underground cable there is no danger of electrolytic action. Electrolysis does not take place except when direct-current flows from the lead sheath into the surrounding earth.

W. D. C., Denver, Colorado.—At the San Francisco Telegraph Tournament, held in August last, R. C. Bartley, of the Pennsylvania Railroad, Philadelphia, transmitted with an ordinary Morse key forty-three and one-half messages in thirty minutes without an error. At the same tournament Mr. Carver, of Topeka, Kansas, transmitted forty-four messages in thirty minutes, using a Pierson transmitter. Mr. Bartley won the contest by virtue of superior Morse.

F. N. H., Bridgeport, Connecticut.—A "rheostat" generally consists of a conveniently arranged box containing a set of resistance coils. By means of small metallic plugs or by radial contact switch-blades, the resistance of the rheostat may be varied at will.

D. K. J., Altoona, Pennsylvania.—An inexpensive short-line telegraph circuit may be set up by using a telephone receiver, an ordinary Morse key, and two cells of dry battery at each end of the line. If a good ground contact can be made to water-pipes at each end of the circuit, one line wire will suffice; insulated bell-wire will answer very well, and is easy to handle. After a little practise the dots and dashes may be read in the telephone receivers as plainly as from a regulation sounder.

S. L. D., Montreal, Quebec.—The Wheatstone Bridge consists of a set of adjustable resistance coils in combination with a galvanometer. This instrument is used for measuring the resistance of magnet windings, line wires, and cabled conductors; also for determining the location of "crosses," "grounds," "escapes," *et cetera*.

ENGINEER NOW CONGRESSMAN.

HON. JOHN G. COOPER, NINETEENTH DISTRICT OF OHIO.

MARCH, 1915, JOHN G. COOPER WAS AT THE THROTTLE—TO-DAY HE REPRESENTS, IN THE LOWER HOUSE, THE DISTRICT WHICH SENT JAMES A. GARFIELD TO WASHINGTON. THIS IS THE FIRST TIME ON RECORD THAT A RAILROAD ENGINEER HAS EVER BECOME A MEMBER OF THE NATIONAL LAW-MAKING BODY. MR. COOPER WAS BORN IN WIGAN, ENGLAND, ON APRIL 27, 1872. IN 1880 HE EMIGRATED TO THE UNITED STATES WITH HIS PARENTS. THE FAMILY SETTLED IN YOUNGSTOWN, OHIO, WHERE THE FUTURE CONGRESSMAN ATTENDED PUBLIC SCHOOL UNTIL HE WAS THIRTEEN YEARS OF AGE. THEN HE BEGAN WORK IN A STEEL MILL. MR. COOPER'S RAILROADING EXPERIENCE BEGAN IN 1896, WHEN HE WAS GIVEN A JOB AS A FIREMAN ON THE PENNSYLVANIA RAILROAD. IN 1901 HE WAS PROMOTED TO AN ENGINEER'S BERTH. THE ENGINEER-CONGRESSMAN HELD A THROTTLE ON THE E. AND A. DIVISION OF THE PENNSYLVANIA UNTIL MARCH 4, 1915, WHEN HE RESIGNED TO BEGIN HIS TERM IN CONGRESS, TO WHICH HE WAS ELECTED IN NOVEMBER, 1914.

OBSERVATIONS OF A COUNTRY STATION-AGENT.

BY J. E. SMITH.

It All Goes to Show That an Honest Man's the Noblest Work of God—and One of the Rarest.

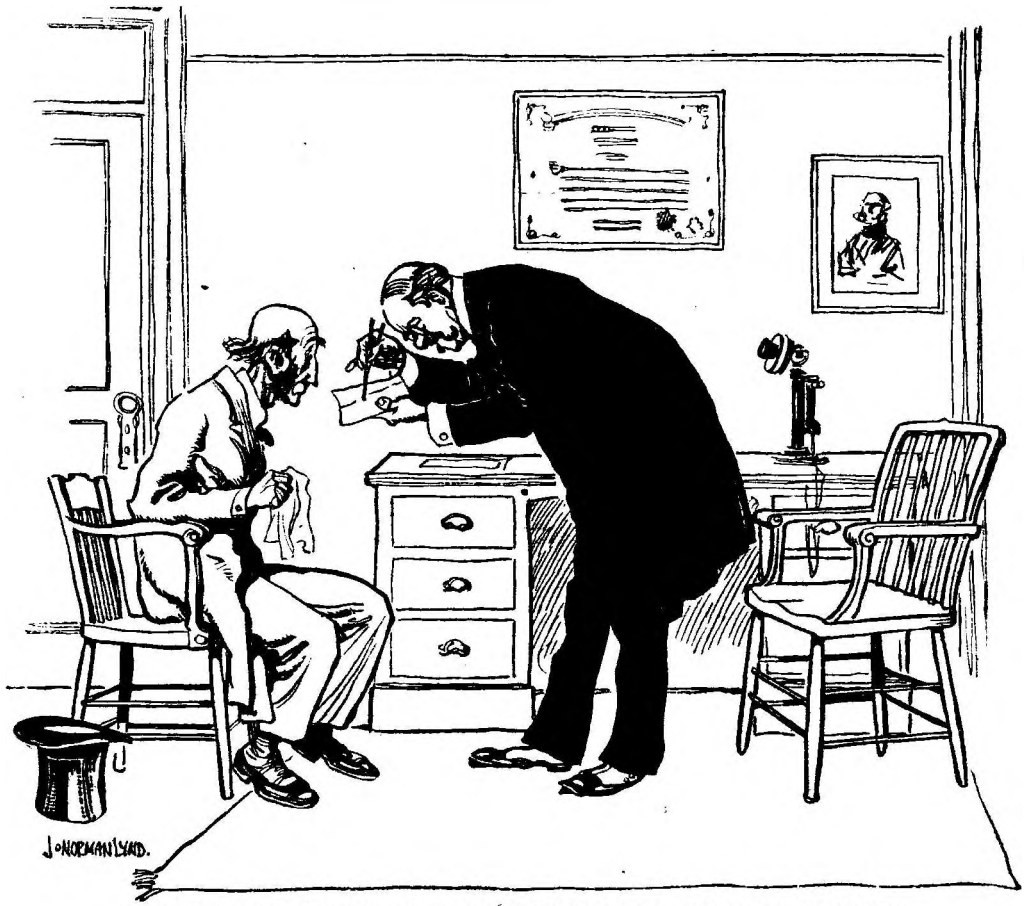
THE MAN IS INTENTLY ABSORBED IN THE FINANCIAL PAGE.

IN this land of liars there is one particular story that is told oftener, perhaps, than any other. It is a pleasant story to tell. It shows high moral resolve and fine intent on the part of the narrator, but where a noble purpose is thwarted by a narrow and arbitrary personality. It is a highly edifying tale.

The "gink" who tells it to you is the chief actor. He makes it plain to you he is the party Old Diogenes was seeking with his flash-light. He has honor and conscience. The story brings out these cardinal virtues in the most flattering way. He does his best to rectify an error, but is thwarted by pig-headed stupidity, and Old Stupidity loses out, to the great delight of the chief actor and later to the utter dismay of O. S.

Briefly the story runs this way: "Our hero, for it is none other than he," goes into a bank and gets a check cashed. An austere and bloodless money-crat behind the iron wicket counts him out the cash in bills.

We shall pause in this narrative a moment. This gives the cashier ample time coolly to look the check over and count out the money.



IMMEDIATELY ON ARRIVING AT HIS DESTINATION HE HAD CONSULTED AN OCULIST.

A correlating thought intrudes. In every case it comes to you. How did the man who was passing this bit of invention come to have a check that would draw a wad of money from any bank? Usually a ten-dollar weekly pay-check is the limit in bankable paper for such gas-bags.

Let that thought perish. He got his money, and he passed outside the bank door, when it occurred to him to count it.

What? Sudden surprise! Can it be possible? A mistake has been made! There is an extra ten-dollar bill!

At this climaxy moment in the telling, and as a patient listener, you have correlating thought number 2.

Why did he not beat it? Why did he linger patiently about counting the bills? Why did he not streak it down to the market-place, and turn abruptly into the Rue de Back-way and lose himself? You mentally resolve he is capable of making that sort of a getaway.

But—he does not do this. Nay, nay! Not he who tells you of it! He hears, not whispers but megaphone calls, of conscience. It bids him go back to the cashier and refund. He heeds it. Bear with me, my countrymen; this is the high point in the story.

He who is reciting and detailing all this, pauses a moment that you may contemplate this blend of modesty and uprightness.

In these pillaging days of commercial barbarism it is worth while to look twice on the real prosopopeia of virtue.

Tentatively and cautiously he returns to the cashier's window, where he asks with all the humility that adorns a fine-quality conscience:

"Do you rectify mistakes?"

The cashier draws himself up and lets out a snort of lordly insolence.

"No, sir; not after you have left the window."

This supercilious ultimatum leaves no

other alternative to the honest man but to slink away. However, he hesitates at the door long enough to speak out:

"You paid me ten dollars too much; but good day."

He is gone. The cashier begins rounding-to with all the conflicting emotions of a man who has stupidly allowed ten simoleons to slip from his possession for the want of a single smooth word at the critical moment.

Of course the honest man keeps the ten, and the haughty and distrustful cashier loses.

That is the story.

More men have repeated this incident with themselves in the title rôle than there are ten-dollar bills in circulation.

That particular pompous but misguided cashier has never been found, but that is of no significance. There are a dozen fresh-blown liars to tell the story for every bank in existence, so that if true it would happen in every bank many times each year. It is, no doubt, the most prevalent bit of fiction in our native tongue. It is the paramount lie in all this rather garrulous old U. S. A.

What I am coming to in all this, is that there are some two million persons in the railroad service and they do not tell the story in just this way. That bank cashier story is the stock story of the common herd. We have a version of our own. When a railroad man tells it, it varies from the national standard. The railroad man eliminates the bank cashier and substitutes the paymaster.

We hear of it among ourselves—thousands on thousands of railroad men on exit from pay-cars have counted the pay and found a ten-dollar bill too many, and have hastily reentered, only to be handed the stern manifesto: "No mistakes rectified."

This has happened oftener than any other one thing in the railroad business. If all the railroad men who have told this story of themselves were sorted out and apportioned there would be enough of them to run a transcontinental line from coast to coast.

It is small wonder that railroads are having hard sledding, and that so many thousand miles are in the hands of receivers, and that the outlook is so infernally punk. The paymasters are paying out all the surplus to the men, and are too lofty and assumptious to get it back.

This appalling loss and disaster to the railroads is redeemed only by the fine example of the honesty of the multitude of employees. In sincerity and justice one and all they try to return the money. Is it not well to pause a moment to contemplate this fine example of wholesale conscience?

Now having hefted and surveyed it to its fulness let us be on with further narratives of hair-trigger righteousness and equity as they appear in the actual operations of railroad business.

There are so many examples, but where will one find anything finer than this?

A superintendent of a certain road had a letter delivered to his office desk by Uncle Samuel's incomparable special-delivery service. I am not able to quote the letter word by word, but it was from a pious patron, and was impelled by the most ethereal holiness.

The writer explained that only the day previous he had been a passenger on a train of this particular road. He had paid the exact fare which was then in effect and legally published. He had ridden between the towns indicated on his printed ticket, getting on at the station of one and off at the station of the other. He had had a full seat to himself all the way, therefore in just calculation he figured he had received full service for the money he had expended for the transportation and was not entitled to anything further.

Now somewhere between the two stations he had got a cinder in his eye. He rubbed his eye diligently and tears flowed copiously, but the cinder, being red-hot and flying through space at good speed, stuck on the cornea of his eye and could not be dislodged. As a result he was compelled to keep it and carry it away with him when he left the train.

His intentions and purposes were the best in the world. He hoped that the management of the road, in hasty judgment, would not think ill of him. He had been in considerable pain, but this had not blunted his conscience or foozled his reason or moral sense.

The cinder belonged to the railroad. It was private property, and he should have left it either within the company's coach or along the company's right-of-way. He felt the obligation.

Immediately on arriving at his destination he had consulted an oculist who by means of tongs, a silver claw-bar and bella-

donna, succeeded in removing the cinder. He had thought all along that it was a good-sized nugget, but it proved to be only a speck. He was relieved to find that he had committed petit instead of grand larceny. This would make it easier for him as his reputation, therefore, had been exceptional.

Upon recovering the cinder he placed it upon a bit of white paper to make it more easily distinguishable, and had carefully folded the paper. He was now returning it under special delivery. He believed that with this explanation the road would absolve him from any intent to pilfer any of its property.

The superintendent opened the small paper contained with the letter, and found the little black cinder glued thereon. Being of good human quality he chuckled. Then he marked it "Exhibit Q," which shows that numerically the freaks are coming well down the alphabet. Then he filed it away for display whenever there was mood or exigency for it.

Ever since the day that George Stephenson sent the Rocket over the Liverpool and Manchester road the railroads have had "conscience funds" into which goes the contributions of people who have become suddenly scrupulous, and who have in anguish of soul and self-condemnation remitted money to cover the amount thought to be due the company for service rendered and not paid for at the time.

THE TICKET MAN SOLD THE HALF-FARE FOR $8.05.

No doubt many of these contributions are from cranks, who magnify their delinquencies in the fervor of a sudden religious regeneration.

Usually the man who writes the letter or sends the money rode from a certain station to a certain station at some nebulous date and did not pay. Putting it in coarser terms, he stole the ride. The party may have ridden the bumpers, the brace-rods or inside a box car or a gondola. Or again, he may be a member of that rather wide fraternity that proceeds to the same end by somewhat more refined methods, the workings of which are something like this:

The would-be deadhead is among the first to crowd into the coach, and endeavors to spot a seat some man has just vacated. He hastily deposits his hat in the rack, and squats far down into the seat, recumbent on his shoulder-blades. He hastily opens a newspaper and buries his face therein. He has the aspect of being settled and established. He does all this quickly and has the appearance of being fixed and merely *en route* as all the other embarking passengers halt, hesitate and shamble into the coach and find their seats.

The conductor comes through the train for tickets and cash fares. The man is intently absorbed in the financial page, as if he had all his money on the war-babies. The chances are that the conductor will bring him out of it with a gentle tap by way of reminder.

The occupied passenger on this hint will roll an eye on the conductor, but will make no further move. This is done in a way to imply that since he took up his ticket a few stations back what more is required? The conductor may be wary and observant with an understanding of the fine points of the game, and will raise no argument but bluntly call for the ticket.

The carpetbagger then senses that the game is up, and next pretends only to have suddenly discovered the conductor's presence, whereupon he "shells out" or "forks over," whichever term more aptly conveys the full meaning of "come across."

There are times on the bluff of no response when the conductor passes on, and the rider is then deadhead.

There are still many other ways than these indicated where railroads get no cash returns for transporting people.

When we then give thought to the spiritual awakening that comes more or less in the life of almost every man, it is not surprising that many should seek to make restitution for what they have gained by trickery.

In some cases full names and addresses are given. Oftener the communications are unsigned. Usually there is a letter of explanation, and often the writer exhorts the railroad official whom he is addressing to follow the writer's example and "get right with the Almighty."

We have no statistics on the efficacy of these pious admonitions so far as it applies to our officials. We know that in every case they keep the money, but just how many erring feet have been turned toward straight and narrow paths we shall not undertake to calculate until we have a new adding-machine.

Many of these letters are well written, while others show the marks of illiteracy. Some only hint of their past defaults, others go minutely into the particulars.

Here is a fair example of the latter:

The writer inclosed fifty cents in silver. He explained that it was to pay the company for a ride he had taken from A to B on the night of August 13. He then went on to explain that he took a freight-train at A, which was passing that point slowly enough for him to hop it. He then climbed on top of a box-car.

It was dark, but every time the fireman added coal the surroundings lit up, and he was afraid he would be seen from the caboose. He made his way forward over a few cars and came to what he thought was an empty coal-car, but which in reality was a high-side hopper. He climbed down the end of the box car and jumped off into the coal-car. He did not land on the firm floor at the box-car level, as he expected. He slid, tumbled and rolled down—down, and brought up in a heap at the bottom of a pocket only one foot above the track. The letter continued:

> Think of my feelings. Suppose that pocket had been open? Where would I now be, as I was then in sin? I would have been ground to pieces. No one would have ever known how it happened, and my soul would have been lost. I had not then repented.
>
> I was stunned and bruised, but I lie there thinking of all this. Never before was I so much impressed with the uncertainties of life. I promised myself that when I got out I would lead a different life. I have. Glory Hallelujah!

The fervent ejaculation of piety in the

conclusion brought a smile to the face of the general passenger agent, but he turned the money over to the conscience fund with the thought that it was rather good pay for the character of the services rendered.

Occasionally we find a receiving official who has a hair-line conscience to match that of the most scrupulous patron.

There was one—name not given on application—who had a remittance from an unsigned penitent of an amount representing an old fare, and which was in excess of the published fare then authorized by the Interstate Commerce Commission.

The official felt he could not receive it and apply it without violating the law. Clearly his road could not overcharge an unknown, and by the same token the surplus could not be returned. If he kept it in his possession acting for the railroad, he was clearly violating the statutes. In these times of trust-busting and corporation-baiting and general governmental vigilance, accepting too much for a fare is to be viewed within itself as a serious misdeed.

I do not know how he wiggled out of it. These are delicate situations and are not to be loosely speculated upon. Viewing the problem personally and with caution, it seems to me that I would have counted out the proceeds up to the exact legal fare, and would then have transferred the remaining "Lincolns" to my right-hand pantaloon pocket. Better still, I might have purchased Red-Cross-T-B-Stamps with them.

But this is idle conjecture. The official felt that no liberties could be taken with the provisions which one Hepburn has woven around the business involving the cash receipts of a railroad.

We are thus reminded on what close lines we conduct our affairs where money and the public are involved. This is best illustrated by an incident taken from the experience of a local ticket man.

The published fare from this particular office to a certain point was $16.11. One day the ticket man sold a ticket to a man and his wife and a half-fare to their gangling, gawking child who would not be twelve until— When they stand before a ticket man all fourteen-year-old children will not be twelve until next— It is the perversity of human nature. But that is aside from the story.

The ticket man sold the half-fare for $8.05. The adult fare was $16.11. One-half of $16.11 is $8.05. So $8.05 was what he collected, and $8.05 was what he accounted for in his remittance and his reports.

When the auditor went over the ticket report he made a correction of the figures to $8.06. The one-half of $16.11 is $8.06 plainly enough. The ticket man was short one cent.

This within itself was no great calamity. Greater misfortunes have come to many a man. Possibly the ticket man, if left to himself and his first impulse, would have gone down into his loose-change pocket and brought forth an Indian-head and transferred it to the ticket-office till, thereby restoring the balance that is sacred wherever railroad tickets are sold.

However, the incident did not come to such an easy conclusion. The auditor solemnly advised the general passenger agent that the ticket man had sold a ticket under the published fares. He had collected from the passenger only $8.05, whereas the blue-prints and specifications plainly called for $8.06. There was thus an undercharge of one cent.

When it comes to the matter of the annual exhibit of gross and net earnings, one cent is no great shucks, and would probably not have affected either the dividends or appropriations; but the principle of an undercharge was there and could not be lightly brushed aside.

The ticket man was a solemn and exacting employee, and he gave serious consideration to the letter the general passenger agent addressed to him.

It informed him he was short in his collections one cent for this particular ticket and added:

> If you know the person to whom this ticket was sold, you must call his attention to the different collection and make every possible effort to collect the shortage, explaining that in order to comply with the interstate commerce law, all tickets must be reported at the authorized and published fares, which are filed with the Interstate Commerce Commission. By presenting the matter to the purchaser in the proper manner, you should have no difficulty in collecting the proper fare.

The easy way out of all this would be for the ticket man to pay the cent, but that would not be complying with the law. The man who bought the ticket must pay the cent.

The ticket man knew the purchaser. He called on him when he returned and explained the situation. He bore a little

heavily on the gravity of the offense he, the ticket man, had committed in selling a ticket for one cent under the published fare.

The man was interested, but not altogether convinced. He figured that one-half of $16.11 was not exactly $8.06, as

"No, I haven't forgotten it," replied the man. "But I haven't seen my lawyer yet. I want to be assured that it is the right thing before I pay. If I should pay and then ascertain that the money was not actually due the railroad company I would have some difficulty in getting it back,

THE MAN MADE A PRETEXT OF GOING THROUGH HIS POCKETS FOR A STRAY PENNY

claimed by the ticket man. To be exact, it was eight-five and one-half. He was very particular about such matters.

He would like a little time to think it over. It was not the amount involved. He made that quite plain. He could make the additional payment, probably, without any serious drain on his resources, but one should not act hastily when such great principles of law and equity are involved.

Thus the matter remained unadjusted.

"I would like to close this matter up," he again explained to the man. "I think, perhaps, you can make the payment any time. I thought you might have forgotten it. It is such a trifling matter, you know."

would I not? Then I might be considered, in a way, criminally liable for overpaying for my ticket."

"Well, you see," persisted the ticket man, "I've got to collect it."

"Well, then, suppose I tell you I won't pay it."

"But I *got* to collect it."

It appeared that we were confronted with that old problem hinted at in physics, where an irresistible force collides with an immovable body, and what would result?

The ticket man was plainly distressed. He had never before known any one to halt and quibble over the measly bagatelle of one cent.

AGAIN HE SAW THE MAN WHO WAS NOW IN A MOOD OF JOCULAR SARCASM.

Again he saw the man, who was now in a mood of jocular sarcasm.

"I have thought that business would pick up before this time," said he, "and that I could make that good, but expenses seem to keep just one lap ahead of prosperity. Of course, if you could wait long enough I have other prospects.

"You see, I have an old auntie who has considerable property, and I am one of three heirs. Of course, that's not right away. In fact, her health is good, but you can never tell in these sclerosis times what may happen. I suppose I could borrow it, but I hate to obligate myself and a bank would want two names. Maybe some other way out will suggest itself. We shall see."

When next they met the man made a pretext of going through his pockets for a stray penny.

"I have decided to pay that cent and end this controversy," he explained.

He made careful inventory, but unfortunately he did not find a cent piece.

"Better luck next time," he added. "Probably I will have it when I see you again."

He saw the ticket man again and again, but he never had the penny.

"I'll tell you what I'll do," he explained on being further approached. "I never seem to have a cent when you come on to me. I am agreed with you it is a shame to let this old account drag along the way it is. Suppose I give you a check?"

The ticket man gladly assented. It would be only a small matter to go to the bank and draw the penny. Furthermore, it would end a contention that was mutually disagreeable. A great principle of law would thus be upheld, and a personal responsibility to his company satisfactorily discharged.

The man wrote the check with care. He held it up to scrutinize it closely, then read aloud in confirmation:

Pay the bearer one cent—one cent.

"Will you now have the goodness to write me a receipt?"

The ticket man gladly wrote a receipt for one cent in full.

Without further loss of time he presented the check to the paying-teller of the bank.

The teller gave one look and whistled softly.

"We can't pay it," he explained with a shake of the head.

"What! No funds?"

"Not altogether that," explained the

teller. "We might find the money, but it is not signed by any one."

True enough, the man had written the check, but had not signed his name. Naturally, therefore, it was not good for the cent.

It was then that the ticket man began warming up.

It was two or three days before he again saw the man.

"Hey!" he called out. "That check, you know! That one-cent check. It was no good. You did not sign it."

"Oh, didn't I?" exclaimed the man in surprise. "Let me see it."

The ticket man produced the check and the man looked it over, then deliberately tore it up and scattered the pieces to the four winds of heaven.

"I say, this is all horseplay," he observed. "Some day when I find a loose cent and you are in reach I may hand it over. Good day."

And he walked off.

It was not a great while after that when the man appeared at the ticket window for a local ticket to a near-by station. The fare was twenty-seven cents and he handed over a half-dollar to the ticket man.

The ticket man was busy and did not look up. He did not recognize the purchaser. He passed the ticket to him together with twenty-three cents in change.

In haste the man grabbed the ticket and started off, leaving the change on the counter.

The ticket man called him back:

"You forgot your change."

The man turned back to the window, whereupon there was immediate mutual recognition.

"Much 'blige to you," stammered the man as he raked in the change. "You are sure on the square for calling me back and not taking anything out. Here's the cent you and I have been having all that argument about."

He tossed a penny back and hurried out to his train.

The ticket man raked it into the till, and that evening he answered the G. P. A.'s letter that he had made the collection, thus complying with all the legal requirements, both in letter and in spirit.

Going back once more to the matter of stolen rides and the conscience remittances therefor: I take it that for all freight and passenger-trains of the country there are at least from three to five stealing rides on the average per train. Say once a week the moral uplift and religious impulse gets one of them and he remits.

What is the rate per M of the spiritually regenerated?

In other words, do not count on the millennium too soon.

REMEMBER this—to-morrow's executives must come from the ranks of to-day, says *Selling Sense*. There is no other place to draw from. And if you would be an executive to-morrow, commence laying the foundation to-day. If you would rise from the crowd, you must perform better. Take better care of your body than the crowd; take more thought of what you read; cease wondering what your department manager does to make himself worth five times as much as you are, and find out—for, rest assured, he earns it. It would take longer to find a good man to fill his shoes than yours, and this is precisely why he draws a bigger salary than you. Take the tip—make your job harder to fill. Do your work so well that Tom, Dick, or Harry can't step right in and fill your place. Learn things outside your department; the next vacancy may occur elsewhere.

STEAM.

BY FRED SHAFFER.

THERE'S a world of silent toilers
In the shops and in the mills—
Brawny minions of the army
Over which a nation thrills.
Day by day, in honest silence,
At their work these men are found—
For the steam that
Blows the whistle
Doesn't make the wheels go round.

In the calm and peaceful valleys,
Where the earth gives up its yield;
On the ranges and the meadows,
In the orchard and the field,
There's another silent army
Making conquest of the ground—
For the steam that
Blows the whistle
Doesn't make the wheels go round.

Then the jingoes and the grouches,
And the men who flaunt their woes,
Make a mighty noisy army—
Trumpet-voiced and bellicose.
Fearful army! Tearful army!
How it makes the earth resound
But the steam that
Blows the whistle
Doesn't make the wheels go round.

SPEEDING THE MILK TO N. Y.

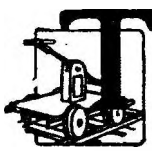
Train That Brings the Stuff to Feed the Babies Has Rights Over the Passenger Drag and Runs On a Faster Schedule.

BIG BURG TAKES 2,500,000 QUARTS DAILY.

Requires Twenty Specials to Supply the Metropolis—Routes Tap Such Far-Distant Points as Montreal and Newark, Ohio—One Company Runs a Cream-Car a Day from Chicago—Only Other City Which Has to Go So Far Afield is Lincoln, Neb.

BY E. L. BACON,

Author of "Big Wars for Railroad Control," "Fighting the Storm-King," etc.



TAKE down the old muckrake. There's still one class of captains of industry unexposed—the jokesmiths who for many long years have been imposing upon an innocent public at the expense of the poor, derided milk-train. These misguided humorists have created a popular notion that the milk-train is about the slowest and sorriest thing on wheels and that it comes rattling along behind a wheezy old engine just before daylight, stopping at every crossroads. The agitated commuter who rolls into town half an hour late springs that hoary chestnut, "This must be the milk-train," as the worst insult of all.

Yet if he really had come in on the milk-train, the chances are that he would have arrived ahead of his schedule. If there is one freight in the speed-class with the passenger train, it's the train that brings the milk. Indeed, it happens a good many times, when it comes to a question of right of way between passenger and milk-trains, that the milk-carrier goes ahead. Milk means more money for the road than passengers do, and getting the milk in on time is a very important matter.

New York City takes two and a half millions quarts of milk a day, and some of it comes from five hundred miles out on the lines—fresh milk, too, that must get to town in time for breakfast. Along the banks of the St. Lawrence River the dairy farms of two countries supply milk for the New York City market.

All the Way from Ogdensburg.

Every morning at seven o'clock a train leaves Ogdensburg with the milk the farmers have brought to that center of the dairy business, and begins a long eastward run to Lake Champlain. At Massena Springs and other towns on the route more milk-cars are picked up. Close to the Canadian border the train crosses the Champlain by boat to Grand Isle. Then it makes a long run through that fertile island's dairy farms, and takes to the broad waters of the lake again on its way to Burlington. It comes roaring down through Vermont headed straight for New York City after its long detour. Now and then it stops to take on another milk-car, until by the time Rutland is reached it has ten of them, although it probably left Ogdensburg with only one or two.

From Rutland for the remainder of the journey there is not one stop. It is only a milk-carrier, the butt of the jokers, but it is one of the fastest trains on the Rutland road just the same, and it would be hard to find a train in all New England that is truer to its schedule.

The milk has got to get to its destination on time. The dealers in the city are waiting for it, and their delivery wagons must cover their routes before breakfast. The butcher or the grocer or the baker may be late now and then without serious consequences, but there are two hundred and fifty thousand babies in New York City.

Makes Run in Twenty Hours.

Southward the train speeds to Bennington, then westward into New York State to Chatham, then down the Harlem road to the end of its long journey. This is at Melrose, in the Bronx, where the milk-wagons are waiting for it. It is two o'clock in the morning when it gets there, just twenty hours after leaving Ogdensburg, and it has come almost five hundred miles.

That makes the milk that came from the farms along the St. Lawrence at least twenty-four hours old by the time it reaches the consumer, and some of it is thirty-six hours old, as it came from the milking of the evening before the train left Ogdensburg. But milk thirty-six hours old is perfectly good. Indeed, New York City gets very little that has been in the cans less than twenty-four hours. Very little of the two and a half million quarts a day can be supplied from the near-by farming districts.

Another long-distance milk-carrier starts at Olean, in western New York, runs southward into Pennsylvania, picks up cars at country stations in the dairy-farm belt of that State and, by way of Williamsport and Harrisburg, reaches Philadelphia, where it turns north. At last, on the Jersey shore of the Hudson, it runs into the Pennsylvania's tunnel under the river, continues on under the heart of Manhattan Borough, then on under the East River, emerging in Flatbush, Brooklyn, which is the end of its long, roundabout journey.

Just imagine the effect on a Flatbush housewife of a generation ago if she had learned that the morning milk, instead of being delivered from some near-by Long Island farm, as it was in those days, was to come from Cattaraugus county, in western New York, by way of Philadelphia and tunnels under the Hudson, Manhattan Island and the East River! A generation ago there were almost as many prophets as there are to-day talking about the wonders the future would bring forth, but not one of them was enough of a Jules Verne to dream of such a milk-route as that.

Twenty milk-trains a day supply America's greatest market, the city of New York. The greatest milk-carrier is the Rome, Watertown and Ogdensburg Railroad, which brings in 350,000 quarts every morning. The Lackawanna ranks second with 325,000 quarts, and the New York, Ontario and Western, with 300,000, is third. The Erie, which brings almost as much as the Ontario, stands fourth.

The other important milk-carriers are the West Shore, the Rutland, the Harlem, the New Haven, the Pennsylvania, the New York Central, the Central of New Jersey, the Lehigh and the New York, Susquehanna and Western. These roads have scores of little tributary lines which bring lone milk-cars to the junctions to be coupled on to the through trains.

Sometimes the far-extended territory from which the milk comes is unable to meet the big city's demands. When that happens the milk-routes suddenly grow longer, and part of the supply is then drawn from Montreal, Canada, and Newark, in central Ohio. This last winter milk has come regularly from both these points because so much of the supply has been condensed in New York to be sent to the warring countries of Europe.

Cream-Car Travels on Passenger Rails.

One big supply company has recently been bringing a car of cream to New York every day from Chicago. The car is attached to a train that makes the journey in twenty-four hours. Much too aristocratic is a cream-car, or a milk-car either, to consort with the plebeian freights on the low-grade tracks. He travels on the passenger rails, sandwiched in among the all-Pullmans.

The gathering of the milk-freight begins out in the rolling dairy country along the single-track branches, where the arrivals of two passenger-trains and a way-freight each day are events in the little town. With the first streaks of dawn the country roads leading to the station are alive with farmer

boys bringing the milk to the railroad. Close to the tracks is a new milk-station. In striking contrast to its trim, business-like appearance, an old cheese-factory is falling into ruin a stone's throw away.

Cheese Factories Have Been Run Out.

Times have changed. Not many years ago the township made cheese. To-day the demands of the big city have reached far out to these little "jerkwater" lines, and the milk is driven to the depot.

The milk is checked and weighed and placed in the waiting car in cans and in bottles. Scarcely has the last big, ten-gallon can been lifted aboard when the warning shriek of the local comes from up the line. The train rolls in, and while passengers are clambering on and off the uncoupled engine puffs away from it, switches off to pick up the milk-car, and brings it back to the train with hardly more than a minute's delay. At other stations more milk-cars are picked up, until at last, when the local meets the main line, it has often grown to be a good-sized train.

The local has been ambling leisurely along, as trains do on these little, single-track backwoods branches. But as soon as the main line is reached its milk-cars are coupled to a milk express and go roaring proudly away toward the city at a terrific pace. For a quarter of a million babies are clamoring for breakfast, to say nothing of a few million grown folk.

Scarcely any milk comes to New York City from less than fifty miles away. But whether it comes from far or near the city's health department would tell you that it is almost all equally fresh. The milk that comes from great distances is placed in consumption at almost the same age as the supply that comes from near-by places.

Most milk is received at the creameries and the shipping stations in the morning, having been drawn that same morning and the previous evening. The milk that is put aboard the train on the shores of the St. Lawrence is either freshly drawn or about twelve hours old. But the milk that is picked up only fifty or one hundred miles from the city has been drawn from twelve to twenty-four hours. So practically the whole supply, when delivered to the consumers, is from twenty-four to thirty-six hours old.

An hour or two before midnight the big, white, high-boxed milk-vans go filing through the streets of the city in long processions to the railroad terminals. Some go to Flatbush, others to the Bronx, others to the ferries along the Hudson. At last they all draw up in the long freight-sheds at the ends of the railroad lines.

Each van has its own carefully marked place. Sometimes at one terminal there will be two hundred four-horse vans in the line, and if each one did not know exactly where to stand the titanic task of distributing the city's two and a half million quarts of milk at these terminals within three weary, nerve-wracking hours of the night without the mistake of a single dealer getting somebody else's cans would be beyond human possibility.

At eleven o'clock the first of the milk-trains back in on the other side of the long, covered platform. Hardly have the brakes been released when the side-doors of the cars are thrown open almost simultaneously. A moment later the whole place is alive with the rattling of cans and the rumbling of trucks.

Ten gallons to a can, two hundred and thirty cans to a car. A single train of average length brings in enough milk for a quarter of a million people.

Assigning each van to its own numbered position on one side of the freight-house platform is only half the problem. There may be a dozen milk-handling companies whose vans are lined up at one platform, and one train brings cans for them all. So each car in that train has to have its carefully assigned position.

Confusion Follows Wrong Spotting.

Two cars of the train may be filled with milk for the Columbia Milk Company. Those two cars stop just beyond a certain pillar of the shed every night, and directly opposite stand the Columbia's vans. The Columbia's cars are the third and fourth. If some yardmaster up the line should happen to shuffle up the cars some night so the Columbia's would be the ninth and tenth there would come close to being a riot at the terminal shed and it might take an hour to get the tangle straightened out. And before the hour was up another train would come backing in, and a regiment of the National Guard couldn't bring peace to the scene of demoralization that would follow.

"Something like that did happen here once," said a platform boss at one of the terminal sheds on the Jersey shore. "And,

believe me, if it ever happens again it will be the incurable ward for mine. Some new yard-boss a hundred miles up the line got all the cars in the train mixed up, and within a minute after it pulled in every milk-van man in the shed was howling murder. It was the most awful tangle I ever saw."

Not many years ago, when New York's death rate was almost double what it is to-day, these milk-trains brought in the germs of most of the city's typhoid epidemics. Eleven years ago the Health Department decided the time had come to take radical measures against this danger. It was resolved to carry the investigations of the milk-supply to its sources.

Sleuthing the Wary Bacillus.

The city officials, of course, had no power beyond the city boundaries, but they realized they held the whip hand over the dairy farmers because they could prevent the milk from being delivered. So inspectors were sent out over all the milk roads to inspect the farms and the creameries. In this work the Health Department managed to get the cooperation of the railroads. The railroads provided special trains for the inspectors when necessary, and every creamery sending milk to the city was visited by these officials.

Then began the greatest housecleaning campaign the dairy belt has ever known. Dealers in soap and scrubbing-brushes must have been started on the road to fortune. The cows were scrubbed, too, and according to some humorists even their teeth were brushed. If a creamery proprietor or a dairy farmer whose place wasn't as neat as wax showed any hesitation in obeying the inspectors' orders to clean up he was notified that not a pint of his milk could be sold in the city, and, with ruin as the alternative, he would come to terms in no time. The housecleaning took months and months, but at last not a slovenly creamery, or dairyman's farm house or cowshed remained throughout hundreds of miles of territory.

While this work of cleaning up the dairy country was being begun, but before the inspectors had found time to visit more than a small fraction of all the places on their routes, an epidemic of typhoid fever broke out on Manhattan Island. The disease was traced to the milk-supply, and the Health Department's inspectors turned themselves into detectives. It was their duty to trace those typhoid germs. While the detectives of the Police Department were running down thieves and murderers, these milk detectives were studying the methods of Sherlock Holmes to trace a far greater danger to the city than its criminals.

They traced the milk-bottles of every family in which there was a case of typhoid. They traced the bottles to the local dealers, and they traced the local dealers' milk cans to the creameries.

Thirty families in which typhoid had broken out were found to be customers of one milkman. His milk was all received from one town more than two hundred miles away. An inspection of the creamery in this town showed it to be very dirty, with poor drainage and slovenly methods of handling the milk.

What was more, in the town were a dozen typhoid cases, and half of them were on farms that were sending milk to the creamery. Then other towns along the milk-roads were found to be infected, and the milk of all these places was refused admission to the city. In this way the spread of New York's epidemic was quickly stopped, and from that day there has never been another anything like so serious.

When all the dairy country was at last cleaned up not only typhoid began to disappear from the city, but many other diseases, and the death rate dropped in a most surprising way. It is largely due to the work of the milk-detectives that New York is a far healthier city to live in to-day than ever before and that its death rate is only half what it was a generation ago.

Death Rate Now Away Down.

It is much less than half what it was when the city's Board of Health was organized in 1866, just half a century ago. The death rate was then 34.92 per one thousand of population. Last year it was only 13.64 per thousand. In 1866 every milk-train was probably a carrier of death, and the germs it brought took the lives of scores of babies and little children. That is all changed now. It is a lucky germ indeed that can beat its way on a milk-train nowadays and escape the vigilance of the milk-detectives.

Every few years it is found that New York's milk routes have been extended. Ten years ago going into Vermont for milk was talked of only as a vague possibility, and as for going into Canada, that hadn't been dreamed of. A very few years more

and the northern route will go even farther than Montreal, not only in emergencies, but for a regular supply.

N. Y. Has World's Longest Routes.

Not another city in the world has a milk-route anywhere near five hundred miles long. There isn't another place in the world where fresh cream for the morning coffee comes a thousand miles. There is only one place in the world that has anywhere near as long a milk-route as New York.

It m t be Chicago? Oh, no.

Phila elphia? Pooh! Why, the Quaker City doesn't have to send one hundred miles to get all the milk it can use. Rich dairy country lies right at its doors.

Indeed, this close rival to New York isn't any one of the big cities you might suspect it to be. It's only a mere little speck of a place known to fame only because it is the home of William Jennings Bryan—Lincoln, Nebraska. No, this does not mean grape-juice. It means milk— fresh milk.

And that little prairie town takes the supply of more than one hundred railroad stations. It draws milk from the farms of three far-spreading States—Nebraska, Colorado and Kansas—and one of its routes is four hundred and eighteen miles long.

Of course, the inhabitants of Lincoln don't use all this milk themselves. They make it into butter and cheese for outside markets.

Not only are New York's milk-routes growing longer; its milk trains are growing faster.

"The time is near at hand when the milk carrier will be the proudest train on the line," said an official in the New York Central's offices in the Grand Central Terminal. "Instead of boasting about our Twentieth Century we'll be talking about our milk-speeder. You see, New York's appetite is growing bigger and bigger every year, and the further it has to send for its milk the faster the milk has got to be carried, for there is a limit to the length of time it can be kept fresh.

Milk Special at 70 Miles an Hour?

"Fifteen or twenty years from now, if you see some train flashing along through the night at seventy miles an hour it will more likely be full of milk than passengers. Not many years ago any old engine would do for the milk trains, but now they get our best ones, at least the long-distance ones do, and when we begin to bring milk from the Mississippi Valley we'll have to hustle with it, I can tell you."

"DONT'S" FOR PASSENGERS.

DON'T stand in the doorway. Some fool may rush through the waiting-room and hurl you on the tracks. Besides, you are in the way of other passengers, says the *Kansas City Southern Current Events Magazine.*

Don't rush through the doorway. You may collide with some one coming in and hurl him out on the tracks.

Don't stand too near the tracks. There is always a possibility of your being jumped on by some irresponsible leaping from a moving train, or being caught by something projecting from a car.

Don't attempt to cross tracks to east-bound platform until you sure that there is nothing coming this way on the west-bound tracks. Hesitate a moment and look.

Don't step on any metal if you can avoid it. There is a live rail under the wooden guard on both sides of the center platform, contact with which means death. Use extreme care not to stub your toe under the guard-rail.

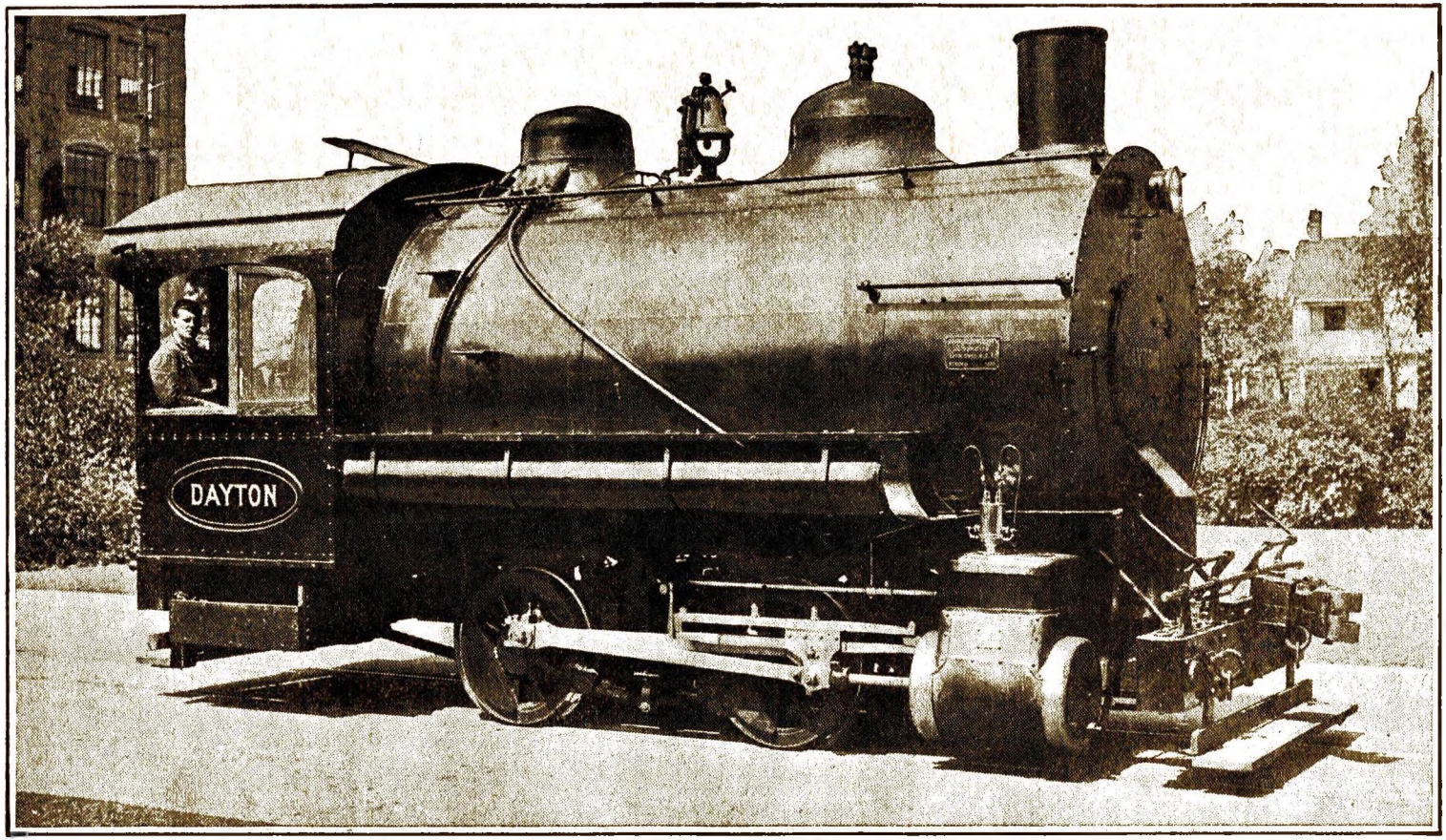
Don't attempt to board a moving train. There is no business or engagement so important as to risk the chance of going through the rest of your life on crutches.

Don't stand near the door of a baggage-car. There may be baggage to unload, and a trunk coming down on your toes is not a pleasant sensation.

Don't cross in front of a standing train, unless you are sure that you can get clear in case it should start.

Don't fail to reach the station in sufficient time to catch your train. More men have dropped dead from overexertion trying to catch trains than have died under the wheels.

A STEAM LOCOMOTIVE WITHOUT A FIREMAN.



INSTEAD OF FIREBOX OR BOILER, THIS LOCOMOTIVE HAS A LARGE STORAGE TANK WHICH A CENTRAL POWER-STATION CHARGES WITH SUFFICIENT READY-MADE STEAM TO PROPEL IT FOR ABOUT TWO HOURS. THE ENGINE HAS A WHEEL-BASE OF 72 INCHES; ITS WEIGHT, WHEN FULLY CHARGED, IS 77,500 POUNDS. IT IS USED FOR SWITCHING PURPOSES ABOUT INDUSTRIAL PLANTS.

HIRAM ON A "BACHING" JOB.

BY CHARLES W. TYLER.

Once Again Does the Aroostook Wonder Demonstrate the Fact That "You Can't Beat a Yankee."

"YOU can't beat a Yankee!" Which is a long-established truth, an' a sayin' that was put on the wire back in the ol' "main" at 109 early in the buddin' days of them *hit-an'-buck* Barclay *perf*-rators.

Ask Mr. Royal Bailey, who has since set up this here newer style *Morkrum* send-fast all over our fair land, and who, at the present writin', is with the Western Union out on Frisco Bay—j'st ask him, an' like as not he'll tell you all about it. I would m'self, but it ain't billed in the drag I'm a takin' over the hill this trip, and I've got tonnage now.

No, s'r! Yer *can't* beat a Yankee! no, you can't!

It's like Ol' Man Curry says about them horse-racin' fellers: "It ain't no use gettin' up early, tryin' to fool racetrack folks. That's when they all get up. The way to fool 'em is not to go bed."

A Yankee is the same breed o' cat. He may have whiskers on his chin, an' a mutton-tallow shine on them hob-nailed brogans which adorns his feet; nevertheless, look out for 'im. Like Uriah Drury's ol' one-lung Nancy G., you ain't never sure when the innocent-lookin' old cuss is goin' to back-fire on yer.

When it comes to drivin' a bargain he's got 'em all backed off the table nineteen ways!

A ol' Yank with rarefied hayseed sproutin' all over his-self will pick the pin-feathers right off your back, singe yer, skin yer, an' clean yer—crop, gizzard and ballast—then let you go away kiddin' of yourself that you put something over on him. It's all ol' Dave Harum in a hoss trade, right over; only in a sort o' different form sometimes.

Now here was me after a doin' such a illustr'us job at rescuin' them poor prunes' kale on that tourist outfit in Mr. Utah's ol' desert. I figured, o' course, that probably besides bein' a hero I was goin' to cop out on a reward or suthin'. You'd naturally a' supposed I was in line f'r some sort o' donation, wouldn't yer? Har-r-h?

But I wa'n't.

No; I was up against another Yankee! It was the gray-haired gent who done all the pattin' on my back—the super. An' when he found I hailed from back East—Aroostook way—why, it appeared he was mighty pleased to make the acquaintance of a State o' Mainer out in the sage-growed sun-garden of Allah. We has a sort of Ol' Home Week around there f'r a time.

"Well-l, well! I never!" he chuckles. "An' so *you're* from Maine? The old Pine Tree State! Why *I* was born back there—*Wiscasset!*"

And he laughed.

H'm, I might have known it! Nobody but a long-legged Yankee would have ever thought of pulling off such a crazy stunt as that. Nobody!

"Well, you see, Doc," I says to him. "It is like the frog in the cistern. I have been a doin' considerable hoppin' of late an' not gettin' much of anywheres—except last night. So when this chance showed up I j'st took another toe hold on Opportunity an' went to the mat with 'er."

"Yes; you did that all right," he grins.

"Yes," I remarks, "I guess I did. An' I pretty near had a Waterloo, too."

Then I explained how I had been whalin' around the land makin' a stab at railroadin', an' telegraftin' an' lumberin', an' *clickety-clackin'* ol' printer-circuit machinery—and not gettin' across the Rubicon with any of it.

"What do you mean by not getting

across the Rubicon?" he wants to know, gettin' interested.

Then I tells him that Mr. Pike of Kokomo, Indiana, said about how if you was a goin' to cross the Rubicon to *cross* it, not wade out half-way and stand there, or you'd get heated hunks of Gehenna lode shelled at you from both banks.

"An' I ain't over yet," I says, "while I have been gettin' peppered from both shores pretty steady to date. But I'm like Mr. Gallagher when they threw him overboard. 'Yez kin clear th' decks f'r fight; I'll be back all right!' he told 'em. An' that's me!"

"Say!" the super gent breaks in all of a sudden—Hooker was his name; Anson Hooker. "Would you consider a job out here with us—railroading—Mr. Ellis?"

"Hiram," I corrects him. "Or j'st plain Hi. I won't be *mister* till I put a win between me an' Goin-t'-Do—till I've navigated this here Rubicon creek without any casualties."

"Well, Hiram, then," he smiles, real nice an' cordial like. "We have an opening for an operator. Something a little out of the ordinary, and not much work with the trick, either. It is down on our New Mexico Division—Happy Day!"

"Happy Day!" I says. "An' what in the ol' scratch is that?"

"A telegraph office," he goes on to explain. "An OS station—one-man job. Pays sixty-five a month. You furnish your own kit and supplies. Have you capital enough to do that?"

An' never a word about comin' across with any reward! Instead, he wants to know if I has enough spondulux to start light-housekeepin' on a "bachin' job"! Get it? Me! On a bachin' job!

"Yes, cap, I has!" I fires back at him, emphatic. "But it ain't for reason of safe an' sane pilgrimage as conducted by your bloomin' ol' one-iron railroad that I still retains a proprietorshup of the same. I guess you forget that *I* run pretty darn near the width of Utah, a dodgin' of whinin' projectiles, in order that I maintains ownership on this here capital you mention, to say nothin' of salvagin' the property belongin' to the rest of my feller travelers."

"Oh-h, I see," he says, kind o' dry, an' eyin' me some calculative. "I see. H-m, back in New England when I was a young man it was considered a common courtesy to return lost property without expecting reward of a pecuniary nature."

"That may be," I states. "And if you consider it a common courtesy to rescue folk's worldly possessions, the while you has to expose your anatomy with*in* the perspective zone of hostile artillery fire, why, all well an' good; but *I* desires to proclaim right here and now, if such be the case, I has performed the *last* personally conducted exploit of the kind of my career."

He appears to give this point of view deep cogitation f'r a spell; then he says:

"Mr.—er-r, Hiram! I am going to make you a proposition."

"Well, I'll give it a once-over, anyhow," I says. "GA."

An' he proceeds:

"You stock up and go down to Happy Day. You will receive sixty-five dollars a month—or fifteen dollars a week—as a salary. *Then,* as a bonus, and in consideration of your recent act of—of courtesy —you will receive, over and above said salary, five dollars a day for every day you stay there over-r—well, say, over one month."

Right off I begins to harbor suspicions concernin' this Happy Day place. Was they havin' plague out there? Or what? But anyhow, there was somethin' to win, an' noth— By gorry! Come to think of it, if New Mexico assayed anythin' like Utah had to the present era there might be more to lose than I was figurin' on.

I meditates deep an' earnest f'r a couple of minutes, the while I seen that Mr. Hooker was studyin' me kind of humorous.

"Hi," I says to m'self, "there's some doggone funny business goes with this New Mexico deal—there's a bug in th' porridge as sure's yo're born. You keep an eye on Mr. Hooker, here."

An' I remembers how Dave Harum says somethin' about doin' the other feller while the doin's good.

Then I looks at the super an' grins.

"It takes a Yankee to beat a Yankee," says I. "Mark me up for Happy Days!"

Look out for Maggie Ute, old timer! '73's!
TX.

It was written on a blank "19" order form in that fine, flowin' script of the old "fist" operator, and was jammed down over the adjusting-nuts of the key.

I hikes to the door, glad to get away from the musty smell of th' place. "TX" had evidently been on his way quite a spell; and it looked like I was the first out since his departure.

"Now, who th' Sam Hill is Maggie Ute?" I wonders, a gazin' up an' down the sizzlin' flatness of the land.

Darn well I found out who the ol' lady was a little later on. J'st at present, humsoever, no livin' bein' is visible on the horizon's shimmerin' haze of heat-devils. Either TX had gone woozy fr'm too much solitude, or Mrs. Ute was to arrive hocus impromptu at some time unspecified.

But she come all right! Oh, yes, she did!

"Happy Day!" I muses, as I looks over my new surroundin's. "What a encouragin' handle."

An' say, neighbor, I'll bet six bits against a Buffalo nickel that the gent who originates this ol' sayin' about, "What's in a name?" was a brass-poundin' at Happy Day some time.

A rickety thirty-six by eight-foot unit of rollin'-stock spilled kitty-corners beside the two streaks of steel, which connects the sky-line east with that west. Evidently a ol' Santa Fe box had one day climbed off the iron and j'st naturally come 'to rest here, while some bright an' theorizin' mornin' glory up to headquarters right off allows it's a fine location for a "dep-o."

I climbs to the roof an' sits on the brake-wheel of Happy-Day's Grand Union Station. I was feelin' kind of out of tune with things about then. Great guns, pal, anythin' but lonesomeness! You think of yesterday, to-day an' to-morrow—th' things behind an' before yer. An' out at these desert an' mountain stations of the world you'll find a lot o' tragedies of life, there, a livin' with the ghost of Might-Have-Been.

An' here I'm livin' with th' shadder o' Maggie Ute hangin' fire. North, south, east, an' west is a shadeless waste. As near as I could make out, Happy Day was the dim beginnin' and also the dim endin' of a blistered desert of plaster-baked an' sunburnt alkali.

"Well-l, anyhow, Hi," I says, kind o' dubious, "you have a good, broad field to labor in, an' not much competition."

Just then a ol' fat grandma rattlesnake comes glidin' out from under the so'west corner of Happy Day's de-pot, an' has a look to see who is the latest arrival. I wonders if she is, maybe, Maggie Ute, then decides she ain't or else TX would 'a' been more specific.

You has probably gathered fr'm that recent exploit o' mine that I ain't strong f'r reptiles. I'll admit it; I ain't no nature faker. And I entertains a special aversion to comin' in close contact with this here stem-windin' variety. It makes me jumpy an' twitchy an' sort o' unrestful.

Durin' the first week at Happy Day I am fairly well occupied—cookin', an' keepin' an eye out for Maggie Ute, an' skirmishin' with that ol' snake under the station, the same who I christens Skeezicks.

Once or twice me an' Skeezicks gets almost close enough to one another so we could wage combat. But I'm ashamed to admit that I took a kind o' mean advantage of Skeezicks, inasmuch as most of my hostilities was carried on fr'm a distance, where I heaves dried-up chunks of local real estate at 'er flat-shaped ol' coop. In reply she sings most venomous an' sticks out her tongue, like as if a invitin' of me to come up close enough so's she could get in just one good, healthy peck at my underpinnin'.

Indigestion an' watchin' my step so's not to trod on Skeezicks's tail unexpected kind of breaks up the monotony of livin' f'r a while.

I struggles through the occasional "19" train-orders that come to Happy Day, as well as my present rarefied telegraftin' ability will allow of, and looks out after OSin' trains which fans cinders past our assembled misery-lost loneliness like they aimed to head-in at the Promised Land, but was on short time.

An' then—of a blisterin' hot afternoon—come Maggie Ute! Also—I took it—Miss Ute!

Ol' timer, there was no more monotony at Happy Day! From that moment for'ard life was j'st one rapid-fire evolution after another.

You've guessed it! They was Injuns! A squaw an' a squab!

The former was a hard-lookin' ol' ticket; but the other one was just plumb, pure American Injun—clean, straight, black-eyed an' magnificent; for all th' world like a Frederic Remington drawin'. Gosh! But she was a queen!

"Good afternoon," I says. "Warm, ain't it?"

"Ugh!" says the ol' lady, some stolid.

An' she squats down out in front of Happy Day. The young one looks me over without battin' an eye; then she squats beside the old one.

"Travelin' far?" I asks 'em.

"Ugh!" says Maggie, effusive.

"You don't say!" I jerks out, gapin' at 'em kind o' perplexed.

Then all at once the elder female widens on what I take was her version of th' English language.

"Heap um nice Chee-e-kita!"

An' she indicates the young one.

"She belong *you!* Do paleface work! Stay many moons! One blank'; two dol'!"

By the great horn-toed! She wanted to hock the girl for a blanket an' two dollars to boot!

"Do you want a Injun housekeeper?" Hi says to me. "N-o!" I says. "I don't! An' darn well you know it! Sufferin' cats! What would Miss Warren think if I wrote an' told her I'd got a railroad bungalow out in th' middle of the New Mexico Desert, with a female Siwash—or Ute, or whatever she is—a keepin' house f'r me?"

"Hey, there!"

An' I begins swingin' the ol' lady high signs an' out-o'-town signals.

"Heap um no want Che'kita! Nothin' doin'!"

And I shakes my head in a negative wigwag until I pretty near unhinge it.

But does a little thing like this sort of a washout flag that ol' coot? Not so's you could notice it! No, s'r! She just settles herself a little more firm in the alkali in front of Happy Day, and repeats her former proposal as impassive as a ol' tin phonograph.

"You darned ol' sage-hen!" I says. "What d'ye think you got here, anyhow?"

An' I gropes desperate f'r some answer to the riddle I finds engrossin' my mind.

How could I skidoo the Ute tribe that I suddenly finds on my hands? But no real, live idea brightens the darkness in my attic. No; all is utter gloom under Hiram's rafters.

But about here Maggie Ute, humsoever, come across with a lu-lu! She butchers some more English to the effect that p'raps Chee-e-kita ain't enough for a blanket an' two dollars. *She'd* stay, too!

And I remembers what TX had written warnin' me to look out f'r Maggie Ute.

"No, you don't, you ol' pansy-face!" I yells, dashin' into the de-pot an' grabbin' up a corkin' red blanket I'd bought up to Durango. I also digs up three silver dollars. "Here you are!" I says, waltzin' out and crammin' the blanket into the old Injun's lap. "You need a clean one powerful bad anyhow!"

Then I grabs her dirty ol' mit and slaps the iron men into it.

"A darn good blanket an' three plunks! Now you ol' desert rat you mobilize your clan an' pull out! *Sk'booch!*"

But does she? Yes; *she* sk'booches all right—Miss Ute, nevertheless, remains at Happy Day! And all the hollerin', an' jawin', an' arguin' I c'n put over is j'st plumb wasted energy. I might as well been conversin' with the four-way winds o' heaven.

"Your ol' lady is set as the ol' scratch in her ways, ain't she?" I says to the young one, who is rubberin' around real curious.

But Maggie Junior ignores me entirely. She has got her eyes on the mate to th' red blanket her ma j'st buncoed me out of.

I flops down at the wood bench where my key is hitched up, and calls the dispatcher.

"OS," I pounds at him. "Maggie Ute; arrived and departed. She has set off a pretty young female Injun without a bill of ladin'. What's the instructions?"

I guess them gosh-darned fishes at headquarters must 'a' all been in with ol' Hooker on the deal; for I hadn't been able to get anythin' out of any of 'em concernin' who was Maggie Ute previous to this.

"Ha-ha!" clatters back fr'm that half-baked dub on the second trick; and there is a pause. Then:

"Hold her pending instructions from consignor."

I bangs a three-letter message at 'im and slaps the key shut.

I was beginnin' to see what the super's bonus was based on. It looked like Maggie Ute wa'n't nothin' new to Happy Day. It would seem that she was the fundamental note of discord an' the root of considerable evil around these particular diggin's, which results that the brass-poundin' fraternity of wanderin' boomers who drifts this way don't never hold down a "sine" long.

It j'st plumb appears that Maggie merely sets off the prot'plastic unit of distress which germinates wo here. She ain't on her way twenty minutes when a gent carryin' on somethin' hostile busts into view over th' crest of a shaggy rise in a cloud of dust,

an' wheels 'em for Happy Day like he's late on a Centurary schedule. Miss Ute, she savvies the approach too, but it don't look like it comes exactly as a surprise to her.

"Rain-in-the-Face much mad," she says, cold an' indifferent. "Heap um scalp paleface."

There follows about four or five seconds that my gear-works labors in a fog, while I absorbs the details of this new development.

The latest—inward bound—is a long-legged, dusky gazabo with not much of nothin' on hisself but a sawed-off shredded petticoat an' a pompadour haircut. His approachin' evolutions is more or less alarmin' to gaze upon, though, inasmuch as he has a sort of pig-sticker on tap.

Upon perceivin' the latter I get under motion practically immediately, the while I performs activities which has to do with gettin' up on the roof of the de-pot without any perceptible delay. In so doin', however, I pretty near treads on Skeezicks, who is sunnin' herself around the corner.

Havin' once negotiated the runnin'-board I exhales a fluent line of relief.

"What kind of a debauched, flesh-eatin' cannibal land has that dab-fatted ol' super shipped me into, anyhow?" I cussed with my first, gaspy returnin' breath.

Meanwhile that red heathen trails me most diligent. Even now I shivers when I contemplates what might have happened if it hadn't been for Skeezicks. She, however, gives no evidence of entertainin' nerve-destroyin' fears of warrin' Injuns in *her* snaky ol' soul.

When who's-iss gallops around the corner in pursuit of yours truly, Skeezicks, disturbed in the middle of her afternoon nap, uncorks a battle hymn right off the bat an' jabs at the red varmint like a double-action air-punch, whereat ol' Rain-in-the-Face drops his carvin'-iron, reverses plumb prompt, an' launches hisself backward into the clear, j'st about a half a shake before the rattler has a chance to bite a hunk out of his shin.

"At-a-boy, Skeezicks!" I hollers. "Sic 'im!"

Then while she is maintainin' a first-line defense, I allows it is appropriate that I come up-stage an' offer a few fittin' remarks anent the occasion.

"Bluff 'im, Hi!" I says to myself. "Bluff 'im good an' proper! If you don't he'll be up here pretty soon an' separate your hirsute crown fr'm yer skull."

Skeezicks has looped herself into a fightin'-coil an' is awaitin' developments. The Injun regains his balance an' says, *"Ugh!"* some disgusted, while I notes his eyes is scrutinizin' the dust in search of his cutlery. I feel a heap relieved when I perceives that it has landed about a half a foot from where ol' Skeez is sittin' at attention.

I felt some tragic, m'self, an' I guess I must 'a' looked it. *Me*—Hi Ellis, fr'm Aroostook, versus a copper-colored bandit of a Injun out here in the middle of a sun-fried New Mexican nowhere, an' not a train due by f'r an hour!

Me, with my hair mussed up pretty near straight on end, a soft shirt open at the neck an' jerked squew-gee in the rush, while a pair of them *kar-ke* britches, one leg rolled f'r high-water, sagged from my hips—an' me, thus festively adorned, attemptin' to uphold the dignity of railroad authority at man-marooned Happy Day, as I waltzes around on the roof of that ol' Santa Fe box!

I pauses all of a sudden, straightens up rigid, raises my right arm, flattenin' the palm out against space, an' spread my fingers. Thus imposin' an' impressive—while pretty near scared stiff—I commences.

"Stop right where you are!" I bellers at the top of my voice. "Stop! Look! an' Listen! you pie-faced aborigine! *Cease* them dingbusted war maneuvers!"

"Ugh! *Hai?"* says he, appearin' to be some perplexed.

"Ugh! Huh!" I grunts threateningly. "Or I'll call on the Great Spirit of heap happy huntin' ground to bill you where they'll fry fat out of your debased hide in a skillet of fire!"

By gorry, an' it got over!

I don't calculate to ever know which part of the discourse got through his thick skull—or if it was, maybe, the majestic appearance I makes up there on the runnin'-board. But anyhow somethin' got under his dome to the effect that he was up against a bad combination, for he says kind of doubtful:

"Paleface heap um big chief?"

"You betcha life I'm a big chief!"

An' I nods vigorous, the while a smackin' of myself on the chest with my left hand.

"Sachem! Heap big! Bad medicine fr'm Aroostook! Passam'quoddy! State o'

Mainer, b'gosh! D'ye savvy the dope now, you half-dressed object?"

Just then, out of the corner of my eye, I seen Skeezicks beginnin' to let off the slack of her fightin'-pose. It was her habit after she an' me had enjoyed our little daily skirmish to unwind an' head in under the station to kind of think things over. Here, then, was a chance to show that Injun a real, P. T. big-top climax of delusion.

"Ho-kus po-kus, hash-ke, pi-na!" I says, slow an' solemn, so's to give the ol' rattler a chance to j'st act natural, an' at the same time wavin' her away impressive. "Get under the de-pot, you buzzin' length of evil!"

An' by the great horn spoon, she did! And from the minute her ring-rolled ol' alarm buggy dragged out of sight *I* was high-muckey-muck at Happy Day.

That bull-luck stunt hit superstitious ol' Rain-Face right where he lived. He was a changed redskin after that. In his eyes I was a heap big paleface medicineman.

Then we began to get acquainted.

An' say, he wa'n't such a bad guy after all—that Injun.

Probably, if you or me had been in his place, an' laborin' under the same difficulties with our sparkin', like, I took it, he was, why, it wouldn't 'a' been so much unlike *us* to have drunk up a little courage, let off a couple hoots, an' sallied forth on a rampage with a gun, or a carvin'-knife, or suthin', too.

As near as I could foller his line of dope, he was Che'kita's steady. She'd made eyes at him or suthin', femine fashion, an' he, masculine fashion, had fell for it, and was overboard a mile; but bein' a *poor* Injun he didn't stand any more show of winnin' his lady than— Well, 'most any destitute Romeo.

It seems that Maggie Ute, like a lot of the matronly females of the species of our own half-way climbers, had a four-flushin' idea that her young progeny was due to get pushed into a better grade of society.

In her own ol' Injun-mother mind it was likely her idea to put Che'kita across the table a couple of notches higher than the Joneses. She'd raise 'em one by marryin' the young lady off to somebody better than the wanderin' Utes of her acquaintance—she'd pull off a match between the girl an' some of them wealthy an' aristocratic lads who whales Morse over the pike for a livin' if it took five years. *They* had blankets, an' nice, round Uncle Sammy cartwheels—valuation one plunk per—an' a wooden house, an' so on.

It was this ambition on Maggie's part which causes a more or less active variety of wo to accumulate for all who associates their persons with this here misnamed portion of New Mex known as Happy Day. And this, inasmuch as fast as the ol' lady settled her daughter at the local OSin' hamlet Rain-in-the-Face appears, runs the presidin' brass-thumper up the line a couple of miles, then carts his lady love right straight back where she come from.

The young Injun woman aids an' abets this proceedin' by craftily cornerin' the local artillery beforehand. This I savvys later, when I discovers my own pop, which I has brought fr'm Durando, empty an' chucked behind some loose papers in the corner.

Oh, yes! I gets the lay fine now—what sort of a game ol' Hooker had stacked the cards on me for, an' all. He'd give me five dollars bonus for every day I stuck over *one* month. Fine! A fat chance! For he allows I'll most probably get scalped, or skilliped, or skinned, or suthin' sometime durin' about the second week. The old Yankee sinner!

But while I meditates a angel of joy gets under the eaves, and a eleventh hour inspiration cops me a "stick" an' flies a load of Yankee cogitation on to the main.

Durin' the next fifteen minutes I labors most diligent to converse understandin'ly with ol' Rain-in-the-Face. I discourses conversation of a mongrel breed, makes signs, an' points, an' beckons—sweepin' the horizon inclusive—an' pulls a pantomime in general that would have been manifest to a intelligent Gila monster, the same which is also entered amongst our local inhabitants.

"Yes, ol' pansy face," I says, "it's yours, as far as I'm concerned—all yours!"

An' I conveys the fact that I'm referrin' to Happy Day an' surroundin' country.

"*All* of it! Yea, bo, Injun! The whole dang-baked, sizzlin' lot an' distance of it is yours an' yer heirs forever, an' welcome! Amen!"

Then I concludes:

"An' now *you* go buy Che'kita!"

I comes across with my remainin' red blanket and all the loose silver I c'n dig up.

"Give it to big squaw Maggie!" I tells him. "An' dawg-gone yer leathery ol' hide,

may you be hen-pecked henceforth an' forever more!"

And I heads 'em both out of town.

Oh, man! But that Injun did a awful good job at peddlin' the news that he'd discovered a paleface medicine man who had give him wealth enough to buy a bride, to say nothin' of a box-car house, a ol' lady rattlesnake full of evil intentions an' a railroad.

No, sir, by gorry! The sun wa'n't two hours above the Culebras the next mornin' when a single-file string of Utes, or Siwashes, or Hop-ees, or Sewers, or whatever wanderin' tribe they really did belong to, begun to trail over the horizon from the direction of the San Miguel Arroyers, the while they lays a course f'r Happy Day.

"OS," I jerks at th' first trick man at headquarters. "Ninety an' nine noble redmen is headin' into town fr'm the south. I've made out my transfer; Skeezicks is in charge. Am departin' eastbound, in about thirty seconds! Safety first! Good luck to yer an' your dad-debased Happy Day! '30.' Hiram!"

He breaks me toward the last, but I'm on my journey.

I has been climbin' over the right-of-way ties—touchin' one an' skippin' three—about ten minutes when a string of tankers overtakes me. The hoggers pinches 'em down an' I connects with the grab-iron when the ol' big sizzles by.

"Been bachin' at Happy Day, son?" grins the eagle-eye.

"No," I says; "Heaven bless yer, *no!* Not bachin'! Teachin' Injuns th' elements of civilization!"

It's late in the afternoon when I meanders in casual to pay Mr. Anson Hooker a visit.

"Merry Christmas, cap!" I says, cheerful, pushin' right in past a couple of interferin' Willie-boys who is maintainin' a sort of defense outside the inner sanctum. "How are yer?"

You'd 'a' almost thought he was expectin' to see me. He don't say "Hello," or nothin'; j'st goes right off half-cock:

"What in Heaven's name kind of a jamboree did you start out to Happy Day?" he shouts. "Indians! Indians! Indians! They've pulled off a wedding of some kind; have got a flat-headed old rattler and are worshiping it in the name of Passamaquoddy, Aroostook and the Great Spirit. There has pretty near been a riot.

"Why, we very nearly had bloodshed between our men and those confounded crazy heathen out there before we found out what it was all about. They thought they owned the blooming place! Mateson, from the agency, has been all the afternoon getting the idea out of their fool heads. And at that they lugged off that darned rattlesnake in a basket, grunting stuff about Aroostook bad-medicine!

"What did you mean by starting anything of that kind? Filling those savages with any such unheard-of notions! No knowing what it might have started! *How* you did it I don't know!"

And he paused, moppin' his brow nervous like.

"Me!" I says. "*Me*, start it? You're comin' east on th' westbound ol' timer. Why, you old Yankee pirate, *you* started it by sending me out there in the first place.

"Furthermore, I'm done telegraftin' on yer sun-scorched ol' pike anyhow. I don't calculate to wither my hide bachin' out on your gosh-blistered desert—not me! I ain't any of yer squatter population! It was your deal an' you give me a bum hand; but I played it out just the same."

"H-m, I guess you did—I guess you did," he mutters, beginnin' to look kind of down-hearted.

"An'," I goes on, "I guess Utah an' New Mex an' Texas ain't big enough f'r two State o' Mainers to railroad proper in anyhow; so I guess I'll be goin'. S'long—Wiscasset!"

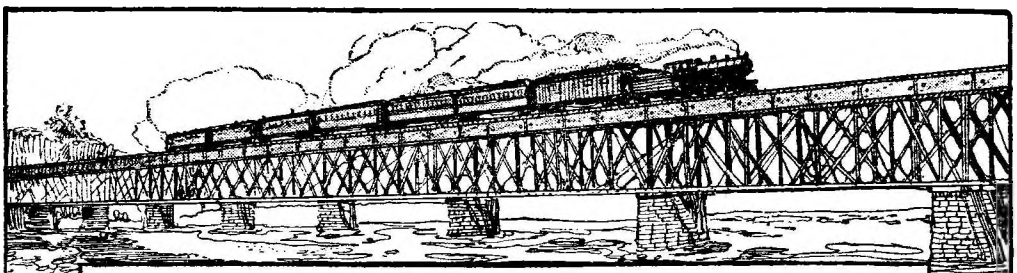
He looks kind of relieved; then grins, still dabbin' at the sweat-beads on his forehead.

"Er-r, so long—Aroostook!"

THE · SIGNALMAN · SAYS

When safety comes first, sorrow comes last.

FROM THE RAILROAD MAN'S MAGAZINE.



THE TROOP-TRAIN.

BY LYDIA M. DUNHAM O'NEIL.

UNDER the red of the morning light,
Under the white of the paling stars,
Under the blue of the arching sky,
Passes a train of thundering cars.
Red, white and blue! That the flag may wave
Over the land they go to save,
Over a race of freemen brave,
Our boys go by in the troop-train.

SAXON and Teuton and Celt and Slav
Have rent asunder the bonds of birth
Under the flag of the land they love
To fight for freedom against the earth.
The war-cry echoes from shore to shore:
"America! Freedom forevermore!"
And the voice of the nation is lost in the roar
Of the onward-rushing troop-train.

THE white rails ring, the car-wheels sing,
As the troop-trains gather from north and south;
And the song they croon is a battle-song
Of fame hard won at the cannon's mouth—
Of lilt of bugle and throb of drum,
Crack of the Krag and the bullets' hum,
Valor, and honor, and glory to come
To the boys on the flying troop-train.

SAXON and Teuton and Celt and Slav,
Their sons are here with the native-born;
Side by side in the coaches they ride
Through the crimson glow of the early morn.
Express and mail and manifest freight
On the long sidings patiently wait;
In the balance is hanging a nation's fate—
Way! Make way for the troop-train!

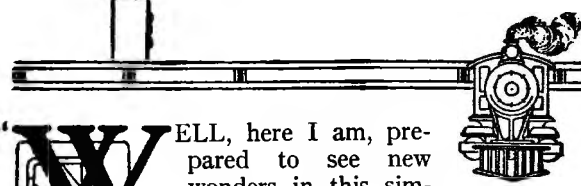
HELP FOR MEN WHO HELP THEMSELVES.

NUMBER 70.

SIGNAL PRACTISE.

BY C. H. CLAUDY.

IN FIVE PARTS. PART FOUR—AUTOMATIC SIGNALS AND TRAIN-CONTROL.



"WELL, here I am, prepared to see new wonders in this simple complication or complicated simplicity of yours,'' announced the Man Who Wanted to Know, as he greeted the Signal Engineer in the busy yards. "The last lesson we had, you promised me more wonders than I had dreamed of."

"Well, I look at them that way—as wonders," responded the Signal Engineer. "For the ultimate end and aim of any good signal engineer is to eliminate, as far as possible, the human factor. Let us once be able completely to get rid of human liability to error, and we can conquer the liability of mechanism to make mistakes.

Signaling Danger Lies in "Human Failure."

"True, our apparatus does fail at times. Wires break, pipes freeze, connections get broken, lack of proper and continuous inspection allows failure to occur from wear. But of the total of accidents caused through wrong signaling or failure of the signal system, only a minute fraction is caused by apparatus failure. It is *human* failure, failure in the cab or the tower or the despatcher's office or somewhere where a tired human brain gets its nervous wires crossed, that the danger is."

"What's that got to do with signaling wonders? Going to show me a mechanical brain?" the Man Who Wanted to Know smiled in derision.

"Not to-day," was the serious answer. "I'll show a mechanical brain to you, and explain it as far as I can, when I take you over an interlocking plant. But I am going to show you how we have made trains do their own signaling. Every time we eliminate a tower man and replace him by mechanism, we have replaced one possible chance of human error. Hence it is that automatic blocking has made such headway in America, and hence it is, also, that in spite of sneers and laughter and the opposition of many, automatic train control is going to come more and more into use."

The Signal Engineer was talking to himself now and gesticulating vehemently.

"Get off the hobby horse and start in with the show," cried the Man Who Wanted to Know. "How can I be enthusiastic over automatic blocking or train control when I haven't any idea what they are?"

The Signal Engineer shook himself.

"That's possibly true," he replied. "Well, as a starter, look at that rail-joint."

The Man Who Wanted to Know looked at the rail-joint.

Rail-Joints Are Both Wired and Plated.

"You see," explained the Signal Engineer, "the ends of the rails are carefully joined with wire in addition to the plates. Those rails are a part of an electric circuit. They are—"

"But why the wire? Wouldn't the plate make a good electrical connection?"

"Not always. Rain, rust, oil, dust, get in. Nothing but the wire joint has been found to work well. Now walk with me along the track and notice the joints and I'll show you something else."

His eyes on the track, the Man Who Wanted to Know stumbled after the Signal Engineer. Trains puffed and whistled, bells rang, freight-cars clattered about the yard, but the Man Who Wanted to Know, with full faith in his friend, kept his eyes on the joints. Suddenly he stopped, pointing.

"Why is that joint filled up?" he demanded.

"This is an insulating joint," was the answer. "You can see the fiber under the plates if you look closely. We have a newer idea than that, though, in a special rail-joint which completely insulates one rail from the next one."

"Do you mean to say that these rails form an electric circuit?"

The Man Who Wanted to Know was frankly incredulous.

"How does it happen," he continued, "that the current doesn't leak out of the rails into the ties and earth, especially in wet weather?"

"We use what we call a current of low potential. It hasn't any power and seeks the easiest path. The easiest path is through the rails. That's another reason for good electrical wire bonds at the rail joints."

"But what's it for?"

Closed-Track Circuit Invented in U. S.

"It is for controlling signals," was the quiet reply. "The closed-track circuit, an American invention, is the underlying principle of practically all automatic blocking. There are other varieties, nearly related to automatic train control, by which a projection on the engine mechanically trips a signal as it goes by, or by which a wiping trolley makes a junction with an open circuit as the train passes, also actuating a signal.

"But all such things have been proved more expensive and less reliable than the simple closed-track circuit.

"In the track circuit we have a source of weak current, usually two or more cells of the familiar blue stone battery, which, at one end of an automatic block, makes an electrical current flow through the two rails, out the right-hand rail, returning through the left-hand rail. At the other end of the block, which is rarely more than a mile away and is better less—because of the weakness of the low potential current, which in turn is necessary if the current is to stay on the poorly insulated rails and not jump to the earth—at the other end of the automatic block is a relay through which the current flows.

"As of course you know, a relay is an instrument, used principally in telegraphy, which responds to very weak currents. This relay is suitably connected to apparatus which works the signal. The signal-working apparatus may be electrical, by means of magnets, or by means of an electric motor, or, as has been successfully if expensively installed in many places, it may be worked by compressed air. The form of power, however, is not important to understand the principle of the track circuit.

Delicate Electric Current Is Used.

"In operation, the current, flowing through the rails of a block and through the relay at one point, keeps the relay energized and in action. The signal remains at 'clear' while the current is flowing. As soon, however, as an engine or car rolls upon the track of the block, the wheels and axles make a short circuit of the delicate electric current, which chooses the easiest path.

"The current thereupon ceases to flow through the relay. Its magnets becoming inert, the armature is let go and by a proper electrical connection allows the signal immediately to swing by gravity to the 'danger' or 'stop' position. It remains so as long as any pair of wheels is in the block. No train can enter the block, of course, with the signal at 'stop,' and as that signal remains at 'stop' while the train is in the block, it is perfectly safe.

"All human liability to error is thus eliminated. The relay will not forget nor will the electric current forget to short circuit. As soon as the train leaves the block, the

track circuit is again established, the relay works and brings the signal-operating power into play, thus forcing the signal, against gravity, to the 'clear' position.

Always Signals "Stop" for Broken Rail.

"Of course, the apparatus can fail. But note that any failure of the apparatus must immediately set the signal at 'stop.' If the batteries become exhaused, the current ceases to energize the track circuit and the relay, and the signal sets itself at 'danger.' If a rail is broken, the signal sets at 'danger,' just as if the current were short-circuited. And right here is one enormous superiority of the track-circuit automatic over any other kind; it infallibly operates signals to 'stop' for a broken rail.

"It is common practise to extend the track circuit a short distance up all sidings and switches, so that if a car is accidentally left inside the fouling-point it will keep the signal at 'stop' until the matter is remedied."

"Wait a moment," interrupted the Man Who Wanted to Know. "What's the fouling-point?"

"It is the point where a car, left on a switch, will be struck by a passing train. Switches diverge gradually from the main track. If a car is left on the slant-away, from the main line, the end of the car may be struck or 'fouled' by the passing train."

"Oh! Well, I understand that. But didn't I understand you to say previously that it was a fundamental principle of all signaling that the normal position of any signal should be the most mandatory order that signal was capable of conveying? And isn't the automatic block signal, which is normally at 'clear,' a direct contradiction of that principle?"

"He really has been paying attention!" and the Signal Engineer smiled. "You are quite right. Operating a track circuit with the normal indication at 'clear' is a direct contradiction of the fundamental principle that the normal should be the most mandatory command the signal can convey. The idea is that should anything happen to ordinary signals so they won't operate, they will be at 'danger.'

Fouling-Point Practise Reverses Rules.

"But that condition is met in the track circuit. Let anything happen to it, and the signal must set at 'stop,' instantly. On the other hand, it is perfectly possible to operate a track circuit with the normal at 'danger,' and have it come to 'clear' when, and only when, the moving train short-circuits a block ahead. But note that in such a case any broken rail would immediately set the signal at clear.

"There are other reasons against it, too. A train short-circuiting a track circuit at a point B, sets the signal at point A, a mile behind, at 'stop,' and holds it at 'stop' until the train passes point C, when it sets the signal at point B at 'stop,' and the signal at point A drops to 'clear.' The track circuit is in no case more than a mile long.

"But with the normal indication at 'danger,' and a two-block interval required, the train would set the signal at A at 'clear' only on passing point C. That would mean either a track circuit two miles long, or the use of an auxiliary circuit on telegraph poles, which adds complications and expense.

"Of course, in the case of single-track roads equipped with automatic blocking, auxiliary telegraph pole line circuits are necessary. For the signals must then govern not only same-direction trains, but opposing-direction trains. A train short-circuiting a track circuit must not only set a signal behind it, but a signal in front of it; these must operate for trains in both directions.

Indicates Speed of Trains, Too.

"I have been talking theory only. In practice the automatic block system uses the 'home' and 'distant' signal just like the manual or controlled manual blocking system. As track circuit signals are usually arranged in short blocks, it is customary to have the 'distant' of one block on the 'home' of the block behind. These are so connected with the track circuit that the distant rises with the home ahead of it, to tell an engineer that he may expect to find it set against him.

"When he finds both a home and a distant set against him he stops. If the distant only is set against him, he goes slowly. If both are 'clear,' he knows he can proceed at full speed. In this way the automatic system is to some extent a speed indicator system, just like manual blocking with short blocks, or the three-arm signals of the Pennsylvania.

"There is as yet no uniformity in the manner in which automatic block signals are operated; that is, by what power they

are dragged to the 'clear' position from the gravity position of 'stop.' The original automatic block signals were worked with a clockwork arrangement either systematically wound daily or provided with a weight and pulley sufficiently long and strong to work, say a week, without rewinding. Next came the electro-magnet, worked by a local current, thrown into use by the relay, as soon as it became de-energized by the car or engine short-circuiting the track circuit.

"But these early devices worked with small and light signals which required comparatively little power. Modern practice demands a large and fairly heavy signal. The signal must be big enough to be easily seen, strong and sturdy, and therefore weigh enough to stand the test of time and the stress of heavy storms, and able to resist increments of snow and ice which may be piled on it in a blizzard—and still work.

"The clockwork and the local magnets were not powerful enough to meet the new conditions. So we came to the use of compressed air—and some systems may have twenty miles of pipe controlled by a central compressor. But a leak in that pipe becomes a serious matter both to the signals and to the man who must locate it. Moreover, pipes and compressors and maintenance forces are more expensive than electric wiring and dynamos or storage batteries. So the electric motor has been brought into play, and many automatic signals are self-contained, have their own power plant in their feet, and require only continual inspection and recharging of batteries.

Liquid Gas the New Actuating Agent.

"A more recent and very satisfactory method is the use of compressed gas—perhaps liquid gas would be a more truthful title—to move the signals. This system has all the advantages of compressed air in pipes without its disadvantages, since it eliminates the pipes. The liquid gas, in cylinders, is drawn off for use through a reducing valve, which keeps the pressure constant and just right to work the piston in the cylinder which actuates the rods working the signals.

"As liquid gas is entirely unfreezable, it is not affected to any extent by the coldest of weather, and as it exerts a more uniform power, it is reliable. Also, unlike a storage battery, the system does not depreciate with time, since every fresh cylinder of gas works just the same as if the whole apparatus were freshly installed."

"Well, it does seem as if you had invented something that would produce a wreckless railroad," commented the Man Who Wanted to Know. "I don't see how they can ever fail."

"I have seen them fail, nevertheless," responded the Signal Engineer. "For, although we have reduced the liability to wreckage or accident through failure of our signal to almost nothing by the track circuit or its equivalent, we have not yet become superhuman.

"I remember a case where a 'surprise test' was rung in on an engineer by a signal engineer who didn't know his business. He undertook to lay a crowbar on the track to set a home signal at 'stop' against a freight train which had not been properly made up. The heavy cars were at the rear and the light and unloaded box cars in front. I agree that the engineer might well have refused to pull the train, but he didn't.

Caused Wreck with Safety System.

"Anyway, the signal engineer waited until the train had passed the 'distant' before dropping the crowbar and setting the 'home' against this train. The engineer, looking confidently for the 'clear' the distance had promised him, saw the board sticking straight out. Now that straight-out board means only one thing when you are close to it—and a thousand feet is close; it means 'all the air there is.'

"The engineer yanked at the emergency air. The train stopped—shades of Westinghouse, I should think she did! The rear end, the heavy end, climbed up onto and telescoped through the light, unloaded cars in front, pitched a couple of them over on to the other track, and—that was the time the down express choose to come slamming through at fifty an hour.

"The engineer of the express saw the mess in time to put on his emergency air, too, and a lot of passengers had a fine shaking up. But the express engineer had set his last air; when he hit that empty, crushed box car, thrown in his path by that 'surprise test,' a board came through the cab window and brained him.

"The signal engineer resigned and went West. No, you couldn't jail him; it was a customary thing to make surprise tests. But—I'm always careful what is running

and who is running it, when I make my surprise tests nowadays!

"Another way signals fail sometimes is by act of God. Of course, a damaged or absent signal is a stop signal. But when a signal sets at 'clear' and looks all right, any engineer is justified in thinking it means 'safety.' Yet there was a wreck on this very road from a train passing a 'clear' signal at speed and bumping into a freight around a curve just ahead. The engineer wasn't killed, and the first thing he said when they picked him up, all mangled, was, 'Go see that signal—it's clear.'

The " Normal Danger " Men Chirk Up.

"They went to see the signal and it *was* clear, and no one could make it set at 'stop.' And when they came to investigate, they found that a stroke of lightning had welded the magnets and the armature of the relay to one solid mass, and of course it couldn't release and so naturally set the signal at 'stop.'

"That was a mighty argument for the 'normal danger' men, but when you consider that the chances are something like one in a thousand millions of a thing like that happening, you are bound to call it the exception which proves the rule. As well say one should always have two engineers and two firemen because men have been known to be attacked suddenly with suicidal or homicidal mania, and so have a safe and sane man handy if the engineer or fireman goes crazy.

"But the newest and latest—and one of the oldest—schemes for safe train operation, and the elimination of the accident caused by human failure, is the automatic train stop. It is so old it is hoary, in idea, and so new in successful practise that a lot of people never heard of it, and a lot more don't believe it is practical, in spite of the fact that no less a road than the Pennsy is using it in certain places, and that it has been proved a possibility and a practicability in certain instances.

"Of course, there are a thousand ways of working it—in theory. There are at least a thousand automatic train stops patented in Washington—and nine hundred and ninety-nine of them are shameful examples of bureaucracy. Even though 'new and different and original,' they have no smell of a chance of ever being used.

"Many of them are of the type of the one which was brought to me recently by a white-haired minister who had come five hundred miles to see the president of the road and show it to him. He had an open circuit instead of a closed one, which was enough to kill it at the start. When the engine hit it, a current was projected into a flash-light and smoke-bomb in the cab. As the inventor gravely explained to me, the flash was not expensive, because it used photographic flash-light powder. I must be sure to use a kind that gave off much smoke, the inventor said, so that the engineer wouldn't think the light was a lightning flash.

"I was also told that this was only a part of the invention. If the engineer insisted on disregarding the warning and thought he would rather die in a train accident than choke to death on his bomb-fumes, a time-clock arrangement fired a couple of bullets into the train-line and so stopped the cars by an emergency air!

"Another inspired mind had a variation of the device by which the angle-cock on the air-pipe on the engine is struck by a trigger erected in the track when a sudden stop it wanted. Usually these things open the train-line and stop the train as fast as the air can do it. This, I was told, was much better than that idea, because it slowed the train up gradually.

"Instead of opening the train-line, the track trigger opened an oil-line and a few gallons of oil lubrication were spurted out on the track in front of the drivers. That was supposed to stop the train because, as I was reliably informed by the inventor, the train cannot move if the drivers do not hold!

This Device Was Too Automatic.

"But roads do try the most foolish ideas, sometimes. The first automatic stop is sometimes credited to A. S. Vogt of the Pennsy. His idea was simplicity itself. He had a glass tube sticking out of the top of the cab. This was a sort of pocket in the train-line.

"When they wanted to make an emergency stop, they dropped an arm with a signal. If the engineer didn't stop before he passed the signal, the arm swiped the glass tube a crack in the head and the air went out of the train pipe and there you were. They actually experimented with this device in 1889.

"And it worked—my word, it worked well! They had forgotten to provide them-

selves with any substitute glass tubes, however, and when they went through a tunnel an icicle hit the tube and the train stopped right then and there and stayed stopped, too, for some time. I haven't heard of the Pennsy or any steam road using the Vogt stop since, although an adaptation of it is used out West on a high-speed trolley line."

"You talk so fast I can't get a word in edgewise," complained the Man Who Wanted to Know. "Why should any one want an automatic stop anyhow? Does the engineer *like* having the control of his train taken out of his hands that way?"

"Generally he doesn't. The steam railroads have been almost solidly against automatic train-control from the beginning. However, their opposition is not, as the public is inclined to think, because of the expense of installation, but because there has yet to be demonstrated any train-stop that is practical for commercial operation of a railroad. Your average inventor thinks that all that is necessary is a projecting arm which will trip a trigger on the locomotive and so put on the air. He forgets that the only train-stop worth its salt would be one which controlled speed as well as motion; that merely having an emergency stop, out of the hands of the engineer, is not a specific against accident.

"Again, all apparatus which is concerned with mechanical means on or about the track, and that means all sorts of levers and trips, is liable to derangement either from malice, from trespassers and practical jokers, or from the obstructing effect of snow and ice.

New Haven's Big Prize Still Unawarded.

"Perhaps you know that the New Haven offered a prize of ten thousand dollars for a satisfactory automatic train-stop which they could use. They had thousands submitted and selected two, I think, for practical tests. No, the award has not yet been made.

"They had eighteen drastic specifications which had to be met before a signal and stop would be acceptable. They are far too long and complicated to give you here in detail now—I'd bore you to death. But here are a few.

"The apparatus must be so constructed that the failure of any part of it will cause the display of a stop signal and the application of train-brakes. It must be applicable either to steam or electric traction and equally applicable to bridges, tunnels, subways or elevated structures. It must operate without failure under all weather conditions in which trains can be operated.

"And then this hard nut—the system must permit a train to pass an emergency stop without stopping it, if it does not exceed a certain speed limit, but must stop it if it does exceed that limit! And again—another nut—it must allow either permissive or absolute blocking and must be able automatically to reduce speeds of trains which go at excessive momentum!

"Is it any wonder that out of thousands submitted, but few were chosen for actual trial? And I have only hit the high places in description at that!

Train-Stops Are Used in Tunnels.

"But there are some good automatic train-stops in successful use in places where weather does not interfere. The New York subway operates express trains on a minute and forty-three seconds headway, and does it in safety because of an automatic stop. And the Pennsy has an automatic train-stop installation in the Hudson River Tunnels.

"In addition to that, they have a curious device by which their traffic can be reversed in their tunnels. A single lever at the Terminal and another at the Hackensack Bridge will reverse the traffic completely, taking the automatic stops for west-bound trains out of commission and throwing in those for east-bound trains on the same track. As their Mr. Rudd, signal engineer, once explained:

"We operate our trains that way two or three times daily in order to be sure everything is working properly, because if we ever *do* have one of our tubes blocked, we are going to need it as the Texan needed his revolver—mighty bad!'

"It is very curious, the division of opinion among railroad men, on this subject of train control by outside means. Now I personally believe in the automatic stop and automatic train-control, and I believe it is the coming thing. I say so without the faintest shadow of a thought of disrespect to the fine body of men who sit on the right side of the cab. And I do think a lot of them who object to it as showing that they are not both able and trustworthy are looking at the thing from the wrong end.

"When I show you the interlocking system, I will show you a derailing switch.

The engineer who runs an interlocked signal knows he is going on to the ties. What is the difference in principle between that and knowing that if he doesn't stop his train when he is told to do so by a signal, a mechanism is going to do his job for him?

"On the other hand, there are many fine signal engineers and many capable railroad executives who say that there is a point in any line of human endeavor where total dependence must be put upon intelligence and machinery abandoned. And they say, and with much show of reason, that the dangers which come from taking the control of a train out of an engineer's hands may well overbalance the safety the automatic train-stop in itself insures. Obviously, if an engineer knows he is going to be stopped if he runs a board, he won't have the same keenness of looking for and seeing that board.

Should Trust Engineer's Discretion.

"Again, railroads spend ten years or more educating a man up to the position of responsibility of engineer. He is subjected to the most rigid tests and gets his job finally only after a very strenuous period of preparation. The automatic stop immediately relieves the engineer of some of the responsibility he has been taught to assume, and that is bad for running trains.

"And there are curious little problems in automatic stopping concerned with the braking-distance of trains and speeds and weights. Suppose an engineer *does* attempt to run a board and there *is* an automatic stop which shoots on his air. He may run a thousand or two thousand feet before his train pulls up.

"Will that save a wreck if the obstruction in the closed block is within that one or two thousand feet? Of course not.

"But suppose you put the automatic stop two thousand feet *this* side of the home signal. Then a man approaching the home signal at low speed, cautioned by his distant, would have the stop sprung on him just the same as if he rushed by it. Again, the slow train will stop much more quickly than the fast one—but the automatic stop can be in only one place at a time!

Wireless Telephony May Solve the Puzzle.

"Well, it's all a great puzzle. But I am convinced some sort of automatic train-control is a physical possibility, and I shouldn't be at all surprised if it didn't lie through wireless telephony—but that is altogether a different story.

"And now"—and the Signal Engineer stretched himself vigorously—"I have shown and described to you the principle of the automatic block, the track-circuits, and have just barely scratched the surface of automatic train-control, to let you know that there was such a thing.

"If you still want to see a mechanical brain, more complicated and harder to understand than your own, come out here once again and I will introduce you to the interlocking, the detector bar and the derail, the means by which the maze of signals and switches and track and trains in a great yard is kept safe, and by which you are kept whole and uninjured when, safe in your Pullman, your driver takes you across a wilderness of track and through a wilderness of trains."

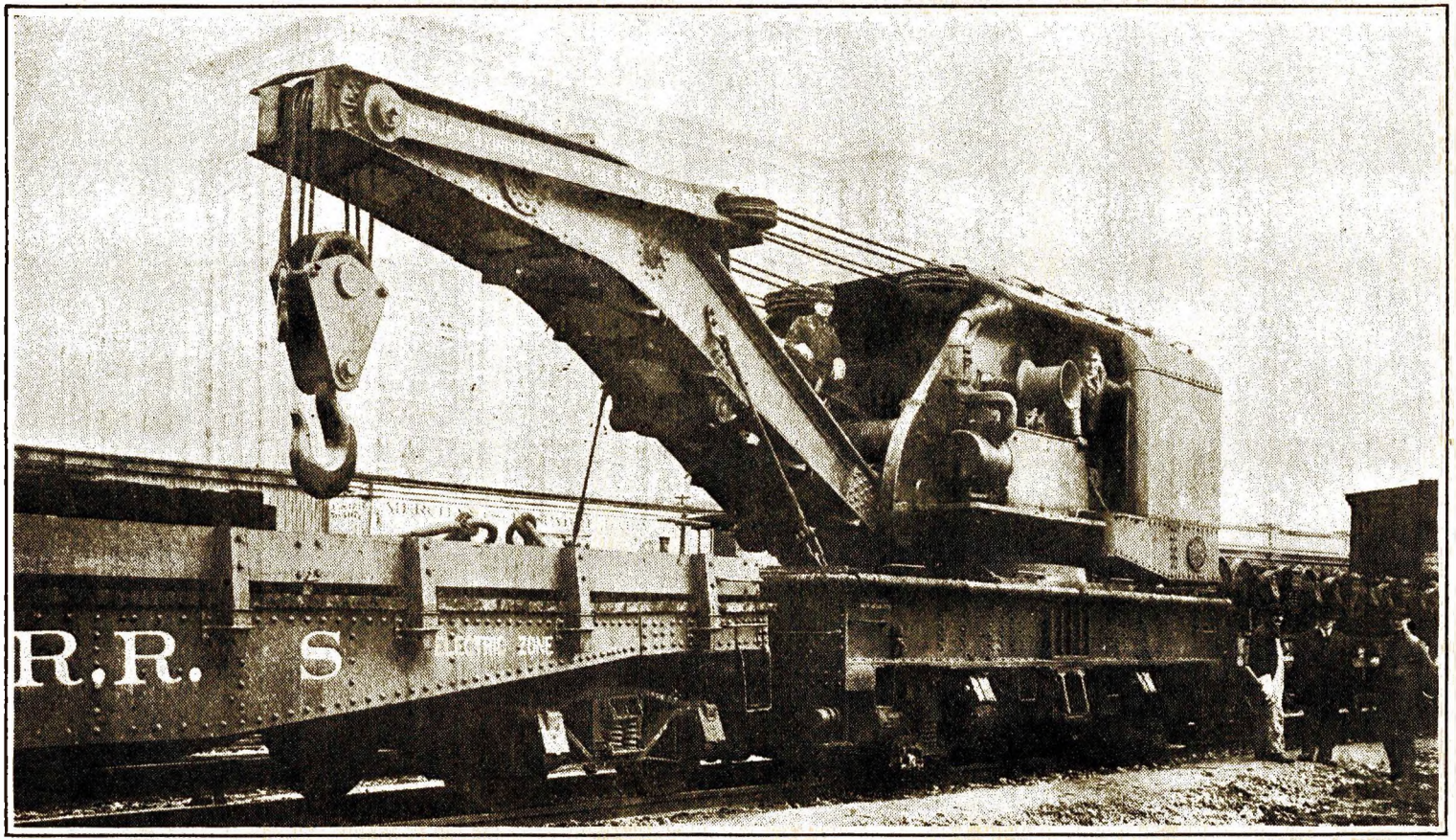
"I shall come."

The Man Who Wanted to Know was thinking deeply.

"Tell me," he said, "why wouldn't this idea be a good one for an automatic train-stop—"

But the Signal Engineer had fled.

GIANT CRANE CAN LIFT 2 STEEL DAY COACHES.



THIS CRANE WAS DESIGNED PARTICULARLY FOR USE IN THE DETROIT RIVER TUNNEL OF THE MICHIGAN CENTRAL. EITHER ELECTRICITY OR STEAM CAN BE USED AS OPERATING POWER, DEPENDING UPON WHETHER THE CRANE IS TO BE USED IN THE TUNNEL OR OUTSIDE THE ELECTRIC ZONE. THE CRANE IS SUPPLIED WITH ELECTRIC CURRENT FROM THE THIRD-RAIL BY A FLEXIBLE CABLE. WHEN STEAM IS USED IT IS FURNISHED BY A LOCOMOTIVE

WITH THE INVENTORS

BY LESTER L. SARGENT.

WE print with each invention described the number of its patent papers. Readers wishing to secure more minute details and drawings of these patents can order from the United States Patent Office, Washington, D. C., by giving the number. The government charges five cents each for patent papers. Remember that stamps or other forms of currency are NOT *taken. A five-cent coin must accompany each single order.—THE EDITOR.*

A FLEXIBLE Railway Car, No. 1,168,335, that bends gracefully around sharp curves of the track, has been invented by Harold Rowntree, Chicago, and patented to the National Pneumatic Company of that city. It is built in three sections.

The central section, which contains side doors, is supported on a frame that is pivotally connected to the rear portion of the front section and to the front portion of the rear section, above the respective trucks. It was primarily designed for street-railway use, though it is not necessarily limited to such use. This construction makes possible a valuable increase in the capacity of the car.

A PAD and Pencil Holding Attachment, No. 1,153,340, which can be readily fastened to the standard of any telephone, has been invented by Howard R. Smith, Washington, Pennsylvania. It saves the telephone user any loss of time or patience while hunting for pencil and paper to take down an important phone message.

An electric-light bulb of small size and a small battery can be attached to the pad if desired for use if the telephone is placed in a dark corner of the room.

AN Absolute Permissive Automatic Block-Signal System (No. 1,174,039) invented by Wilmer W. Salmon and Frank L. Dodgson, Rochester, New York, affords head-on protection from one passing-siding to the next, on *single-track* railways. The blocks for following train-moves may be made as short as track conditions require.

Instead of giving the same indication for a train entering the block from one direction as from the other, as with the ordinary automatic block-signal system, the signals in this system are operated only by traffic going in *one* direction. This is accomplished without additional apparatus or circuits other than the ordinary closed track-circuits in common use on railways.

The invention is referred to as a unit system. A signal circuit is opened as a train enters a block. A further signal circuit is closed only by a train which enters the block from *a like* direction. Semaphores are governed in accordance with the presence and *direction* of a train on a track-circuit section, while preserving the advantages of an automatic system.

GUNS, automobiles, motor-cycles—all have noise-silencers nowadays. To this list a Muffler for Locomotives (No. 1,173,447) is now added. A series of perforated plates or partitions of wire netting in pipes leading from the steam-chests to the locomotive stacks silences the escaping steam. Helon B. MacFarland, Chicago, is the inventor.

CHARLES H. SMITH, Spokane, Washington, locomotive engineer, has invented a Wheel Flange-Oiler (No. 1,161,897) consisting of an oil reservoir and a pipe, the end of which contracts with the wheel flange end, and being of less hard metal than the wheel, wears to conform in shape with the wheel. This saves adjusting the device after it is once installed. A limited but continuous feed is attained. One of the devices applied to the front wheel lubricates the car.

TELESCOPING of cars in collisions, with the consequent loss of life in such events, is forestalled in a Railway Car (No. 1,174,057) invented by Frederic A. Delano, Chicago. Ends of adjoining cars have oppositely arranged buffer face-plates and extended flanges that are arranged to interlock one with the other to prevent telescoping. Under stress of shock the impact is borne by the underframe construction of the cars, which by reason of its greater strength reduces the danger of telescoping to the irreducible minimum.

THREE tiers of berths are a feature of a new Sleeping-Car (No. 1,174,703) devised by Ernest Flagg, New York City. The car has a longitudinal corridor extending along one side of the car, with a series of two-room compartments communicating with this corridor. Alternate compartments have their floors depressed from the floor of the corridor for the lower berths. Each alternate compartment has a partially collapsible roof independent of the car roof.

The two upper berth-levels are insulated from

the lower level. The entire window-space remains undisturbed when the car is transformed for night service. Separate toilets are provided for each compartment, but independent therefrom. Privacy is obtained by the arrangement of the compartments with the greatest economy in floor-space.

IMPROVED ventilation is secured by a new Ventilating Apparatus for Sleeping-Cars (No. 1,172,313) invented by William P. Russell, Chicago. An air conduit, or duct, extends the length of the car, and from this main conduit branch pipes extend to each berth. A valve at the end of the main duct provides a device by which the porter may cut off the entire system on occasion, as when the train passes through a tunnel. The occupant of each berth also may control or regulate the ventilation of his particular berth to suit his personal preferences. A zigzag construction of the intake passageway of the ventilating apparatus prevents dust, cinders, or rain from passing farther than the intake cowl.

A TELEGRAPH Transmitter (No. 1,173,702) of the vibroplex type is the subject of a recent patent to Clayton Bell, Centralia, Missouri. The vibrating mechanism is all operated by a single key. A second lever is mounted on the pivot of the first lever which controls the vibrator, the second lever being movable independently. The levers are movable together to release the vibrator.

The independent movement of the second lever is limited by a spring. A spiral spring connected with the first lever is attached to a thumbscrew by which the tension on the vibrator may be readily adjusted to produce dots at the desired speed to suit the operator.

ALFRED A. ZIEGLER, Boston, Massachusetts, has a new Railway Signal Lantern (No. 1,173,239). It is an electric apparatus, with two incandescent lamps and an automatic circuit controller that permits of the device being used with either a direct current or an alternating current, according to the kind in use in the signal system where it may be put in use. In case one lamp burns out, the circuit of the electro-magnet with which it is connected is opened and its armature is permitted to move away from the electro-magnet, thus closing a switch that closes the circuit of the other lamp, thus causing it to glow. For alternating-current work an especially constructed electro-magnet is employed to prevent the armature from vibrating.

TRAINMEN can grab messages and orders conveniently while on a train in motion if the messages are attached to a new Device for Delivering Messages (No. 1,174,604) invented by Edward Y. O'Conner and Carl N. McCaslin, Earl Park, Indiana. The device is in the form of a fork. Near the ends of the prongs are small leaf-springs under which a cord can be slipped and held taut. The letter to be delivered is put in an envelope, and the flap closed about the cord and sealed.

The cord is then stretched between the prongs of the device, where the engineer or conductor can readily grasp the message, as the spring clips release the cord readily and make it possible easily to snatch the letter from the device. In fact, the trainman must merely catch the cord or loop in order to get the message, and this can be done when he is on a train traveling at high speed.

JOSEPH F. HADDOCK, St. Louis, Missouri, has invented a Railway Lantern (No. 1,172,523) of the type commonly denominated "markers," in which an ordinary oil-lantern of this description may be electrically lighted. The electric lamps within the lantern have electrical conductors that extend part way around the lantern and terminate in free electric-contact devices carried by a bracket member which is rotatably mounted on the lantern.

The lantern has three green and one red bull's-eyes for the purpose of signal or warning. The lantern can be turned to display green lights at the front, rear, and side when the train moves onto a siding, the brackets and conductors permitting of such turning without breaking the electrical contact.

TO take the place of the usual wooden cross-arms for telegraph poles, Lawrence L. Crabtree and T. Sharley Riple, Sulphur Springs, Texas, have invented a Metallic Cross-Arm (Reissue No. 14,040) of angle-iron form, with the top portion supporting the insulating pins, while the widened or reinforced central portion of the rear wall is attached to the telegraph pole.

THE A. O. Smith Motor-Wheel, which makes a motor-cycle out of a bicycle, has now found a place in railroad service, being used to drive section and inspection-cars. It takes the place of manual labor in driving hand-speeders. Sherman G. Amsden, an officer of Mudge & Co., Chicago, the railroad distributors of the motor-wheel, explains:

> The light-frame construction of a speeder will not adequately support its own motor, and a troublesome and unnecessarily expensive makeshift has been the reward for many operators who have tried to rebuild their speeders into motor-cars.

The Smith motor-wheel created a sensation among the motor-cycle and bicycle fraternity when it was first announced in the fall of 1914. As first devised it is an auxiliary to the bicycle. It consisted of a small internal-combustion en-

gine contained within a wheel somewhat smaller than the ordinary motor-cycle wheel, and was provided with flexible connections by which it could be attached to the bicycle to furnish the power for driving it. Its application to use on railroads is a novel utilization of the device which is proving important.

The improvement is patented (No. 1,176,931) to Reuben Stanley Smith, Milwaukee, Wisconsin.

WILLIAM D. SMITH, Trenton, New Jersey, a former railroad telegrapher, has a new device for taking the mail-bag from a moving train, on which a patent is pending. The advantage of the new mail-bag catcher is that the arms that hold the mail-bag are controlled by springs so that shock is eliminated when the mail-bag is dropped by, or picked up from, a passing train.

The inventor claims that it can even take a basket of eggs in a mail-bag without breaking the eggs, even when the train is going at the rate of sixty miles an hour.

Of the two arms that hold the mail-bag in position to be picked up by the mail-car, the upper arm is arranged to swing from vertical position and the lower arm is arranged to swing from depending vertical to horizontal position. A ratchet member controls the operation of the arms.

MAGNETIZATION of Car-Wheels to make them adhere to the rails of the trackway and lessen the possibility of cars jumping the track is the unique idea embodied in a device (No. 1,174,854) patented to William F. Gray, Meridian, Mississippi. A dynamo is connected by belt to the car-wheel axle, and the dynamo-current is delivered through brushes and collecting-rings to the magnetizing winding on the respective axles of the truck. Some of the zigzag roads described in other pages of this magazine might be relieved of their romantic dangers by the simple application of a safety device of this kind.

HAROLD ROWNTREE, Kenilworth, Illinois, is the inventor of a Passenger-Car (No. 1,172,563) with an inclined floor providing a theaterlike arrangement of seats, so that those in the rear can readily see over the heads of passengers in the front of the car and obtain a view through the windows in the front of the car. The doors of the car are arranged at the sides near the front end, where the floor is sufficiently low to permit feeble passengers to step in and out easily.

The car is arranged for use as an amusement-car as well as for regular passenger traffic. An auxiliary compartment segregates smokers from other passengers, besides providing a storage-place for various auxiliary devices. The conductor has a raised stand or seat to give him better facilities for observation of passengers boarding and alighting from the car. The patent rights have been acquired by the National Pneumatic Company, Chicago.

TO separate the loading from the unloading passengers on trains bound in the same direction and thereby increase the safety of the public and the capacity in trains per hour is the object of a Station Construction and Method of Handling Traffic (No. 1,174,400) invented by Alphonsus L. Drum, Highland Park, Illinois. When the incoming exceeds the outgoing traffic in one direction and the outgoing exceeds the incoming traffic in the other direction, the greater incoming and the greater outgoing traffic is confined to two separate platforms, while the lesser outgoing and the lesser incoming traffic is confined to a third platform.

AN automatic crossing gate (No. 1,172,327) has been devised by Otis M. Walrath, Hanover, Ohio, to safeguard the public at grade crossings. A motor operates the gate, the operation of the motor being controllable by electric means set in operation when a train approaches the grade crossing.

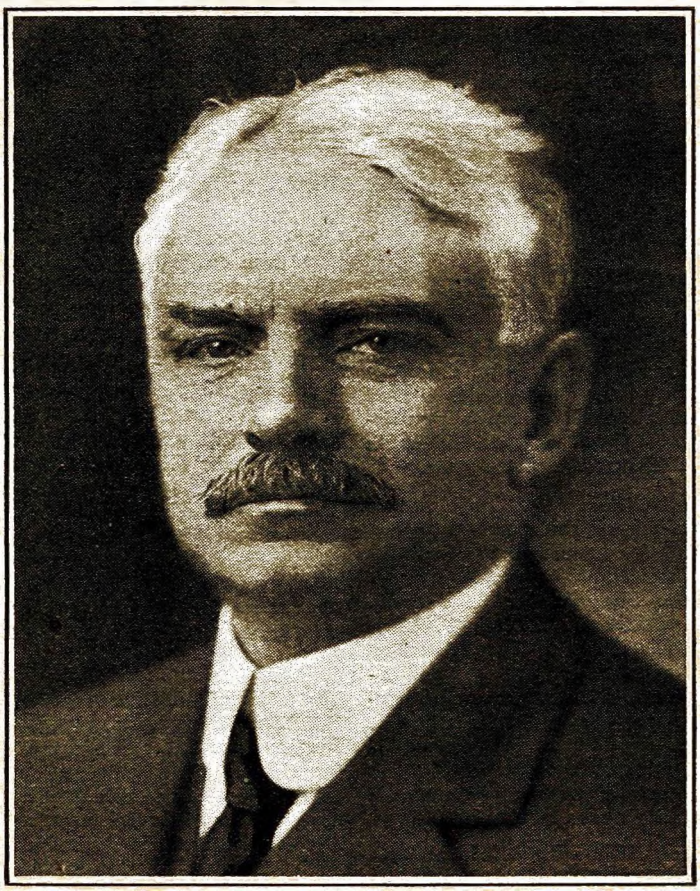
CREEPING of rails is prevented by a Rail-Fastener (No. 1,174,615) recently invented by Montezuma Saine, Peru, Indiana. The rail is fastened by overlapping flanges of triangular rail-chair members that engage each other, and also have a downturned portion, a projection, arranged to engage in a recess in the tie. Spikes and bolts are not required, and the device is adapted for use with either wooden, concrete, or metal ties.

A DIAPHRAGM for Non-Vestibule Passenger-Train Cars (No. 1,172,749) that is practically burglar-proof and tramp-proof has been devised by Howard Stillman, Berkeley, California. It consists of two metallic diaphragm-plates which are pivotally connected to each other and pivotally connected to the respective car-ends. Obviously the metal diaphragm cannot be surreptitiously slit open and entered by a trespasser as a canvas diaphragm may be.

TO eliminate the bump which passengers usually notice when a train crosses another track and the wheels pass over the usual open rail-gaps, Charles A. Helfer, Los Angeles, California, has devised novel Tread-Blocks that operate to close the tread-surface at the gap of the rails before the train passes. The device is an Automatic Railway Crossing (No. 1,172,795), and the tread-blocks are automatically moved into proper position to close the tread-surface of the rails of one track and open the passages through the rails of the transecting track on the approach of a train. Or the device may be operated by hydraulic means, controlled by a switchman stationed at the railroad crossing.

WORLD'S MOST FAMOUS WILL.

Singularly Beautiful Prose Poem, Written by Williston Fish, Lawyer, Philosopher, and Railroad Man.



WILLISTON FISH.

AUTHOR OF THE MOST FAMOUS WILL IN THE WORLD. MR FISH IS VICE-PRESIDENT IN CHARGE OF RAILWAYS OF WEST PENN TRACTION COMPANY

HERE is one of the two great "last wills and testaments" in the English language. Both of them were written by railroad men. The other is the brief will of the late E. H. Harriman, who, in less than a hundred simple Anglo-Saxon words, devised and bequeathed his great fortune and vast interests solely and altogether to his wife.

This "Last Will and Testament of Charles Lounsbury," one of the obscure treasures of English literature, was composed by Williston Fish—lawyer, philosopher, formerly general manager of the Chicago Railways Company, and now vice-president in charge of Railways of West Penn Traction Company.

Until THE RAILROAD MAN'S MAGAZINE unearthed the history of this singularly beautiful prose poem it was generally supposed to have been written by an insane lawyer in an Illinois institution.

"The Lounsbury will" was first printed in *Harper's Weekly* in the year 1897. It attracted some attention at the time and was occasionally copied in other publications with incorrect history and slovenly credit. Finally *The Scrap Book* resurrected it from a yellow mass of clippings and reproduced it with what at that time seemed to be the correct history of the work and the character of its author.

Nothing more was publicly heard of the Lounsbury will for many years thereafter. It was treasured by those who kept the files of *The Scrap Book*, and references to the simple beauty of its thought and its clean dignity of diction sometimes occurred in the conversation of writers and editors.

It was in this way that the will came to the notice of Irving Berlin, the writer of popular ballads. He looked it up in *The Scrap Book*, and was inspired to write "When I Leave the World Behind." The refrain begins:

I'll leave the sunshine to the flowers,
I'll leave the spring-time to the trees—

Across the title-page Mr. Berlin caused to be printed this graceful acknowledgment of his debt to the man who was supposed to have died in a madhouse:

"Respectfully dedicated to the memory of Charles Lounsbury, whose legacy suggested this song."

There was a real Charles Lounsbury, although he never wrote, read, or even heard of, the will that made his name famous. He was a big, hearty, bright York State farmer, kin to Mr. Fish three generations back. "I took the name of Charles Lounsbury," writes Mr. Fish, "to add strength and good-will to my story."

The song reached Professor E. H. Woodruff, of the Cornell University College of Law. Professor Woodruff happened to know the real history of the will. He wrote to Mr. Berlin and told him that the masterpiece was purely the imaginative work of a practical business man, Mr. Williston Fish, of the Chicago Railways Company. Mr. Berlin, eager to give credit where it was due, took the question of authorship up with the editors of the Munsey Company, who wrote to Mr. Fish.

Mr. Fish modestly acknowledged that he was the author of the famous will, and sent a copy of the original document, which had become garbled and changed in its journey through printed pages.

Here you have Mr. Fish's original work. It is a wonderful sermon on the blindness of man who mistakes true gold for dross. What are your real treasures? Are you going through life with your eyes on the ground like the organ-grinder's monkey, with no thought, no vision for anything above pennies? Have you accepted the rich legacy of Charles Lounsbury—the treasures of the dawn, riches of the fields, the glory of the night, and the wealth that is born of the love of all things that live?

If you haven't, read this will of a railroad lawyer and become one of his heirs at law.

A LAST WILL.

By Williston Fish.

HE was stronger and cleverer, no doubt, than other men, and in many broad lines of business he had grown rich, until his wealth exceeded exaggeration. One morning, in his office, he directed a request to his confidential lawyer to come to him in the afternoon—he intended to have his will drawn. A will is a solemn matter, even with men whose life is given up to business and who are by habit mindful of the future. After giving this direction he took up no other matter, but sat at his desk alone and in silence.

It was a day when summer was first new. The pale leaves upon the trees were starting forth upon the yet unbending branches. The grass in the parks had a fresh-

ness in its green like the freshness of the blue in the sky and of the yellow of the sun—a freshness to make one wish that life might renew its youth. The clear breezes from the south wantoned about, and then were still, as if loath to go finally away. Half idly, half thoughtfully, the rich man wrote upon the white paper before him, beginning what he wrote with capital letters such as he had not made since, as a boy in school, he had taken pride in his skill with the pen:

In the Name of God, Amen. I, Charles Lounsbury, being of sound and disposing mind and memory [he lingered on the word memory], do now make and publish this, my last will and testament, in order, as justly as I may, to distribute my interests in the world among succeeding men.

And first, that part of my interests which is known among men and recognized in the sheep-bound volumes of the law as my property, being inconsiderable and of none account, I make no account of this in my will.

My right to live, it being but a life-estate, is not at my disposal; but, these things excepted, all else in the world I now proceed to devise and bequeath.

Item: And first I give to good fathers and mothers, but in trust for their children, nevertheless, all good little words of praise and all quaint pet names; and I charge said parents to use them justly but generously as the needs of their children shall require.

Item: I leave to children exclusively, but only for the life of their childhood, all and every, the dandelions of the fields and the daisies thereof, with the right to play among them freely, according to the custom of children, warning them at the same time against the thistles. And I devise to children the yellow shores of creeks and the golden sands beneath the waters thereof, with the dragon-flies that skim the surface of said waters, and the odors of the willows that dip into said waters, and the white clouds that float high over the giant trees.

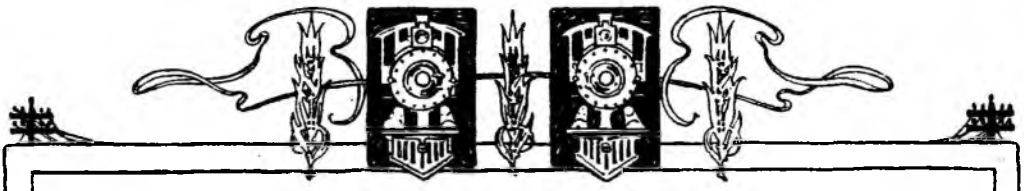
And I leave to children the long, long days to be merry in, in a thousand ways, and the night and the moon and the train of the Milky Way to wonder at, but subject, nevertheless, to the rights hereinafter given to lovers; and I give to each child the right to choose a star that shall be his, and I direct that the child's father shall tell him the name of it, in order that the child shall always remember the name of that star after he has learned and forgotten astronomy.

Item: I devise to boys jointly all the useful idle fields and commons where ball may be played, and all snow-clad hills where one may coast, and all streams and ponds where one may skate, to have and to hold the same for the period of their boyhood. And all meadows, with the clover-blooms and butterflies thereof; and all woods, with their appurtenances of squirrels and whirring birds and echoes and strange noises; and all distant places which may be visited, together with the adventures there found, I do give to said boys to be theirs. And I give to said boys each his own place at the fireside at night, with all pictures that may be seen in the burning wood or coal, to enjoy without let or hindrance and without any encumbrance of cares.

Item: To lovers I devise their imaginary world, with whatever they may need, as the stars of the sky, the red, red roses by the wall, the snow of the hawthorn, the sweet strains of music, or aught else they may desire to figure to each other the lastingness and beauty of their love.

Item: To young men jointly, being joined in a brave, mad crowd, I devise and bequeath all boisterous, inspiring sports of rivalry. I give to them the disdain of weakness and undaunted confidence in their own strength. Though they are rude and rough, I leave to them alone the power of making lasting friendships and of possessing companions; and to them exclusively I give all merry songs and brave choruses to sing, with smooth voices to troll them forth.

Item: And to those who are no longer children or youths or lovers, I leave Memory, and I leave to them the volumes of the poems of Burns and Shakespeare, and of other poets, if there are others, to the end that they may live the old days over again freely and fully, without tithe or diminution; and to those who are no longer children or youths or lovers I leave, too, the knowledge of what a rare, rare world it is.



JUST A DOG.

BY CHARLES L. FUNNELL.

THAT dog? He owns the office and the chief despatcher's room;
He's the pal of every trainman on the line;
He has general supervision of the work of this division,
And the meals he gets are just as good as mine.

'Bout a year ago we found him. He was lookin' pretty sad,
'Cause the porter on a Pullman kicked him out.
He had somehow got inside, but they wouldn't let him ride,
So he stood and cocked his head one side in doubt.

When he saw us boys he wiggled and began to wag his tail,
So we took him to the trainmen's smokin'-room.
While he wasn't real good-lookin', and had no pedigree worth bookin',
Still his happy waggin' tail just knocked out gloom.

The boys all got to like him, and they taught him lots of stunts.
You could throw a lighted paper on the floor,
And he'd douse it with his feet, pounce right on it like 'twas meat;
Gee! I've never seen a dog like him before.

One day when we was waitin' till 'twas time to get aboard,
Our dog came in with one paw held up high.
We found blisters when we looked; man, his paw was nearly cooked!
But when we bandaged it he never blinked an eye.

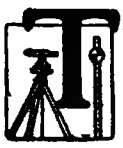
We wondered where he got it till we heard the super yell.
He found his paper-basket nearly burned;
A fool and a cigar were the reasons for the char,
And the dog had pawed it out as he had learned.

That dog? He owns the office and the chief despatcher's room;
He's the pal of every trainman on the line;
He has general supervision of the work of this division,
And the meals he gets are just as good as mine!

THE CHIEF CLERK AT COURT.

He Can Still Chuckle Over the Funny Occurrences, Even Though the Railroad Is Sued for Every Little Grievance.

BY M. E. CARROLL.



THESE hill-billies have just got on to the fact that they can get some easy money out of the railroads by going to court for every little grievance, sometimes real and more often imagined. After the little stunt the Old Man had me pull off in the Gillispie case that resulted in having it thrown out of court, he took the notion that perhaps I could help the lawyers on some of these other cases, and as there are only eleven of them pending against us in this term of court, he had me down there last month and spend a week with our attorneys.

Say! These railroads have a great chance to make money in this country. It isn't enough that they have to pay us fellows handsome salaries and all their other expenses for wages and coal and material and a hundred other things, but these courts cause an awful leak in the money-box. I was surprised at some of the things I heard down there, not only in our own cases, but in cases against other roads.

Wanted to Make a Noise in the World.

Down at Easton, for example, a nine-year-old kid stole the tool-box off Jim McIntyre's gasoline-car one day last spring. When the little rascal was ransacking it, he found a couple of torpedoes which McIntyre carried so he could replace any that his car might explode along the line.

The young rascal smashed one of them between two stones so he could make a little noise in the world, and incidentally lost a couple of fingers. Darned if his old man didn't sue us for five thousand dollars damages for leaving the guns where the kid could find them, and our lawyers are having an awful time to keep from getting stuck, at that.

A fellow down at Tifton is suing another road in this term of court for twenty dollars apiece for seven fancy, high-bred carrier pigeons. He claims they flew over the track one day a few months ago just as No. 1 came along and, being nice, kindly, home-bred, hand-raised fowls, they didn't recognize the ruthless destruction awaiting them from the onrushing train, so they slowly flew in front of it in time to be struck and killed. The Old Man says that at that rate we had better send to Europe and get some of those war aeroplanes for use of our crossing flagmen.

Convict Sued for "Injury to Feelings."

We had a suit brought by a convict who was injured out on the county farm by a cave-in at the gravel-pit. They brought him to town and put him in one of our baggage-cars to be taken to the hospital. When the porter was ordered to make a fire in the stove to keep the chap warm, he got peevish and gave the convict a bawling out, saying it was too bad his neck wasn't broken instead of his leg. Anyway, we are defending a one-thousand-dollar suit for injury to his feelings, and the fellow gets a free ride to court every session while the lawyers have it continued to the next term.

They sue us for running trains too fast and for running them too slow; because the cars are so hot they can't sleep at night and because the depots are so cold they catch cold waiting for the train. They sue us for running trains at night with a headlight extinguished, and they sue us because our headlights are so bright that they can't follow the road with their autos after dark.

One farmer brought suit, claiming a track-spike flew and struck him while he was plowing in the field, although the mark looked as if a mule kicked him.

They sue us for any fire that starts within a mile of the track, and for running over a mangy, yellow dog that is too near dead to get off the track before the train hits him. Sometimes they even imagine their grievances.

There was one I listened to, brought by the family of a fellow called Johnson. As near as the evidence showed, Johnson's chief occupation was drinking whisky. One day they found his remains alongside our track at the Bluff Road crossing. Nobody seemed to know who he was, so he landed in potter's field.

But after a short time his family started looking for him and, learning of the case, had the body exhumed and identified and brought to their town. Well, of course, they wanted five thousand dollars from the company, which is ten times more than he ever had in his life, and although I sympathized for the family, it's hard to imagine how he was ever anything more than a detriment.

At any rate, they had witnesses to show that he was walking along the Bluff Road at 5.30 P.M. on the day of the accident, bright and sober and in his right mind, and produced several people who saw our train rushing along at a reckless speed that afternoon, while high weeds hid the view from those coming along the road.

It all sounded very bad for the heartless railroad, until we put our conductor, Bill Peters, on the stand. I learned that he was well posted on the habits and gossip of the people along our line, and wired for him to come down that morning, just in hopes he might help us a little.

The Johnson Mystery Is Solved.

He remembered seeing this man on the station platform at Salem when he was pulling out on No. 23 that morning, and as he was due out at 5.23, it was hard to see how the old chap had walked the three miles to the Bluff Road crossing in seven minutes, in time to be struck by the same train. We got in touch with our agent at Salem on the phone, and by quick work he located and sent over three witnesses in an automobile to show that old man Johnson was on the station platform that day, and had climbed on the steps of No. 23's baggage-car as she was pulling out. After that there was nothing more to it than that the old man in a drunken stupor had fallen off the car-steps without any one knowing about it. If it hadn't been for old Bill Peters we would have had to pay a handsome damage in this case.

It's a great business, these lawsuits. While I was going over to the county seat there was quite a bunch of lawyers and prospective witnesses on the same train, and as none of them knew me, I was interested in listening to their discussions.

Cross-Breeding For Damage Suits.

Two of the lawyers were arguing about the best breeds of farm horses, one suggesting the straight Morgan breed, while the other wanted to cross with some other kind, claiming they would bring more money. As the argument progressed, a third lawyer sitting in the smoking-compartment with us gave as his opinion the following:

"If you want to make money, I would suggest you cross your horses with locomotives. You can get five hundred dollars apiece out of the railroad company for doing that."

Then they got to telling stories, and one of them told about a farmer who came into the office one day for advice regarding his case. It seems the farmer had two sons, one a lawyer and the other a doctor. He was asked why he didn't go to his son for advice.

"Well," replied the old fellow, "you see, it's best to keep those things out of your own family, because relations can't ever agree on such matters. Now, my son who is a doctor wants me to throw away these bandages, and says he can have me as sound as a dollar in a week, while my son who is a lawyer wants me to put on some more bandages and use a crutch so he can make a case against the railroad."

Another one of them told about the suits that were started when the road ran a spur up to the local lumber mills. While the surveyors were laying out the line and figuring on right-of-way, one old farmer raised lots of objections to the line cutting across his farm. They sent their right-of-way man out to see him.

The new line being under separate charter, he offered the old farmer eight thousand dollars in stock for the right-of-way across his land.

"No, siree!" said the old farmer. "In the fust place I don't want no railroad running around here, and if I did I sure don't want no stock in it. Fust thing I know, you'll be killing one of my cows, and then

I'd have to help pay the damages myself, being a stockholder."

The reports which our people make at time of accidents are of great assistance to the lawyers, and the Old Man was pretty particular about this sort of thing. He used to get a bunch of the roadmen together every once in a while to impress on their minds the importance of making out accident reports properly.

What the Injured Man Said.

I remember that shortly after a meeting of this kind our pile-driver crew, in handling some bridge stringers at the Little Black River, knocked one of the bridge-hands off the end of a cap into the water. When the foreman made his report, he tried to answer every question fully. When he came to the question, "What did the injured man say?" he put down, "It's a blamed good thing I could swim."

I had a funny experience the first night I was at court. One of the cases pending against us was that of a brakeman, Jimmy Colfax, who was suing us on account of being paralyzed by falling off the side of No. 52 while they were switching up at Chester one day. He claimed that the grab-iron pulled off the side of the car, and was supposed to have been injured when he fell to the ground, although nobody saw the accident happen.

The Old Man was always suspicious about this case, so he had the grab-iron and the bolts carefully saved, showing that the bolts were in good condition, bright and shiny, as if the nuts had just been taken off of them. There was nothing on the bolts, the iron, or the boards to show that this grab-iron had been at all loose for any length of time.

The Chief Clerk Makes a Discovery.

Well, the first night I was at court I felt pretty tired because of the excitement and unusual experiences, and went up to my room at the hotel rather early. There was a light showing through above the door into the next room, and I could hear voices in there which mentioned our road and some of our people frequently.

Naturally I listened, and found they were discussing the Jimmy Colfax suit. Well, this interested me a great deal more. I at once turned spy, and pulled the furniture over to the door so I could climb up and look through the transom. I hope to spend the rest of my days firing one of those big Mikados if there wasn't Colfax himself, standing in the middle of the floor, talking to his lawyers, no more paralyzed than I am.

This seemed to bear out the Old Man's suspicions that Jimmy had taken the nuts off the grab-iron bolts himself, and was faking the whole thing.

I did some hard thinking that night, and the next morning I told the whole transaction to a couple of our lawyers. We waited until Jimmy was wheeled into the courtroom in an invalid chair, and they were examining the jury. There were only a few people in the courtroom at the time, the day being pretty hot. I slipped out into the hallway, where I found a couple of our boys waiting for me. Two or three of us pulled out big .44's and, with a string of loud shouts, began firing them as fast as we could aiming at the floor. Then we beat it down the back stairs into the basement and hid in a coal-bin, while every one in the courtroom stampeded to safe places, our own Jimmy Colfax leading the race.

The fake, of course, was apparent, and the case was non-suited—fortunately before any one laid himself open to a charge of perjury.

Mose Wanted to Accommodate.

While I was waiting one morning for one of our cases to come up, I listened to the evidence in the case of a man accused of stealing brass. When the defense was called it seemed the old fellow had not provided any. The judge said:

"Mose, you should be properly represented by counsel."

"Yes, suh; yes, suh, boss," replied Mose cheerfully.

"Have you taken no steps to get a lawyer?" asked the judge.

"No, suh; I don't fool 'long er no lawyers."

"If you have no money," offered his honor, "you know I will appoint a lawyer to defend you without charge."

Mose twisted his hat around in his hands a moment and replied:

"You needn't be bothering about me, jedge."

"Well, what do you propose to do about the case?" demanded the judge.

"Yer honuh," said Mose in a tone of accommodation, "as fah as I'm concerned, you can jes' let the whole mattah drop."

MAGIC WITH MAGNETOS.

The Adventure of the Stalled Auto-Stage; Or, When Mr. Crecelius Played Merlin to a Balky Motor.

IF you read "The Flight of the Genius Special" in the March number, you, too, may have been puzzled by the Adventure of the Stalled Auto-Stage and the apparent black magic of one Crecelius. If you have forgotten the incident, it ran like this:

When fifteen big motor-stages were going through the Yosemite last fall, carrying most of the great men in the electric-railway business, the leading stage stalled in crossing a brook and lay there dead, blocking the narrow road so that the other stages could not pass. The chauffeurs cranked the engine, but the motor refused to mote.

Several of the great engineers of the party gave ten minutes of their time—of an aggregate value of about $956.48—to an inspection of the motor. It was evident that the magneto was not magning. L. P. Crecelius, superintendent of power of the Cleveland Railway Company, asked some questions of the chauffeur and then, as Thaddeus Dayton's interesting story ran—

Making the Magneto Magn.

took out his jack-knife, opened one blade, and walked back to the next machine, which was chugging impatiently just behind the stalled one. He lifted its hood and appeared to be digging into its vitals with the instrument. Then he came back with the open knife in his hand, carrying it almost at arm's length as if it were dripping gore.

Mr. Crecelius stabbed the mechanism of the dead machine in a certain place with his knife. Then he rubbed the blade back and forth over it two or three times.

"Crank her up," he told the chauffeur.

"It won't do no good. She's dead," replied the chauffeur.

"Well, I'll crank her myself. Let's see what happens."

Mr. Crecelius gave the crank a few twists and the engine roared and sputtered. It was all right again.

"Well, I'll be blowed!" exclaimed the chauffeur. "What 'd you do?"

"Your magnetism was all gone. I got some from that other machine — with my jack-knife — and transferred it to yours. It's perfectly simple. When you've been fooling around with electricity as long as I have, you'll be as good a guesser as I am."

"Oh, Piffle!" Cries Mr. Clark.

The March RAILROAD MAN'S MAGAZINE in due time fell into the hands of Mr. George T. Clark, of Biddeford, Maine, whose middle name may be Thomas, for he is, or was, a doubter—a good, honest doubter who wrote right to headquarters about his doubts, saying:

Editor RAILROAD MAN'S MAGAZINE,

DEAR SIR:

I value your magazine so much that it really grieves me to see it imposed upon with such piffle as Mr. Dayton, no doubt innocently, included in his otherwise very interesting article, "The Flight of the Genius Special." I refer to Mr. Crecelius doctoring the stalled motor.

A magneto doesn't lose its magnetism suddenly, for one thing. If it did, however, T. Edison Westinghouse Tesla couldn't find it out by merely looking at it, and after he had discovered the loss of magnetism, he couldn't put it back with all the jack-knives ever "made in Germany" or anywhere else. If you don't believe this, please publish it, and see what the rest of the boys have to say.

Yours truly,

GEORGE T. CLARK.

62 Adams Street, Biddeford, Maine.

We turned the doubting letter over to Mr. Dayton, who wrote the story, and Mr. Dayton communicated with Mr. Crecelius. Now, for the benefit of Mr. Clark and all others who have doubts about the Crecelian wizardry, we print the Cleveland electrician's own exposé of the case, so plainly written that any one with a couple of auto-stages can do the trick in his own home:

DEAR MR. DAYTON:

I have your letter of February 27 before me, and am now in a position to answer it, after

having given the question brought up therein further consideration. After receiving your letter, I made some experiments on magnetos to determine the merits in the case.

First, your account of the incident is not exactly correct, for the reason that I used a large file which I magnetized from the poles of the magneto of another car. From my experiments here I duplicated as far as possible the circumstances contributing to the starting of our automobile at Yosemite. By means of a large file, which I magnetized from the poles of another magneto, I brought this in contact with the poles of the flat magneto, and there is a very appreciable difference in the volume and magnitude of the current generated by the flat magneto while the file is in contact with one of its poles. This, therefore, gives credence to the following explanation of how our truck was started.

While making investigation for the trouble, everything was examined carefully, and while the car was being cranked I examined the magneto in particular to determine whether or not it was generating. The current generated by the magneto, if any, was so feeble that it could not be felt, and I therefore used my knife to examine whether the permanent magnets were O. K. I was surprised to find the magneto practically flat, with very little magnetism in the poles.

This led me to try bringing into contact with one of these poles any sort of magnetized metallic article. I therefore went back to a truck in the rear, where I found a large file, which I magnetized from the poles of the magneto on a car which were fully magnetized and in good shape. This magnetized file I then brought into contact with one of the poles of the magneto of our car and had the man crank same, whereupon the engine was started.

Of course, after the engine is started there is sufficient speed to continue generating current from the residual magnetism that was left in the poles of our magneto, and continue running the engine. Thus, I concluded that the additional magnetism of the magnetized file was sufficient to cause the magneto to generate sufficient current at the low speed of cranking to start the car.

As to what causes contributed to the demagnetization of the poles of the magneto I am unable to say. However, I was very much surprised to find them practically flat and almost wholly demagnetized upon investigation with my knife.

Very truly yours,

L. P. CRECELIUS.

RECENT RAILROAD BOOKS.

A NEW WORK ON TARIFFS.

A USEFUL book has recently been published by the La Salle Extension University, Chicago, entitled "The Publication and Filing of Tariffs," by F. R. Garrison, chief clerk of the Central Freight Association. This work is aimed to explain the confusing regulations of the Interstate Commerce Commission in regard to filing and publishing tariffs.

Without special training and experience it is a rather difficult matter to comply with the intricate regulations enforced by various State commissions and the I. C. C. This volume is intended to fill this requirement.

Besides incorporating a short introduction on the development of tariff regulation and the provision of the Act to Regulate Commerce, appendices to the book contain the text of the official instructions and orders issued by the Interstate Commerce Commission.

Some of the chapters are headed as follows: "Construction," "Miscellaneous Rules," "Cancelation," "Concurrences and Powers of Attorney," "Long-and-Short-Haul Clause from a Tariff Publisher's View," "Digest of State Posting and Filing Regulations."

"The Publication and Filing of Tariffs," by F. R. Garrison, La Salle Extension University, Chicago, Illinois. (This book is not offered for separate sale; it is a part of the material used in the course in interstate commerce offered by the university.)

"RAILWAY REGULATION."

MANY problems of management and public control have been brought into being by the rapid expansion of the railroads of the country. A number of these questions are still unsolved, and there is an everchanging series of statutes designed to alleviate a situation which itself is never static

"Railway Regulation," by I. Leo Sharfman, professor of political economy at the University of Michigan, deals ably with the various methods of railway regulation and control by government commissions and individual State bodies. The book is intended to give shippers and railroad men a clear insight into the foundations of the railroad situation. As the preface says, this is "an attempt to present an analysis of the leading problems in railway economics from the standpoint of government regulation in the United States."

Some of the chapters are: "The Extent and Importance of Railway Transportation," "The

Problem of Regulation," "American Railway Development," "The Theory and Practise of Rate-Making," "Regulation by the States," "The Conflict between State and Federal Authority," and "Federal Regulation."

"Railway Regulation," by Professor I. Leo Sharfman, A. B., LL. B., La Salle Extension University, Chicago, Illinois; price $2 postpaid.

GOVERNMENT OWNERSHIP DISCUSSED.

SAMUEL O. DUNN, editor of *Railway Age Gazette* and author of "The American Transportation Question," has recently written a book entitled "Government Ownership of Railways." In this book Mr. Dunn gives an exhaustive comparison of public and private ownership of railways in various typical foreign countries.

The main point of the book is, naturally, the probable results of government ownership of the railroads of the United States. Coming from the press at a time when the public ownership of railways is more or less under discussion, Mr. Dunn's book is one that will probably meet extended attention. The author is a man of wide experience in railway problems, and thoroughly familiar with their practical details.

Some of the book's chapter headings are: "The Question of Government Ownership in the United States," "Relation of Railways to the State," "Causes of Government Ownership," "Cost of Capital," "Effects of Consolidation Under Government Ownership on Economy of Management," "Economy of Management of State and Private Railways," "Adequacy of Service," "Quality of Service," "Safety of Service."

"The Government Ownership of Railways," by Samuel O. Dunn. D. Appleton & Company.

HOW ONE STATE REGULATES.

A COMPREHENSIVE review of railway and public-utility regulation in Wisconsin is found in "Regulation of Railroads and Utilities in Wisconsin," by Fred L. Holmes. To quote from the preface: "Wisconsin has been one of the pioneers in the field of railroad and public-utility regulation by a State commission. The results of this legislation have, on the whole, been satisfactory."

Mr. Holmes's book gives the history of Wisconsin's experience with control by the commission system. The author states in the foreword that he has been actively interested in the work of the Wisconsin commission since its organization in 1905. Mr. Holmes was a member of the Wisconsin Legislature, and served as chairman of the assembly committee on transportation. His observations and conclusions, therefore, are based upon a long experience with public-utility regulation.

This book deals with a number of important phases of regulation. Some of these are: "Provisions of the Railroad and Utility Laws," "Commission Organization and Procedure," "Physical Valuation of Railroads and Utilities," "Standardization of Service," "Uniform Accounting," "Putting Utilities on a Business Basis," "Making of Railroad Rates," "Street and Interurban Railways," "Improvements in Safety and Convenience of Railroad Service," "Some Accomplishments in Handling Railroad Rates."

"Regulation of Railroads and Public Utilities in Wisconsin," by Fred L. Holmes. D. Appleton & Company, New York; price $2 net.

"RAILROAD VALUATION AND RATES."

RATE-MAKING and valuation is discussed in a new book entitled "Railroad Valuation and Rates," by Mark Wymond. The book treats on the principles of rates and their relation to valuation and rate regulation.

Mr. Wymond states in the preface to this book that he has had thirty years' experience in connection with the promotion, construction, reconstruction, operation, and valuation of railroads, *et cetera*.

Instead of the usual index, this volume has an outline which shows the main divisions of the book. These are as follows: Historical, Promotion, Construction — Reconstruction, Capitalization, Valuation, Rates and Rate Regulation.

"Railroad Valuation and Rates," by Mark Wymond. Wymond & Clark, 909 Rand-McNally Building, Chicago, Illinois; price $1.50.

MOTOR STARTING AND LIGHTING.

"MODERN Starting, Lighting and Ignition Systems" is the title of a new book by Victor W. Pagé, which will prove of peculiar value to those who operate the various types of motor-cars in railroad use. This book deals with what is often the most troublesome portion of the mechanism. When automobiles were first made they were equipped with simple battery and coil ignition. With the advent of the high-tension magneto, however, the battery began to lose ground. Last in the succession is the electrical generator, used in conjunction with the storage battery.

This has proved the most satisfactory method for motor-car use, and it bids fair to be universally adopted in the near future.

This book explains all kinds of electrical ignition systems used with gas engines of all types. The subjects are treated in a non-technical manner, and 295 illustrations clarify the text.

"Modern Starting, Lighting and Ignition Systems," by Victor W. Pagé, M. E. The Norman W. Henley Publishing Company, New York; price $1.50.

OPS. WHO MADE GOOD IN MANY FIELDS.

HERE is a condensed list of prominent men who began life as telegraph operators. This list includes only the more prominent of those who have reached a high station after graduating from the key. Thousands of others have advanced to managerships in various mercantile pursuits; they are to-day scattered from Sandy Hook to Golden Gate, reaping the rewards of sobriety, accuracy, concentration, and application learned while " pounding brass " for the railroads:

Andrew Carnegie, iron king and philanthropist; Thomas A. Edison, inventor; Daniel S. Lamont, Secretary of War in Cleveland's second administration; Cassius M. Barnes, Ex-Governor of Oklahoma; Marshall Jewell, Postmaster-General in President Grant's Cabinet; H. Guy Carleton, author; George Kennan, writer, authority on Russia and Siberia; Robert J. Wynne, Postmaster-General in Roosevelt's Cabinet; Rufus B. Bullock, founder Southern Express Company, Ex-Governor of Georgia; Lee Mantle, United States Senator from Montana; Walter P. Phillips, formerly general manager of the United Press; A. B. Chandler, ex-president Postal Telegraph Company; Robert C. Clowry, ex-president Western Union Telegraph Company; Sir William C. Van Horne, ex-president Canadian Pacific Railway; Thomas T. Eckert, ex-president Western Union Telegraph Company; R. D. Blumenfeld, editor *London Express;* William Gillette, playwright; Charles J. Glidden, writer, millionaire automobilist; Harry de Souchet, playwright; George Primrose, actor; George V. Hobart, playwright and author; B. A. McNab, editor Montreal *Star;* W. H. Woolverton, president New York Transfer Company; Beverly S. Wrenn, president Manhattan Automobile Company; J. H. Converse, president Baldwin Locomotive Works; Richard W. Sears, president Sears Roebuck Company; L. C. Weir, ex-president Adams Express Company; C. M. Hayes, ex-president Grand Trunk Railway Company; A. J. Earling, president Chicago, Milwaukee and St. Paul Railway; E. Dickinson, president Kansas City, Mexico and Orient Railway; Marvin Hughitt, chairman Chicago and Northwestern Railway; Benjamin Campbell, vice-president New Haven Railroad; Lucius N. Tuttle, ex-president Boston and Maine Railway; Percy R. Todd, president Bangor and Aroostook Railway; W. H. Newman, ex-president New York Central Railroad; W. C. Brown, ex-president New York Central Railroad; James McCrea, ex-president Pennsylvania Lines.

THE WHISTLE.

BY MAY WILMOTH AND OLIN L. LYMAN.

A NOVELETTE—COMPLETE.

PROLOGUE.

DANNY.

HE sound split the dreaming summer silence; the echoes flung back from the woodland across the river. Blatant, barbaric, overwhelming, it wailed in mournful ululations, shattering sleep. It imperiously roared its morning summons to the folk of Chappleville to rise and toil, this steam siren of the Chapple mills.

With the savage fanfare the village seemed visibly to stir to torpid life. Hardly had the final echo died away when there recurred the unmistakable throb of a new day of effort. A milkman, just arrived from the hills beyond the woodland, drove into a straggling street hedged by squalid cottages of the mill district. Halting, he leaped from his perch and trotted with his can to the back step of a dwelling.

The bray of the gong wakened a man in a lower sleeping-room of one of the larger cottages, built close to the river's edge. He stirred uneasily, then opened reluctant eyes. These turned to the pillow next his own, where a tousled head should have rested. A quiet twinkle lightened them as they found the space empty. A clatter and bustle sounded from the kitchen that communicated with the bedroom.

There came a swift rush of booted feet from the kitchen. In an instant Evans was overwhelmed under an avalanche of small boy. Strong, calloused little hands clawed at him, a strident young voice rallied him, happy laughter sounded as they rolled upon the bed in affectionate disportings.

"Dad, ain'tcha the snorin' old kid, though? Lazy old dad, I beatcha! You beat me yesterday, but I beat you to-day. I beat the whistle, too; beat it ten minutes. Everything's started, dad. Get up!"

"I can't get up, Danny; you won't lemme get up! Get off me, you darned little skoozleums, so I *can* get up."

"You *can't* get up, dad. I'm on top of you; you ain't never goin' to get up."

"I *ain't?*"

The boy shrilled anticipatory laughter.

"No, dad, you ain't. You've got to lay here always."

There ensued an uproarious two minutes. Then the boy, breathless from laughing, wriggled from under his father's hands, grabbed something from a near-by chair, and scurried into the kitchen.

"Here, you tyke!" yelled Evans. "Bring back them pants!"

"You come get 'em!" retorted the youngster.

So Evans, his nightgown flapping grotesquely about his knees, chased Danny around the kitchen until he recovered his property. Picking him up, he swung him by the ankles in mid air like a pendulum, while the boy shouted with delight.

"There!" threatened the father as he set him down safely. "You get gay with my pants again an' I'll let go of you next time, you see."

"Yes, you will!" challenged Danny in sublime disbelief. "G'wan, put on yer pants an' leave me 'lone. I gotta hustle the breakfast. You wouldn't never get up in time to get it."

"Just for that," called Evans from the bedroom, "I grab all the bacon, young squirrel."

"You try it," chuckled his disrespectful son, "an' I'll take the griddle to you."

Soon, while the desultory chaff progressed, Evans was out helping with the breakfast. Suddenly Danny scooted out to the back door and returned in triumph.

"Milkman on time for once," he announced. "Oh, dad, that makes me think of a new one."

"Spring it, Danny; I'll fall," invited Evans, setting the bubbling coffee-pot on the back of the stove.

"You're the best fighter in the mill, ain'tcha?"

"Ain't had a fight in a long time, son. Why?"

"Well, get busy, dad, an' lick the cream."

"Gee! Danny," protested Evans sorrowfully, "I never brung you up to make bum jokes like that. Why, say, if you was an end man in a minstrel show an' sprung that, an' I went to look for my little son, I'd have to dig him up from under a mountain of sick eggs an' garden sass an' dead cats."

They stepped about the kitchen, "kidding" each other in the jovial fashion of the workaday poor, while they supplied the finishing touches for their hasty morning meal. Henry Evans, a foreman in the big cotton mill to which Chappleville owed its existence, was a man who would have attracted attention anywhere.

Blond, blue-eyed, fair-haired, he was of herculean stature and mold, of the manly, uneducated, rough-and-ready type that is of peculiar fascination in any American crowd. The strongest man in the Chapple mills, reputed able to "lick his weight in wildcats," contented with plodding labor since beginning it in the early dawn of his thirty-seven years, Evans was representative of a large class of industrial workers in the United States.

Danny Evans was "a chip of the old block." Lusty, sturdy, virile, in appearance he was a smaller edition of his father. He was large for his eleven years, and could trounce any boy of his age in the village.

He had hardly passed infancy before he was eager to go to work. Evans had felt the same as the child, and circumstances had readily allowed him to gratify his ambition. Danny had remained in school till he was ten. That was a year more than his father had spent in the pursuit of "book-learnin'." Then, as he was now old enough to go into the mill, Evans had permitted him to do so, and took pride in the record made by the youngster during the past year. He was "a chip of the old block."

Evans grinned at the boy in the other battered chair across the cheap pine table covered with yellow oilcloth. Danny glanced at the old clock that ticked solemnly upon the wall.

"I'm through. Keep on with the bacon, dad; you've got a couple of minutes before the next toot."

He jumped up and began "skippety-hopping" about the kitchen, intoning an old nursery rime in time to the canter:

"Ride a cock horse
To Banbury Cross
To see an old woman
Ride on a white horse;
Rings on her fingers,
And bells on her toes;
She shall have music
Wherever she goes."

He paused, Evans's own sense of humor gleaming in his blue eyes.

"Ain't that *silly*, dad? I used to hop around an' say that when I was a kid."

Evans rose slowly and reached for his coat. There was a lump in his throat. He had taught Danny the rime before the child was out of dresses. It had been one of his blundering devices to try to fill the place of the mother the child had never known.

Now, with the quick metamorphosis of the workaday world, a little man stood looking importantly down at his first long pants, donned the previous week. He had put away childish things.

Uprose again the blatant summons of the whistle, sounding five minutes before the opening hour. From seven till six, with an hour for dinner, formed Chappleville's working day.

Danny hustled into his coat.

"Right with yeh, dad! We'll beat the belts by a minute."

They emerged from the front door to join a stream of mill folk hurrying to toil. The boy set the pace, looking back triumphantly at his father.

"Say, dad, when I get big will I be a foreman like you?"

"You bet! They can't stop you, son."

"Hope they'll like me like they do you."

"You're a good little scout. But a foreman ain't so much. What if you was the Chapple kid an' lived in the big house? If you was him you'd be head of the mill some day. Wouldn't you like to be him?"

"What? That darned little ninny? Naw! He's got long hair."

"Yes, but Chapple's his dad. Don't you wish you was Chapple's boy?"

Danny reached up and gave his father's hand an affectionate squeeze.

"I should say not! You suit *me!*"

But a vague discontent, which sometimes possessed Evans's spirit, drove him on.

"You know, Danny," he persisted, "I've told you me an' Chapple started together poor boys over in Codington. An' now he's head of the mill, an' the town is named for him, an' your old dad is just one of his foremen."

"Wisht it was *your* mill an' the town was named for *you.*"

"Huh, kid!" laughed Evans. "A town would sound funny called after me."

"Oh, I dunno," returned the youngster. "You could call 'em 'most anything if you had the dough."

A peculiar expression crossed Evans's face. Every father in the world, of high and low degree, has worn it in those moments when he was subtly assayed by his son.

They turned upon the street which led to the mill.

"Oh, there comes Chapple now," cried Danny, "hellity-larrity in his automobile. He's early to-day."

"You mustn't swear, Danny," warned Evans.

"Aw, dad, 'hellity-larrity' ain't swearin'. If you told a feller to go to hell, now that 'd be swearin'. But just sayin' hellity-larrity ain't swearin', dad. It just means somethin' *fast.*"

"All right, Danny. It ain't swearin'."

"But honest, dad, do you think it's swearin'? Honest?"

"No, Danny, it ain't; not when you say it like that."

"Besides, dad, you swear yourself, somethin' fierce. I've heard you."

Evans felt the heat of a dark flush mantling his cheeks, rough with a three days' growth of beard.

"I don't mean you'll hear me, kid. Besides, don't do like I do. Do like I say."

In the boy's face came again the look so oddly beyond his years; shrewd, sober, appraising.

"It's hard to be good sometimes, ain't it, dad? Us fellers has our troubles."

They were now close to the big brick factory into which were swarming throngs of toilers. Father and son walked in the frank, free, full comradeship of the workaday. Danny pressed closer to Evans's side.

In his attitude was the subtle essence that sweetens the humbler paths of life, as if they were fringed with wild flowers. The child of wealth inherits also self-seeking. The fellowship of poverty even from birth inspires thought for others.

As they reached the doors Evans brought his great palm down tenderly on the boy's shoulder while he scowled thoughtfully.

"I spoke to Chapple again yesterday about spendin' some cash to protect the hands," he said. "It's a shame, the way machinery is let go. It ain't safe. Now you look out for that shaftin', won't you, Danny?"

The boy looked up at him, smiling as he squared his firm shoulders.

"Sure, dad! Don't you worry about me! I'm all right!"

Evans patted his broad little back as they went into the mill.

It was an hour later. Evans stood midway in the great weave-room, reverberating with the crashing roar of seven hundred looms. The harnesses smashed up and down, the shuttles shot back and forth with staccato clackings. The weavers, accustomed to the thunderous roar, talked intermittently with their neighbors without experiencing the difficulty in hearing which a layman would have expected.

Henry Evans had been foreman of the weave-room for ten years. He was well liked by the hands. Now he stood in the center aisle, gazing down it toward a loom which stood third from the end. There worked the littlest weaver in the department, eleven-year-old Danny, three years younger than any boy who had ever previously served at a loom in the Chapple mills. Entering the factory as a spinner only a year before, his promotion had come with rapidity that made the old-timers open their eyes.

Evans's heart swelled with pride as he looked at the sturdy youngster, working with the easy nonchalance of the veteran. Every motion of the strong limbs and lithe little body was instinct with grace. He was puttering with the loom; now he made the adjustment to his satisfaction and stood with legs planted wide apart and with folded arms, a small, compact, blue-overalled figure.

A smile tugged whimsically at the corners of the father's mouth; the attitude was at the moment an exact replica of his

own. Just then Danny glanced around, saw Evans watching him, and waved his hand. His father returned the salute.

"That's a great boy of yours, Evans."

The foreman turned at the voice close to his ear. Jerome Chapple, the head of the Chapple Mills, Incorporated, stood at his elbow. Prematurely gray, of medium height and robust mold, he fairly exhaled the force of his forty energetic years. From brown derby hat to the tips of his square-toed shoes he looked the plain, forceful, unassuming American business man. A light overcoat was thrown over his arm and he carried a small traveling-bag.

"He's a good kid, Mr. Chapple," replied Evans.

Chapple continued to stare intently at Danny, whose eyes were now again busy with his loom.

"He's a wonder," he pursued. "When you told me he was ready for a loom I thought you were crazy; he's hardly more than a baby. But he's been on two months now, and he's as good as any of the men, to say nothing of the women. Best of it is, he's won his spurs on his own hook; his dad put it up to him. I've watched him with a lot of interest because he was your boy."

"That's good of you to say that, Mr. Chapple," returned Evans heartily, with a gratified smile.

"It's only the truth. Weren't we kids together, you and I? Tell you what, though, Evans, you'd better buckle in. That kid will be leaving you at the post first thing you know."

"That'll suit me," returned the foreman above the din. "We ain't only pace-makers for our kids, anyway."

"That's right. That's the way I feel about mine. Say, Evans, I just stopped in a minute to tell you to be sure to have those four looms in the last row overhauled in the next three days. I'm going West—quick call. I'll be gone a week. Train's due in fifteen minutes. So-long."

"Just a minute, Mr. Chapple," called Evans. "How about that matter I've been botherin' you about? Fixin' up this machinery? This mill ain't safe—"

"Can't talk now, Evans," flung back the manufacturer impatiently. "Besides, the directors won't stand for it. They've got to have their dividends, you know. I'm not the whole cheese here; I'm only one."

"There was Cavanaugh's accident in May," persisted Evans. "Some one 'll be getting killed next."

"Can't talk now. They've got to watch out. Remember to overhaul those looms. Good-by."

Evans watched him walking rapidly toward the egress. There was a scowl on the foreman's face.

"Dividends!" he said to himself. "Holy mackerel! Don't they ever think of *lives?*"

An assistant pecked at his elbow, summoning him to the other end of the room. He was busy there for a half-hour. Then he went to make a careful examination of the four idle looms which Chapple had ordered overhauled.

Suddenly the growling din of the great room was split by an indescribable uproar in higher keys. The shrieks of women, the shouts of men, sounds invested with congealing horror, brought Evans, prostrate under a loom, to his feet with instant divining. His blond face flashed into grim lines. It had happened again, the thing he had been trying to make impossible through securing the safeguarding of the antiquated equipment. There had been another accident.

Evans leaped out into the aisle and glanced along it. An incipient frenzy had gripped the room. Everywhere weavers, men and women, boys and girls, were leaving their looms running free while they rushed toward a common magnet near the end of the center aisle.

A man rushed up. He was Evans's assistant, Joe Martin.

"What's the matter, Joe?" bawled the foreman above the terrific clack of the machinery.

"I don't know. Some one's hurt—"

Evans waved an arm toward the looms.

"Shut 'em off!" he cried, and, dashing to the center aisle, ran down toward the frantic, jostling, hysterical crowd of weavers which had collected at the far end.

As he reached them the crash of the looms died to silence. There remained the incoherent babble and outcries of the workers. Evans was halted at the edge of the press.

A woman, eyes wide with horror, seized his arm, gabbling excitedly.

"Jim Bennett's phoned for Dr. Foster; he said he'd be right over—"

"Who is it? Who's hurt?"

Evans scarcely recognized his own shrill,

constricted speech. What was this fear which gripped him—what was it?

"I don't know," she whimpered. "I can't get near—"

He turned from her, shouldering at the writhing circle. Another voice reached him—a man's, hoarse with passion, shuddering with fear.

"Ain't it awful? Ain't it awful? That shaftin' runnin' wild; not a dollar spent to keep ye out o' them belts. I seen 'im shoot up; then—*bing!* He slams down like he'd go through the floor—"

Another voice sounded while the foreman tore at the weavers upon the outer fringe, the furtive fear at the core of his heart expanding to a shape of fury. He stretched to his full height, striving to see over them. But he could not make out what dread sight groveled upon the floor, confronting those within the inner circle. But this new voice, raised in a man's sobbing note above the distracted clamor around him, what awful message was it transmitting?

"Poor little fellow! Oh, the poor little fellow! Wa'n't he game? An' him cut near in two! He's an Evans, he is!"

With the words there came from the rear of that huddled, squirming, distraught crowd of hundreds a single bestial cry, a howl as if some powerful brute of the wild had been pierced with a mortal wound. As it wailed above the discordant din of women's shrieks and sobs and men's agitated growlings, they turned.

Then as best they could they parted, in common understanding, scrambling to clear a path for the blond giant in overalls and with brawny arms that fell like flails, dealing ruthless, staggering blows as he charged through the cringing throng. On he drove, blue eyes set in an agonized glare, his face a sight that was for months to come to haunt the dreams of many who beheld it on that bitter morning.

The inner circle crumbled before his savage rush; he stumbled through to fall upon his knees before the little, crumpled, bleeding figure upon the floor. His trembling hands caressed the plump cheeks grown white as snow. His distended eyes stared in the soul's most poignant hunger down at the waxen lids which veiled blue eyes so like his own. His voice, low in his throat, called with that pathos of appeal which seeks to summon back the beloved from the fields of eternal sleep.

"Danny! Danny! Oh, my boy, my little boy! Speak to daddy! Speak—to—daddy!"

A tremor traversed the crushed little body; the blue eyes opened, dim with agony. Over the white face flashed a wavering, pitiful smile. A grimy, small hand sought to caress Evans's bristling cheek, then fell back inert.

Amid deathly silence the father bent his ear to catch the final words, breathed in a ghostly whisper.

"The shaftin'. Sure, dad! Don't you worry about me! I'm—all—right—"

He lay inert, his head upon his father's arm, his eyes closed. Evans sat upon the floor, staring down at him stupidly. His eyes turned to a splotch of blood upon his hand, then turned back to the boy as if he could not comprehend. About him unheeded there rose again the sobs of women, the broken mutterings of men. A fresh outcry pealed. A woman had fainted; they were carrying her away. Evans sat as if in a nightmare, holding his senseless burden, staring stupidly.

The circle parted again; the young mill physician hurried through it, medicine-case in hand. At sight of him Evans, mechanically divining, eased the boy's head back upon the floor with the tenderness of a mother placing a child in its crib, and stood up while Dr. Foster bent over his hurried examination.

After a few minutes he rose. There was again unbroken stillness, a tense circle of wistful faces. The doctor's eyes sought Evans's own.

The father contrived a hoarse, hesitant question.

"Is he—"

"No," answered the physician.

The reply was given with odd reluctance which Evans, ready to clutch at the ghost of hope, failed to notice.

In a flash his haggard face was transfigured; he clutched the doctor's arm.

"You mean—there's a chance, doc?" he cried.

Dr. Foster—of brilliant achievement, but still with the ready sympathies of youth—gulped hard. His hand gripped Evans's palm and his brown eyes were averted as he answered:

"I wish there was, Henry; I wish it from my soul. I—I would give anything to tell you that. I can bring him back—for just a little while."

Not a sound stirred in the great room. Over it there seemed to brood the wings of the age-old terror. Then, with a curious hollowness, Evans asked another question:

"How long—will he live?"

"Perhaps an hour."

"You say—you could bring him back?"

"For just a few moments, Henry."

They all stood, the doctor and the hundreds of mill folk, with gaze riveted upon him. He stood stolidly, shoulders drooping, eyes devouring the still form upon the floor—stood while he weighed winging moments against the eons of eternity.

"Don't bring him back!"

With the low-growled words they all started and gasped and stared. There was in the tone something terrific, something of menace and revolt and untold torture, a sinister, elemental writhing something that blanched their faces and struck ice to their hearts and set their fibers shuddering.

They were gazing upon a soul stripped raw; they listened in a repelling fascination to the morbid cry of a scourged spirit; they beheld the inquisition of agony.

He stood with bowed head, gaze fixed upon his dying boy, big hands clasping and unclasping at his sides. He spoke again, his somber voice gathering volume as a sullen wind is borne on a winter night. He had forgotten them all; he saw only Danny.

"Don't bring him back! He mustn't know his suffering—again. What right did I have to father him—*me?* I can only apologize to him, layin' there, for callin' him into the world. I've killed him like I killed his mother—I can see it now. She died when he was born—she worked like a dog up to the last—an' I let her. An' now I let this baby do a man's work—an' he's gone to find his mother. We'll go home now—an' I'll—wait."

Mechanically he stooped and picked up the mangled little form, cuddling it close to his breast. They all silently parted before him as, preceded by the doctor, he bore Danny out of the mill and to his physician's automobile. They wrapped a lap-robe about the unconscious boy, and Dr. Foster drove fast to Evans's cottage.

Evans lay the boy upon the bed they had shared together since he was born. The doctor administered a hypodermic injection. Then he stood up with a long sigh.

"That will ease him," he said. "It's all we can do."

"How long—" Evans managed to ask huskily.

"Within an hour," the physician answered. His voice was a little unsteady.

"Doc," pursued the father, "will you leave me alone with him—now?"

With a firm grip of his hard hand Dr. Foster left the cottage. The thrum of his automobile died in the distance. Now the only sounds audible to Evans were Danny's labored breathing and the measured ticking of the clock upon the kitchen wall.

The father rose and drew the shade before the single window, excluding incongruous sunlight. He resumed his seat upon the bed, staring down at the small white face dim in the shadow, holding a chilling little hand.

He sat there for what seemed eternity. Then the boy's lips breathed a long exhalation; a convulsive shudder shook his body. Danny lay very still.

His father bent over him, battling silently, blindly, despairingly with the truth. Finally he rose, reached for his hat, and stumbled out into the sunshine. He locked the front door. He walked like a somnambulist past the morbidly curious women and children who had again gathered outside after Dr. Foster sent them away upon his departure.

Evans turned upon Main Street. In that moment there dinned in mournful ululations the factory whistle, blowing for the noon rest.

Evans reached his goal. Two caskets displayed in the large window sufficiently advertised the ultimate. The undertaker greeted him in the true professional way. He had learned nearly two hours previously that he would call, as Evans had called eleven years before to requisition the last offices for Danny's mother.

The foreman's voice was flat, as one mumbles in dreams.

"I see you've heard, Stevens. Listen; I want it done *to-day*. I know it ain't usual, but I want it that way. Me an' you an' the sexton can manage; he was just a little shaver. Before night, mind you! You 'tend to whatever red tape there is. Can you come over—an' fix him—now?"

Stevens looked into the man's face and ventured no objections. He immediately busied himself with details. At five o'clock that summer afternoon a hearse, with Evans and Stevens following in the undertaker's buggy, drove slowly across the

bridge and to the little cemetery on the hillside. The sexton had dug the grave and the three men lowered the little coffin into it.

Standing by the fresh mound the other two men inclined their heads while Evans spoke his brief, stumbling prayer:

"O God our Father in heaven, You're Father of all of us—You understand. Take —take care of him. Amen."

Returning to his home, he spent the night numbed, stretched upon an old couch up-stairs. He could not bear again to lie in the bed which had held them both. Dawn found him with grief still mercifully deadened. He lay till the mill whistle sounded its summons; then he rose, but not to go to the factory.

He bathed, shaved, and dressed himself in his best. He was about to leave the house when his gaze fell upon a toy bank that had been dear to Danny's childhood. The sight set him to rummaging; soon he had finished making a package of little keepsakes, which he placed upon the bureau.

He emerged upon the street. He encountered many persons who would have condoled with him. He passed them unseeing. They looked into his face and the words they would have spoken were forgotten.

He called at the bank and withdrew his savings as well as Danny's little store. He was of thrifty habit; there was a comfortable sum. He stopped at a couple of stores and paid small bills, then at the undertaker's and settled the funeral expenses.

Then he went to the office of the Chapple mills and saw Eli Johnson, Chapple's right-hand man.

"I can't stand it to stay around here no more," he told Johnson. "I'm goin' to leave; I think I'll go to my sister's up in northern New York. The rent's paid on my place up to the first of the month. You can have some one else in by then. I'll have the stuff taken out an' stored. Tell Chapple when he gets back I had to go or go crazy."

Johnson surreptitiously tucked an extra ten-dollar bill in Evans's final pay-envelope and pressed his hand warmly as they parted.

Upon leaving the office Evans felt strangely weak. He remembered vaguely that he had not eaten since he and Danny had breakfasted the previous morning. So he stopped at a little restaurant and forced himself to partake of some nourishment. Then he wandered, still in that strange torpor, out upon the street which led to the bridge and the hills beyond.

It was two o'clock when he reached the bridge, which was of the old-fashioned "swing" variety. He glanced up at the tender, Ike Norman, whom he knew very well. Norman was sprawled out in a chair in his little "coop," yawning and rubbing his eyes.

"Hello, Hen," called Norman. "Day off?"

With a queer relief Evans realized that the man had not heard of his bereavement.

"Yes," he answered.

"You're lucky," returned Norman with a scowl. "Any man's lucky to work for any one that's got a heart. Look at me. They sent for me at midnight 'cause Theobald was sick, an' me with two hours' sleep. They promised to relieve me at noon an' no one ain't come yet. I'm that sleepy now I can't hardly keep my eyes open to work the swing. The man you work for ain't got no heart these days."

With a commonplace response Evans continued across the bridge. He walked to the hill and threw himself upon the grassy slope. He looked across at the placid river dotted with shipping, at the great brick mill and the squalid village surrounding it, at the sunlit ocean outspread two miles beyond the river.

Somehow there echoed in his torpid brain in interminable reiterations the closing sentence of Norman's grumbling harangue:

"The man you work for ain't got no heart these days."

It was as if an alien voice whispered it. As he listened the deadly lethargy of many hours was gradually dissipated to be replaced by white-hot thrusts of pain. The full bitterness of complete realization was at last engulfing him.

He lay a long time, then finally rose unsteadily. The sun was low in the west. He walked down the hill and up the road to the little cemetery. He stood by the grave which held his dead. Somebody had rendered a tender service which he had forgotten. Some flowers, in a cheap glass vase, had been placed at the head of the mound.

Evans flung himself on his knees, his hands before his eyes, his great body racked with dry, hard, tearing sobs. Then he

sprang up, fairly rushing from the cemetery. As he reached the road his pace slackened to a weary walk.

He proceeded back toward the bridge in the gathering dusk, his head bent, his brain afire with grief and bitterness and arraignment. Like the *motif* of a fugue, there throbbed in memory the words of the bridge-tender:

"The man you work for ain't got no heart these days."

That was it! Danny was the victim of man's inhumanity to man. The Chapple Mills, Incorporated, had held dollars dearer than human life. Evans had warned Chapple again and again, during a long sequence of minor and more serious accidents, that protection against the dangers of the old machinery must be afforded the operatives. His words had been unheeded. Now Danny was dead and Chapple was his murderer.

A red lust of rage possessed him; his hands clenched at his sides. The bridge was near at hand now but imperceptible. It had grown quite dark, and an arc light near the entrance to the bridge was sputtering uselessly. Evans had reached a spot in the road, a hundred and fifty yards from the river, that was brilliantly illuminated from a light directly over his head.

Suddenly a whirring rush from behind caused him instinctively to step aside. He glanced at the automobile as it whizzed by him. He started as he recognized Chapple's machine. It was driven by the mill owner's colored chauffeur and by his side sat Chapple's three-year-old son, Redmond.

The automobile whirred at high speed toward the bridge and was lost in the shadows. Evans plodded on in the dust. The next instant he was electrified to hear a hoarse cry and a resounding splash as if the bridge itself had toppled into the water. Simultaneously down-stream sounded the mournful hoot of a boat's whistle.

Into Evans's mind flashed realization of the situation. The tender, Norman, had not been relieved. Half dead with fatigue, he had opened the bridge to let a vessel through and had fallen asleep, leaving an open deathtrap at either end. The Chapple automobile had driven straight into the river.

Loud cries sounded from the opposite shore as he ran down the road and clambered down the bank. Twenty feet out he saw, indistinct in the shadow, the hood of the shattered machine. As he plunged into the stream he nearly stepped upon a still figure lying at its edge.

He realized that the chauffeur had seen the gap just before the plunge and jumped.

Evans was a magnificent swimmer. A few powerful trudgeon strokes brought him to the automobile. In that instant near it there rose close to his hand a small head.

In a flash the mite was safe upon his broad shoulders. He swung about toward the shore he had just quitted. Then, as if some fantom of the night whispered it, there came a repetition of the haunting phrase:

"The man you work for ain't got no heart these days."

In that instant Evans, in the core of his sorely beset soul, underwent the completion of the transforming process which the dark hours had brought him. Amiable, jovial, easy-going, he had entered the crucible. Its acids, with appalling swiftness, had scarified his spirit and made of him an embittered Nemesis.

Through his brain flashed a plan of unbelievable malignity. He cast a swift glance toward the near-by bank. Nobody was there.

He whirled and swam across the river, the baby upon his shoulder. Cautiously he gained the shadows of the shore above the bridge.

Below him there rose confusion in crescendo. He laid his ear against the little boy's breast. The child's heart was beating strongly, though he was unconscious.

Evans hugged the little form to his breast and swiftly skulked unseen up the shore. He reached his own cottage and stealthily let himself in at the back door, locking it after him.

He groped his way to the sleeping-room he had occupied with Danny and laid the boy on the bed. Pulling down the shade to its fullest extent, he lighted the lamp upon the bureau.

Standing there dripping, the fires of Tophet in his haggard eyes, he gazed down at the senseless boy and muttered grim words:

"It's an ebb tide. They'll think you drowned and carried out to sea. My boy was as good as you. You're on the pallet of a pauper. Lay there! You're the sub-

stitute for my dead boy. Live as he did, sweat an' grind as he did, jump to the whistle like he did! Your father killed my boy, damn him! *You're mine now!"*

At this moment the mill whistle, like the howls of mad witches in the night, began a wild fanfare, summoning help to search the river's bed for the body of the mill owner's son.

Roused by the unearthly din, the little fellow on the bed opened his eyes. He looked into the grim face above him and smiled.

CHAPTER I.

THE MOTHER.

OVERLOOKING his squad of Jamaican blacks stood Henry Evans, now bossing a dredge gang in the early days of work at the Panama Canal. It was a broiling summer day.

Thousands of toilers swarmed in the cut. Myriads of mosquitoes trilled in the breathless heat. The deep green of tropic vegetation glowed in the distance. There sounded the clack and thunder of steam-shovels and giant dredges.

Clad in khaki, Evans made a stalwart figure. He wore a wide-brimmed straw hat. His face and bare, folded arms were burned brown as a Mexican's.

He had come direct to Panama from Chappleville four years previously. While the river was being dragged for the body of his employer's little son, supposedly drowned, Henry Evans had been busy with the details of his plan for vengeance.

Behind the locked door of his cottage he cut Redmond's hair and found in an old trunk some discarded clothing of Danny's at a similar age. The next night, carrying some simple belongings in two old traveling-cases, he slipped out of the hut and walked with the boy to the next village, two miles away. They caught a late train for Hoboken and ferried across to New York. The following day they embarked on a steamer for Panama.

Evans found work as a member of a dredging gang. His superiors soon marked in him the quality of mastery. For two years he had been a dredging-boss, a unit in the realization of the dream of ages, the cleaving of a pathway between two mighty seas.

Evans's brows were knitted on this summer morning; he constantly shouted orders to his men. It was a day of stubborn onslaught upon the latest slide on the west bank. Already the stealthy caving away of the soil was threatening the village of Culebra. For every shovelful of earth removed, two more seemed to slide in. The scenery of yesterday was the debris of to-day.

Evans removed his hat and drew the back of his hand across his streaming forehead. Four years had worked in him significant changes. His thick, fair hair contrasted oddly with his bronzed skin. The piercing eyes of northern blue seemed an anomaly in his darkened face. Their former kindly light was replaced by the icy gleam which remains in the eyes that have looked on bitterness.

They were now the eyes of the outdoor man, narrowed with the habit of sweeping wide, sunlit spaces. The face was thinner, traced with severe lines. The lips, once a little flaccid with the relaxation of those who drift through life, were firm set as are the lips of those who fight a stubborn inward battle.

He had assumed the rôle of avenger, seeking to punish in his own way what his grief-distraught mind held to constitute a terrible injustice. About him were indelible evidences of the strain.

He watched his Jamaicans toiling steadily. The sweat glistened upon their bare backs and shoulders; their white teeth gleamed as they chanted a barbaric song.

Suddenly the fanfare of whistles announced the long interval of resting which days of overpowering summer heat necessitated. With the shrill blasts Evans's brows contracted; his eyes closed for an instant as if in spasmodic pain.

The blare recurrently recalled to him the blackest hour of his life. The whistle epitomized the tyranny of toiling, that tyranny which demanded nothing less than the sacrifice of sweat and tears and of blood itself.

The blacks stopped work to eat their lunches. Evans turned expectantly and looked toward a path which wound down the high bank from the village.

A little figure carrying a lunch-pail came scuttling toward him. Evans's eyes brightened at sight of the youngster who had taken the place of his own boy, at his side and in his heart. He had dedicated their life together to his interpretation of justice. He was doing for this boy what he had

done for his own—rearing him in honest toil, in honest dirt, in honest manliness.

For the sake of his young charge Evans lived the rough life of the canal laborer with a difference, keeping aloof from the low temptations that were the common lot. He had made a tryst with Fate; he was keeping it as a sacrament.

The boy known to Culebra as Georgie Evans, the dredge-boss's little nephew, came running to him. His little, round face, browned by the sun, was further obscured by elemental soil; his bare legs approached a negro's in hue. His sturdy body, large for his seven years, was incased in ragged khaki trousers and a torn cotton shirt, once white. His big, dark eyes danced.

"Here, uncle," he called, extending the pail—"here's a fine layout. Bet you'll say I can make fine coffee, too. Jes' took it off the oil-stove."

"You bet you can, Georgie," replied Evans, with the smile he had always ready for the youngster. "They can't beat you nohow."

Evans ate slowly while he watched the child playing about the excavation. Georgie was such a splendid, healthy, muscular boy as Danny had been, and fully as dirty. For all that, Evans recognized with a faint pang of bitterness that there was something incongruous in the sight of the little figure filling that tattered khaki. He possessed the ineradicable air of class that to the close observer stamped him as superior to his surroundings. Evans knew why this was so. The boy's mother was the daughter of an old Virginia line, proud but impoverished.

Suddenly there sounded near at hand a stream of talk of disgusting vileness. Evans's brows knitted in a heavy scowl. He cast a flashing glance toward a neighboring dredge-boss, sitting with some negroes. Then he glanced at Georgie, who had paused in his play to listen with the wide-eyed curiosity of childhood.

"Boy," he abruptly directed, "go on playin'—an' sing, so you can't hear that talk. An' stay here; I'll be right back."

Obediently Georgie resumed his digging in the loam, raising his shrill treble in a song that Evans had taught him. Henry walked to the other group, two hundred yards away.

The talk had ceased by the time he reached there. A burly white man with red hair and a week's growth of sandy beard, looked up surlily as Evans stopped by his side. Henry's lips were a straight line; his eyes gleamed; the veins in his temples throbbed visibly.

"Look here, Latterner," challenged Evans, "I've warned you before to cut out that sink talk when my kid's around. Get up!"

Bill Latterner rose and spat unctuously into the clay. He was ten years younger than Evans, broader, with the long arms of a gorilla. Physical power was expressed in every line of him. His broad face was red with wrath. His Jamaicans stood about, teeth glinting, dark eyes rolling in the hope of a collision.

Evans's blacks came running, sensing the imminence of a fight which Culebra's toilers had anticipated for a fortnight. Now, as the pair faced each other, the word passed with electrical swiftness and men came hurrying from a wide area.

Latterner's hoarse voice flung defiance in response to Evans's demand:

"Now, get this, Mr. Sunday-School Preacher! You don't own this here ditch an' neither does yer brat. I talks around here w'at I —— —— please—"

A crashing left-hand smash full on the mouth sent him reeling back. With catlike swiftness Evans followed him up. The squat giant's murderous right whizzed by Evans's ear in a clumsy, fruitless swing. Then he tried to wind his long, crushing arms about the taller man, but Evans leaped aside.

On came the fellow, head down, with a bull-like bellow of rage. Evans stopped him short with a smashing left and right to the body. The crowding blacks heard the sharp crack of snapping bone.

The onlookers yelled as Latterner's hand was clapped to his side while his face was distorted with pain. In that instant a pile-driver right drove flush to the point of his jaw, and he dropped, twitching and senseless, to the clay.

A great laugh spread as the swarms of toilers running toward the scene learned of the lightning suddenness with which the question of fistic supremacy at Culebra had been decided. For by common assent the laurels had lain between these two men.

"What's this, Evans?"

Alfred Crandall, a spruce, energetic young engineer, stood by the dredge-boss's side. He had long since taken a fancy to

Henry and it was to him that the former mill foreman owed his advancement.

"He was springin' his sty talk before my kid again," responded Evans. "You know I told you what 'd happen if he opened his trap again."

"Quite right!" briskly acceded Crandall. "He was spoiling for it; he's been bullying the ditch too long. He'll be off the job a while, I think; you must have broken at least two ribs. I'll put Weston on in his place. Here, Tom!"

Up stepped old Tom Weston, an all-round veteran of the cut who lived in a hut beyond Evans's place. There was a gratified smile on the old man's face.

"Say, Hen," he said as he grasped Evans's hand, "didn't I tell you that w'en you came to it you'd push that big stiff clean through himself. Some class, w'at?"

Evans smiled soberly and walked through the press back to where Georgie was waiting. His blacks followed admiringly, naked chests thrown out as if the victory had been their own, jabbering delightedly. The men who had gathered returned to their stations throughout the big ditch, marveling at the prowess of the man now fully accredited with being the most irresistible fighter of them all.

He grinned ironically as he walked toward the boy. The adulation meant nothing to him. The superficial days of satisfaction in physical exploits for their own sake were over. For years what fights he had indulged in a rough environment had been waged for some one or other of his rude but honest ethics.

He paused by the boy's side, looking down at him with a queer tenderness.

"Georgie," he said, "w'en ye're grown up, an' ye hear some loafer talk bad before a little feller like you are now, promise me you'll light in an' whang the whey out o' him!"

"I sure will, uncle!" responded the boy, with all the earnestness of enthusiastic childhood.

"Good! Have you brung yer book?"

"Yes, uncle!"

Together, while the voluble chatter of the resting negroes sounded near them and the flies droned in the sunshine, blond and dark heads were bent over the well-thumbed elementary arithmetic. Evans was daily, in laborious fashion, teaching Georgie "book-learnin'" as once he had taught Danny.

Once voices and the tramp of feet near by attracted his attention. He lifted his head to behold several workmen passing, supporting Bill Latterner, who was walking slowly with a big hand pressed to his side.

The fellow gave Evans a malevolent glance and shook his fist.

"I'll get even!" he snarled. "You mark me!"

"See here, Latterner," called back Evans, "I didn't go for to break no bones. You'd ha' done the same to me."

"You wait!" replied the other threateningly.

Evans shrugged his shoulders and returned to his book.

A little later the boy, whose eyes had occasionally glanced toward the disappearing group, imparted tidings.

"They've piled him into a cart, uncle, with a pair o' mules, an' they're drivin' up the road to the village. I guess they're takin' him home."

"Guess maybe, Georgie," responded Evans. "Get back to yer knittin'. How much did you say six times six was?"

"Thirty-four," repeated Georgie confidently.

"Ye mean well," replied Evans, with a smile. "Add two to it, kiddo. How much?"

"Thirty-six."

"Righto! Remember it, will ye?"

"Try to, uncle. Leave me play, will yuh?"

"Lesson first. You play enough, you tyke, you. Gimme the multiplication on fives."

Soon afterward the whistles blew for the resumption of work.

"G'wan, rascal!" instructed Evans. "Take yer pail an' skiddoo. See if ye can pile any more dirt onto yerself playin' around this afternoon. You got to get it off to-night. Got to get in the tub, you terrier."

"Aw, uncle, I don't wanna take no bath! W'at's the use? Allus takin' baths!"

"You hear me! Into the tub for yours to-night! You look like a Jamaican! Now beat it, kid! *'Raus* mit you! Stop an' get them things at the store."

Laughing, Georgie scuttled back toward the path. Evans watched him wistfully a moment, then turned toward his negroes, who bestowed upon him looks of flattering

awe. He was one of the most popular bosses in the ditch, and now that he was proved Culebra's most effective pugilist his hold was tightened upon his dusky charges.

It was an hour later when he walked over to Tom Weston, who stood overseeing Latterner's gang while he contentedly sucked at his corn-cob pipe.

"What's the matter?" asked Tom. "Ye look white, Hen."

"I'm feelin' a little sick, Tom. Nothin' much. Sun's pretty hot an' I'm sick to my stomach an' my head whirls some."

"It's a little afterclap of that touch o' fever you had, Hen. I know; I've been through it. You go on up home an' I'll take charge o' yer gang along with mine. You take care of yerself an' you'll be all right in the mornin'. Stay on the job an' you might get a week of it."

"I guess it's good advice, Tom. Much obliged. I'll be on in the mornin', all right."

"Look out for Bill," laughed Weston as he departed.

"I ain't worryin' none," replied Henry.

Evans approached his cottage, elevated on low spiles and containing two rooms. He had occupied the place, one of many similar huts furnished by the government for its workmen, since the early days of his stay at the isthmus. At first he employed a housekeeper, but had dismissed her two years previously when Georgie was five years old.

Since then he had taught the little fellow the homely duties that Danny had performed at a like tender age. Georgie was already proficient in the simple cooking of the Evans's ménage.

Evans received a surprised and noisy greeting from his foster-son.

"I was kind o' sick, Georgie," he explained, and sat down in a kitchen chair, smoking, while the boy rattled on with the aimless inconsequence of childhood.

There were two rooms in the hut, the kitchen and the bedroom, which held two bunks. The furniture was meager, the main items of the bedroom being an abundance of mosquito netting. The kitchen held a cheap pine table and a few chairs, including a couple of rockers, and an oil-stove.

Doubtless born of his indisposition, gray thoughts of the past, of Danny, drifted like fog-patches through Evans's brain as he watched the boy.

In search of a diverting of his reflections, he arose and fumbled among the packages of Georgie's purchases at the general store, lying upon the pine table. After a little he turned, addressing the youngster wth mock sternness.

"Say, you little runt, where's the coffee? An' where's my lunch-pail? You forgot an' left that at the store again, didn't you?"

"Uncle, I sure did! An' I forgot to get the coffee, too. Didn't I get everything else?"

"Yes, but we've gotta have the rest of it. All's *all*, you know, Georgie. I know w'at I'll do. I'll make ye go back after the coffee an' the pail. *Now* I'll bet you're sorry!"

The boy's sweet laughter trilled musically.

"Yes, I am! Yes, I am *not!*"

A smile twitched at the corners of Evans's mouth.

"Don't do no good to punish you, skeezicks," he acknowledged. "You like it too well. Any excuse to go rammin' around, bare legs!"

"You feelin' better, uncle? I don't like to leave you if you ain't feelin' well."

"I'm a lot better already, Georgie, now I'm out o' the sun. Stomach's easin' an' my head is lettin' up. Off with you, an' don't be dawdlin' on the way."

Evans sat in a chair near the window which overlooked the rough road, filling his pipe. He smiled as the little chap, donning his old straw hat, dashed out of the door into the brilliant sunlight with an ecstatic "Whoop!" Suddenly Evans, whose constant solicitude for the boy's welfare was almost maternal, bethought himself of a matter which required constant attention.

"Georgie!" he called.

The boy's dirty little face, lighted with those wondrous dancing eyes, reappeared in the doorway.

"What, uncle?"

"Don't you eat more 'n one piece of the candy they'll give you. You lug the rest home an' I'll parcel it out as you need it."

"All right, uncle."

Evans grinned slyly at the shade of regret in Georgie's tone. In all his instructions the boy adhered rigidly to the honor system. But he had just fairly flown out of the door hoping to anticipate his foster-father's usual caution. Had Evans forgot-

ten to transmit his reminder the little chap would have serenely eaten all the generous portion of sweets which the proprietor always handed him before Evans again looked upon his roguish face.

Bare feet again scuttled toward the road and spring-time, as evidenced in seven years, went skippety-hopping along the rough thoroughfare in the hot summer sunshine. A shrill treble intoned in time to the canter of an old nursery rime:

"Ride a cock horse
To Banbury Cross
To see an old woman
Ride on a white horse;
Rings on her fingers
And bells on her toes;
She shall have music
Wherever she goes."

The world of God's outdoors is all wonder and rose-leaves and sunshine to Seven Years, if Seven Years be protected and cherished by love. Also, it is the age of myriad quests, of uncounted pilgrimages and achievements, of the eternal gardens. Seven Years dashes pell-mell through the fields of unsullied dreams, and if it pauses for a moment it is but to revel in ecstasy at the glory of the green meadows.

Georgie ceased skipping and for a time walked soberly along the road, kicking bare toes through the dust. His dark eyes roved to the green glory of the adjacent jungle, to the nearing ramshackle town, to the cut from which arose the thrum of ceaseless labor. In his ears sounded the soft stir of a cooling sea breeze in the long grasses which bordered the roadway, the manifold hum of circling insects, near by the sweet song of some bird hidden in the feathery crown of a sentinel palm.

Again Seven Years danced upon the roadway, danced in dirt and tatters and joy, danced in all the sincere abandon of the morning glow. But now, with the lightning suddenness of the age of swift transitions, his mood changed to something infinitely fierce and bloody.

With a black charger of parts between his sturdy knees, and uttering a wild whoop of defiance, he galloped straight for the long grasses. The foe turned to fly, but it was too late. Waving his straw hat with one hand, he emptied the chamber of his trusty imaginary Colt with the other. When the massacre was completed exactly one thousand and ten Indians lay among the grasses, slain in two minutes by the deadly hand of Georgie the Red, the Avenger of the Plains.

By the time he reached the store he was a young man of infinite variety and bewildering versatility of achievement. He had engineered the canal work to a successful completion and made his foster-father king of the region for life. He had served several terms as President of the United States. He had hunted the wild beasts of Africa and killed them all. He had resurrected them and shown them in the biggest menagerie that ever was. He had done everything in the world except take a bath. He had not had time to do that.

He reached the general store, and the proprietor, an old man with gray whiskers and a shiny bald head which was for Georgie a magnet of unending fascination, grinned at him.

"I bet if I took a spade," he imparted, "and shoveled down through all that dirt, I'd find little Georgie Evans. Why don't you go down in the cut, son, an' leave them turn the hose on you? What can I do for the kid?"

"Uncle says I've got to take a bath tonight," answered Georgie irrelevantly. "I forgot the lunch-pail. An' I forgot to get a pound o' coffee this afternoon."

Sam Edwards did up the pound of coffee and produced the lunch-pail, which he had deposited for safe keeping under the counter. Then, with a kindly malice, he remained for a moment studying the wishful little face.

"What's the matter?" he questioned, his eyes searching the canned goods on the topmost shelves. "Have I forgot anything?"

"Candy," ventured Georgie, his tone discreetly low.

"Candy?" echoed the old storekeeper in mock amaze. "Why, I gave you some this afternoon."

"I've come twice," insinuated Georgie.

"Twice?" mused Edwards, the twinkle brightening in his eye. "Yes, I guess that's so. I think it's an excuse, but w'at's the difference? Here, run along with you, but don't you ring that on me too often."

He pressed a generous supply of loose candy into Georgie's hands. One piece went into the youngster's mouth, the remainder into a pocket. The boy thanked

him and, taking the lunch-pail in one hand and the package of coffee in the other, dashed out of the door into an unexpected opportunity.

"Hey, mister!" he called. "Gimme a ride, please?"

The man who had paused briefly to adjust some trifling difficulty with his big touring-car paused as he was climbing into his machine in front of the store and glanced back at the youngster, who came running eagerly.

"Going my way?" he asked carelessly. "Sure, boy; hop in."

Lunch-pail rattling, Georgie piled over the door into the rear seat.

"Thank you, sir," he piped. The automobile purred and got under way.

A woman seated directly in front of him, who had glanced briefly toward him as he ran to the automobile, inclined her head toward the man at the wheel.

"What a polite little boy!" she said.

"Yes," he answered with dry jocularity. "As polite as he is dirty. Did you notice the accumulation of soil on him? He's a fine subject for a geologist."

"I didn't notice."

There was silence, save for the purring of the powerful automobile, driving at moderate speed down the rough road. The man and woman stared straight ahead. On the rear seat Georgie bobbed up and down on the soft cushions, short legs sticking straight out in front. A tin spoon in the lunch-pail rattled noisily. The boy's snapping eyes observed every detail of the beautiful car.

"Hey, mister!"

The man at the wheel half turned his head.

"What is it, my boy?"

"I live in that third house from here, please; the one kind o' by itself. My uncle lives there, too. He's home; he's sick this afternoon."

"All right, boy. We'll stop."

Henry Evans sat near the window, looking out at the glory of green verdure and blue sky and brilliant sunlight. A deepening thrum caught his attention; an instant later a big touring-car containing three persons came slowing to a halt before his door.

"My Heaven!"

Evans's eyes flared horribly. He leaped up. His chair went sprawling; his pipe fell from nerveless fingers and snapped upon the floor. He tore his collar from his suffocating throat as he reeled back aganst the opposite wall.

There was but one shred of hope to which he clung. He had moved swiftly, spurred by white-hot fright; they could not have seen him. His dry lips moved silently, furtively.

In the fraction of an instant he lived a lifetime of agony.

So Nemesis had hunted him down—Nemesis of which he had dreamed sometimes in the black nights! The slimy octopus of fear, crushing always in his subconsciousness, now pounced upon him. Its writhing tentacles enwrapped him, sucking him down to the nethermost horror. He was a rat shuddering in a trap; he was hounded, trailed to his doom—he was done!

They had come to reclaim their own—and to punish him!

In this moment of acute crisis Henry Evans, for all the brave sophistries with which he had bulwarked the theft of flesh and blood and soul four years previously, looked the hunted, ravaged, desperate criminal.

Then, filling the instant's pause between the stopping and restarting of the powerful car, came the voice of its driver. Its message spelled to the crouching wretch within the hut a fateful reassurance, even as little feet drummed from the open toward the door.

"I've brought back your boy."

Then the machine, getting under way, thrummed on down the road.

Slowly Evans, a distraught figure shrinking against the kitchen wall, wild-eyed and ashy-faced, straightened in the knowledge that he was safe.

These words which had floated to him from the roadway, with what mockery were they freighted! The man in the hut threw back his head and laughed hoarsely. His eyes closed.

"He brought back my boy!"

He whispered the phrase. In that instant life leered brutal, frightful, monstrous.

"Uncle! Uncle! What's the matter?"

Stupidly Evans opened his eyes to behold Georgie standing frightened in the middle of the floor. His foster-father strove to speak, but could not.

"Uncle!" cried the boy again, a sobbing note in his voice.

Evans took an uncertain step toward him. The child cowered but stood his ground. His face showed piteous fear.

"Where you been? W'at you been doin'?"

Evans's voice was strained and harsh.

"To the store, like you said," quavered the child. "A man give me a ride back in a automobile."

The man turned on him with violent gestures.

"Don't you take no more rides!" he flung. "An' you stay indoors! You hear me! It's got too hot for you to be out these days!"

"Yes, uncle!"

The little chap's lips were trembling. Then he began to cry.

"I didn't mean to do nothin'. W'at have I done?" he blubbered.

The shadow left Evans's eyes; his somber face became tender. He sank trembling into a chair and gathered the sobbing mite close in his arms.

"You ain't done nothin', little man," he soothed. "I'm sorry I was cross."

"What was the matter?" quavered Georgie after a little. "You sick?"

"I'm all right now, kid. I had a bad spell."

"You looked like you saw a ghost."

Across Evans's face drifted a bitter smile.

"No, kid. There ain't no ghosts. No dead ghosts. Jes' livin' ones."

The world was small; it held alike Chappleville and Panama. Evans knew the bitterness of living ghosts. He had just seen a woman, grown gray and old in four years' time, sitting in an automobile staring straight ahead. Evans knew why. His own act had laid waste her life. Since then she could not bear to look upon happy childhood.

And the man, gray, grim, cigar in mouth; Evans had known him also.

"I've brought back your boy," Jerome Chapple had called—and left at Evans's door his own son.

CHAPTER II.

BATTLING SHADOWS.

EVANS rose haggard from a sleepless night; he had spent the dark hours engaged in a grim battle. Silently he had warred, striving to beat into some cohesion and reasonableness his shrieking conscience. He had set against a mother's sorrow, his own agony, born in the moment when Danny had lain dying upon the floor of the Chapple weave-room. And he had won, beating back in turn the furies which assailed him.

Georgie had not wakened. Evans knew that the day would bring him grief over his foster-father's admonition to remain within doors. It was a cruel deprivation, yet one wholly necessary, with the boy's parents in Culebra.

Evans stood in the center of the little kitchen, his brows knitted thoughtfully. Then he walked slowly over to some valises stacked in the corner, the bags he had brought from Chappleville.

He regarded them for a moment and heaved a deep sigh. His hands fell shaking as he undid the straps of one of the bags and opened it. Within were the keepsakes of Danny, that he had collected on that last day in Chappleville.

Silently Evans looked at the old rag doll which, one day when he was five and thinking himself grown to man's estate, Danny had thrown into a corner, to be rescued by his father. There were marbles, too; some big striped "glassies," a few agates, and little brown "migs"; a knife, various lead soldiers the worse for wear, and several well-thumbed picture-books.

Evans gathered up the things and walked into the bedroom. His face, which had grown white and tense, softened as he knelt by the bed and laid the articles beside the slumbering Georgie.

More than anything he had done this act seemed to settle decisively for Evans his right to the boy. Georgie was now fully to take Danny's place; to play with Danny's toys.

The big man bowed his head upon his hands. So poignantly had the little fellow crept into his heart that more than ever in this moment Evans realized that he had won the love once given Danny. Yes; Georgie should have from him the love of a father; he would be good to the boy, he vowed.

He bent yearningly over the bed.

"Little scout! Little scout!" he called softly.

Two big, dark eyes opened wonderingly. Then a tousled head was raised from the pillow.

Georgie jumped up and encircled Evans's neck with two fat arms.

Evans strove to command his voice.

"Look, little scout, what I've brung you," he said, hugging the sturdy little body close. "Stayin' in daytimes, like I told you, 's goin' to be hard. But it's gettin' mighty hot for you to be out; I dassent risk it. You might be sunstruck. So here's some things you knowed was here, an' what you've allus wanted."

The boy cried out with delight as he espied the playthings heaped upon the bed.

"Oh, uncle!" he gurgled ecstatically, plumping down beside them. "Danny's things!"

"Yes, little scout, an' now I must be goin'. You won't forget about stayin' in?"

"No, uncle," answered Georgie, absorbedly turning the leaves of one of the fascinating picture-books.

He looked up, with a sudden afterthought.

"I hate not to bring you your lunch, though."

"You're better off here."

Evans caught up his dinner-pail and departed. He came to the edge of the high bank. His gaze swept the great excavation into which thousands of toilers were thronging from village and camps. He turned for a moment and gazed back toward his own hut in the distance.

He spoke low words, almost the words he had used upon that night four years prior when the child lay unconscious upon the bed in the cottage at Chappleville.

"You're mine now. You've got to live as Danny did, sweat and grind like he did, jump to the whistle like he did. An' you ain't so bad off; you'll be a man!"

He arrived at his dredge just before the whistles heralded the beginning of the new day of labor. His Jamaicans hailed him with joy and picturesque expressions of satisfaction over his whipping of Bill Latterner the day before. Already the rougher portion of the population of Culebra was agog over the news that in less than two minutes Harry Evans had demonstrated his leadership among the "scrappers" of the cut.

As the men started work he glanced across at Latterner's gang. The burly boss was not there. Tom Weston was taking his place. He turned and waved to Evans.

As soon as Henry had seen the efforts of his own gang well under way he started over to talk with Tom. Old Weston was a capable, handy man and was often placed in temporary charge of gangs in emergencies.

"Hello, Hen," called Tom as Evans approached. "Yer friend Bill couldn't roll out o' bed this mornin'. Sawbones says you smashed two ribs."

"I hadda hit 'im hard," answered Evans. "Wouldn't never done to let 'im get to close quarters with his arms around me. He'd ha' done the same for me. That fight hadda be won quick."

"You won it," grinned Weston, biting off a fresh chew of plug tobacco. "You smashed his trap all over his face, too. They tell me he looks like a man w'at's jes' gettin' over bein' caught under a slide. An' he's dead sore against you."

"It was a fair stand-up fight, after I'd warned him, wa'n't it?" demanded Henry. "Toe to toe, an' he got licked. W'at's his kick?"

"Dan Frieland was tellin' me," pursued Tom. "Dan's disgusted with the poor, cheap skate. Says like the rest of us, he got licked fair an' square quick enough, an' he oughta bury his grudge. Dan told him so. All he answered was to make faces an' swear at you an' tell he'd drink yer blood, or some such pleasant sentiment like that."

"He'd choke on it," grinned Evans.

"All the same, Hen," earnestly advised Tom, "ye'd better keep yer eyes peeled. Ye know he threatened ye w'en they took him off. That stiff is bad medicine."

"He's a cheap bluff!" answered Henry contemptuously.

"Say," pursued old Tom, hopping from one subject to the next with the easy facility of the flea, "they got a new doctor, a young feller, in charge of the hospital. He's jes' in from the States."

"That so?" rejoined Henry, mildly amused as always by the ceaseless stream of news from old Tom, who had long before been dubbed by some canal wit "the sewing-circle," because he was somehow always in receipt of all the gossip of the big ditch. To his ears all news was as homing pigeons. "Who is he?" supplemented Evans.

"His name is Foster—Dr. Thomas Foster, I believe," replied Weston. "He's from somewhere up in New Jersey, I hear,

an' he's got a big rep. One o' them young 'comers.' Got appointed through the President hisself. He's here with his wife. Her folks came along with 'em; they've come whillikin' around here in a big 'bubble.' Some folks has got it soft.

"Old man—they say his name's Chapple—was on some big Western business trip, an' they mixed it with pleasure. We can't do that, hey Hen? The bunch comes in from Colon yesterday mornin'. Old folks was goin' to stay two or three weeks, but the old lady is ailin' so she an' the old man is goin' to beat it back to Colon this mornin' an' catch the Miguel that sails for New York this afternoon. I heard a couple o' engineers talkin' about it."

As he rambled on Henry Evans's eyes flared, then narrowed in a face otherwise like that of a prince of poker players. Surely the situation was complicated enough. Evans remembered hearing that Chapple's daughter Dorothea was engaged to Dr. Foster in the days before the double accident that had sent him to Panama.

He soon left Weston and retraced his steps to his own gang, pondering his dilemma. The permanent presence of the doctor and his young wife at Culebra constituted a serious menace to Evans's plan. Henry had intended to keep the boy in hiding till the Chapples should leave Culebra—but now?

The boy had changed considerably in appearance in the four years since Evans had abducted him. However, he dared not yet run the risk of Dr. Foster nor of Dorothea meeting him. Fate had well served Evans on the previous day. The disguise lent the child by the tropic sun, by dirt, and by old clothing had served to fend off the indifferent glances cast toward him by his parents.

But though the boy had been too young at the time of his disappearance to retain more than hazy fading memories of his former gentler life, there remained still an unmistakable resemblance to the sturdy three-year-old boy of the family's memories which sharp eyes might readily detect. Assuredly, it would not do to risk the little fellow afield.

Also, it would be monstrously unjust to keep Georgie penned up in the hut. The habit of obedience was so strong in him that he would do as Evans directed, but such cruelty was not in the foster-father's ken.

There was but one way out of it, he decided, and silently came to a decision which he imparted to the boy that night after they had finished their supper.

"Georgie," he said as he sat smoking his pipe, "you've heard me tell about little old New York that they call little because it's so big, bigger 'n all outdoors an' half o' Georgetown. It's way up north, you know, where it's only hot part o' the time 'stead of all the time like it is here. It's got buildin's that run away up into the sky an' cars that run under the streets, an' parks with animals in cages. How'd ye like to live there, Georgie?"

"Gee, uncle!" cried the boy, with all the juvenile itch for novelty and change bubbling in his tone. "I'd like to, all right, you bet yuh!"

"Well, I'll tell ye," pursued Evans, "we'll move up there in a few days. An' we'll sail in a big ship that ain't much like the little ships I've bought for you to sail around in mud puddles. It'll be a great, big ship, bigger 'n ever so many houses like this, an' me an' you'll walk on the deck an' look at water till you can't rest. It'll take several days to sail through all that water up to New York. What d' ye think o' that?"

"Oh!" exclaimed the boy, his eyes widening. "That 'll be great!"

"You bet it will! An' me an' you 'll work up there like we've done here, an' I'll learn you things. Meantime, you stay indoors like I told you. This climate ain't healthy. Now me an' you'll take that evenin' walk toward the jungle; then you got to take that bath we forgot last night an' turn in."

Five days passed uneventfully. Evans had determined to work two weeks longer before quitting the isthmus. Always of thrifty habit, he had a snug sum laid away in the community bank. But how soon he would secure a job after reaching New York was problematical. He intended to land as well financed as possible.

Upon the sixth evening Tom Weston walked home with him from work.

"Bill Latterner's out again," he communicated.

"That so?" responded Evans. "W'at's his condition? How's he look?"

"Like the day after, they say," grinned Tom. "He was out around the village yesterday against the doctor's orders with his cracked ribs trussed up. They say he's still good an' sore against you."

"I should worry," returned Henry.

"I wish you'd look alive; I've told you. He's bad business, that guy."

"He's a skate," rejoned Evans dryly. "He's all mouth. He ain't goin' to hurt me none, old hoss."

He proceeded to his hut with no further thought of Latterner. The old wistful smile came to his face as he welcomed Georgie. The boy had the supper preparations well ahead, anxious for the evening walk with his foster-father. At the table his nimble little tongue waggled interminably of the wonders of New York which he was soon to see. Then, grabbing his hat, he set off for his stroll with Evans toward the jungle that lay beyond the hut of Tom Weston.

Tom had been insistent in warning Evans of Latterner and it is always well to heed the candid warning of a rattlesnake. Tom saw Evans and the boy pass his hut and hailed them. An hour later Weston, smoking in his doorway, dropped his pipe as a shot rang out and ran through the moonlight to the jungle, guided by Georgie's cries. He found Evans lying by the side of the path, bleeding at the right side. Georgie knelt over him, sobbing.

Evans looked up with the ghost of a smile.

"Some one got me; I suppose it was Latterner," he gasped and swooned.

He woke long hours afterward and, drifting gradually from torpor, looked about him in uncomprehending amaze. His head felt strangely light and giddy; in his nostrils was the heavy odor of drugs. As he stirred feebly there shot through his side a sharp pain.

The warm sunshine streamed through unfamiliar windows. Evans's gaze beheld a long row of white cots upon which were stretched the figures of men. Everything was white and wholesome and immaculately clean.

Recollection came to him. It was the aftermath of the night walk, the shot in the darkness. He was in the community hospital.

A light step sounded. A bright-faced young nurse, wearing the dainty cap of her profession and bearing upon her arm the insignia of the Red Cross, bent above him.

"Don't try to move. You lost considerable blood," she explained.

"How bad is it?" he asked in a weak voice.

"It is not a dangerous wound now," she said kindly. "You'll just have to lie here a while and mend; that's all."

Still under the influence to some extent of the deadening drugs, his thoughts drifted lazily for a few moments, then became becalmed as he fell asleep. It was not until mid-afternoon that he again wakened.

He lay staring sleepily for a time, turning his head to look up the long ward. His drowsy mind searched mechanically for a definite object, something he had forgotten, something he should remember.

Suddenly it came. He closed his eyes in a sudden spasm of mental pain. What of the boy, the poor little boy? In his inertia, born of the shock, he had not once thought of Georgie since the moment he had swooned in the forest, with the little one's arms about his neck and the anxious face of good old Tom Weston bending above his own.

Here he was lying helpless in the hospital. Where was Georgie?

Had anybody, in the inevitable confusion following the murderous assault, thought to care for him?

Quick steps sounded, approachng his cot. The next instant, with a qualm of fleeting inward fear, he looked up into the friendly eyes and handsome face of Dr. Thomas Foster. His hand, lying outside the sheet, was taken in a firm grip.

"Evans," said the doctor, and in his tone was a ring of unmistakable sincerity, "I'm glad to see you again. Give you my word, old man, when they lugged you in last night and I recognized you, it came to me with a lot of force that the funny old world is pretty small, after all. And just for old times' sake in Chappleville, believe me, I took more than professional interest in the task at hand."

Smiling-eyed, he drew up an adjacent camp-chair and sat down by the cot. Evans, torn between anxiety over Georgie and the need for appearing somewhat natural in manner, contrived a wan smile.

"It's good to be remembered, doc," he said. "I'd just heard you'd got down here. I want to thank you for what you done for me."

"I'm glad I was here," answered the young surgeon soberly. "The time was, and not so long ago, when wounds of that nature were considered fatal. But there's a new quick operation, known to the few, that makes them instead merely a tem-

porary inconvenience. I happened to have performed it before. Now, with quiet, we'll have you all right in jig time."

"I s'pose Bill Latterner got me," observed Evans. "He's a fellow I had a fight with recent."

"I heard of it. Yes, they know it was Latterner, all right. They're hunting for him, but he's apparently left the isthmus. You're lucky to be alive, Evans. I'll leave you now, but I just want to say how glad I am to have run across you again in circumstances in which I could be of help. I've felt pretty friendly toward you ever since— Well, you know.

"And I want to tell you we all feel that way. The grief that came upon the family on the heels of yours— Well, such things bring understanding, the universal tenderness. Mr. Chapple will be glad to have track of you again. I wish he had remained long enough to have seen you. He has often spoken of you and wondered where you were.

"Later, when you're a little stronger, Mrs. Foster—Dorothea—will call to see you.

"Well, I ought to be kicked for running on so, but even we doctors are human and when we run across an old friend we're apt to forget he's a patient. I'd fire a nurse for doing it. By-by, old chap; pound your ear again and rest easy. I'll see you through right!"

With a cheery smile he left Evans a prey to decidedly mixed emotions. Surely, it was getting harder and harder to dwell in Culebra! To hold consistently to his plan he must leave there the moment he was out of the hospital. Into the twisted skein of his life had come another snarling thread. An acquired member of the family he had despoiled had saved his life, the life that was devoted to an object of sinister injustice toward them all.

His mind abruptly veered from this demoralizing thought. He had suffered through them; they must suffer in turn. It was the law, the ancient law of human justice. "An eye for an eye."

He lay staring up at the white ceiling of the hospital which the government maintained for the care of its toilers when in need, without cost to them, the building of exterior rough-and-ready appearance, but equipped within with every facility known to modern medical science.

A riot of thoughts winged through Evans's mind, confused with a slight delirium resulting from the shock of his wound. It seemed to him he was searching for Georgie in the jungle. The boy had been lost. Evans stumbled on distractedly; at times he could catch a glimpse of the child's worn clothing through the vivid greenery and would hurry there to find that he had again disappeared.

He called to the child fruitlessly, hearing in reply only the mocking chatter of monkeys and the squawking cries of parrots in the limbs above his head.

Again he heard a shot ring out and sank to the ground with an agonizing wound which bled until he lay drenched in a pool of it, a pool which widened and widened until it was lost to view in the surrounding shrubbery. Suddenly a bush opposite his glazing eyes parted and from it looked out the villainous face of Bill Latterner, horrid with triumph. Latterner stood there taunting him, who was about to die, until, writhing before his enemy, Evans summoned all the effort of his will and rose to pursue and exact reprisal.

With a cry of fright Latterner turned to flee from his gory victim, but Evans followed him like red, relentless death, through dense bushes, over the fallen trunks of trees, across dark, noisome swamp pools, until he overtook Bill at the edge of a deep stream enmeshed in a tangle of shrubbery and by which crawled venomous reptiles, while basilisk-eyed alligators crouched in the shadows of the shore. There Latterner whirled and stood at bay while the red death swooped down upon him. They struggled together a moment, then splashed into the turbid depths and went down, down, down to the ultimate horror.

Next, his disturbed mind recurring always to the boy, he was searching for Georgie through the shadows of the tropic night. He heard him wailing somewhere far ahead, and pressed on helplessly, in the blind dark, praying fruitlessly that he might find him.

Suddenly Evans's straining eyes beheld a radiance ahead. He ran toward it, thinking that his quest was rewarded. Instead there materialized before him a luminous shape, with outstretched hand barring his way. He shrank back in dismay. It was the mother who stood there, the woman he had robbed four years previously. Her eyes blazed; her white, prematurely wrin-

kled face was a tragedy framed in her streaming gray hair. The look of her held him as in paralysis.

"Go back" she cried. "He is not for you; he is never again for you! He is dead now—do you hear? He is *dead,* and he is God's and mine for all eternity!"

Evans lay upon his cot, stirring feebly, moaning and muttering incoherencies. The nurse, passing down the ward, stopped by his cot and looked at him sharply. She administered a sedative, in compliance with Dr. Foster's instructions regarding her course when the delirium should develop, and he soon fell into a restful sleep, not waking till the next morning.

He had scarcely more than opened his eyes and become adjusted to realities when the nurse was again at his bedside.

"An old man called last evening while you were asleep," she told him. "He said he worked with you and told me to tell you that Tom Weston left his best wishes, and that the boy is with him."

Evans gave a sigh of relief.

"Here's your broth. You're getting on finely. Dr. Foster says you have a constitution of iron. You'll be out of here before you know it."

Footsteps approached his cot.

"Mrs. Foster has come to see you," said the nurse.

Startled, Evans looked up to gaze into the brown eyes of Georgie's sister, the wife of the surgeon who had just saved his life. He battled silently with the feeling of unworthiness which assailed him as her slim, white hand sought his roughened fingers lying outside the sheet. As she spoke he wondered mechanically at her resemblance to her mother.

Lovely, unaffected, in the full flush of young womanhood, she fairly radiated sympathy and friendliness.

"My husband told me of you, Mr. Evans, and I have come the moment he pronounced it wise for you to receive company. I am so sorry for you. I have brought you some flowers."

He mumbled his thanks while she arranged them in a convenient vase upon a window-sill. Gowned all in white, with her dark hair coiled low about her dainty head, she presented a charming picture.

She set a low chair at the side of his cot and sat there talking with him of Panama, of the work, which evidently interested her greatly, of her regret that her mother's frailness had necessitated the immediate return to the States of the Chapples, following the arrival of the party at Culebra.

"Mother has been in a pitiful condition ever since Redmond was drowned," she said, a little catch in her voice. "That was the great reason I dreaded our coming here; I feel guilty in leaving her. The doctor and I were married two years ago and we lived with papa and mama. She had come to depend on me so

"When the doctor received the appointment he was inclined either to refuse it or to come alone and leave me at home with mother. But she was so brave. She said:

"'You young people have your way to make in the world; I am on the western slope. It would be criminal for Thomas to refuse this opportunity to rise in his profession. You must go by all means, both of you, for the place of husband and wife is together.'

"So we're here, and she and daddy are alone."

Her eyes were misty; her voice was trembling. The gaze of the man on the cot was averted. He nodded silently.

"You understand how it is," pursued the girl. "Your own terrible grief at the same time tells you how father and mother feel. Isn't life hard?"

"Yes," replied Evans very low. "It's pretty hard."

"I'm *told you have a little* nephew here with you. He must be a great comfort to you now. I wish mama had such an interest, to divert her mind. Her grief is never absent from her; it is *awful.* Yet she has sometimes the most uncanny feeling, she says, as if Redmond were not dead, but *living.* Then the truth comes back and she almost sinks beneath it. They tell that the years bring an anodyne for grief. I don't know; I don't know!"

Still Evans lay silent, with white face averted. In him was the turmoil which the sudden intrusion in his thought of the bereft mother was henceforth to bring. Within his breast truth, like a wild thing seeking freedom, beat against its prison walls.

The young wife rose with a startled glance at Evans's white face.

"Forgive me!" she asked contritely. "You should not hear these things now. It is inexcusable of me. I will go now and will come again. Can I do anything for your little nephew?"

"Oh, no, thank you, ma'am," he answered hastily. "He's with friends."

"Bring him to see me when you are well, won't you?" she urged; and as he mumbled an indistinguishable reply she flashed him a friendly smile and walked quickly down the ward.

It was an hour later. Again soft steps approached his cot. He looked up to behold the nurse approaching with another visitor.

"This is your busy day," she smiled and left him with old Tom Weston.

Their hard hands met in a cordial grip.

"How's Georgie?" asked Evans anxiously.

"Fine! Fine!" assured the old fellow. "An' the gamest little kid ever. He won't stir out o' the house. W'at's the idea, Hen?"

"I told him to stay in," mumbled Evans. "I'm afraid o' sunstroke."

"Sunstroke?" echoed Weston, staring. "Why, he's as healthy as a baby alligator! Ain't ye the old woman about him?"

"Leave him stay in, Tom. It's the way I want it."

Weston looked at him wonderingly.

There was something odd here. Oh, well, his business was his own.

"What about Latterner, Tom? Any word about him?"

"They say he got to Colon an' sailed for the States, Hen. I wish we'd caught him! We'd strung 'im up."

"Leave him go, Tom. He ain't worth the exercise. Leave him hate himself to death."

Weston rose from his chair.

"The kid said something about you taking him north afore long, Hen. Is that right?"

"Yes, Tom; but don't tell no one yet, not till we're gone. The isthmus don't agree with us no more. We're goin' up to little old York."

"I'll be sorry to see ye go, Hen."

There was a ring of regret in the old man's voice.

"I'll be sorry to leave a friend like you have been, Tom. But that seems to be the best thing."

"I must be goin'," said Weston. "The nurse is eyin' me shameful. The kid wants me to bring him to see you here. Shall I?"

"No, Tom!"

There was a sharp note of anxiety renewed in Evans's voice.

"You keep him inside, like I said, an' tell him uncle 'll be there to see him as quick as he can."

"He's yer nephew, eh? He don't look much like you. He's dark, an' when he's washed up he's han'some."

"He's my dead sister's boy. She lived up in northern New York. He looks like she did. She died jes' when I was comin' down here an' left him to me."

"Well, all right, Hen; I'll keep him in. So-long, an' get out as soon as you can. I won't say nothin' to the boys about your leavin'."

Two weeks later Evans, having recovered sufficiently to make traveling safe, resigned his job. He packed his belongings and turned over the hut to the authorities. He skilfully evaded the doctor and his wife, and, accompanied by Tom Weston, took Georgie to Colon, where they bade farewell to good old Tom.

In the hot summer afternoon Evans stood with the boy on the deck of the steamer upon which he had engaged second-class passage for Manhattan town. The boy, somewhat "bleached" by his enforced sojourn within doors, but strong and healthy, chattered like a magpie.

Evans, gaunt of frame and pale of face, had the far look in his blue eyes that comes of the habit of introspection. He looked his last upon the green patch in the distance that was Panama. The Rafael plowed the waves of the Atlantic, northward bound.

CHAPTER III.

HIRED OUT.

ORCHARD Street, of Manhattan's East Side, bore out its name on this stifling August day only in the item of mixed aromas from overflowing fruit-stands. For the rest, there were dirt and squalor and unbounded confusion; noisome smells, frayed humanity lolling in doorways and windows; swarms of children, scuttling, laughing, fighting. The spawn of the tenements disported upon the rough pavement that formed its playground.

The day waned and evening shadows gathered. Through the dingy cañon, cliffed on either side by rickety warrens of frame and brick, stole a cooling breeze, promising the breaking of a week-long heat wave. The shrill clamor rose in crescendo; pic-

turesque colors warred in the sorriest of rainbows; Orchard Street was in its midsummer glory.

Georgie Evans sat upon the battered doorstep of a dingy brick tenement. He was well layered with grime; patches of browned hide showed through tears in his cotton shirt, knickerbockers, and stockings. He was at peace with all the world. With his pocketknife, a valued treasure, he was whittling away at a lath, carving the beginnings of a sword.

Suddenly the crowd of children directly in front of him became wildly agitated, separating with shrill cries and then surging forward. Georgie's keen eyes had caught the cause. Leaping up, he dropped knife and lath and sprang into the press, pushing his way through to the one-sided fight that was in progress.

A lad had Isidor Strunsky, a little boy who lived on the floor above Georgie, down on the pavement, pummeling him.

Isidor's assailant was larger and older than Georgie, but with the young champion's determined rush he thumped over upon his back. Georgie straddled him, pounding with hard fists.

At that interesting moment a cry arose:

"Skiddoo! Beat it! The cops!"

Georgie leaped up as the variegated circle flew in all directions. He galloped back to his doorway. Grasping his lath and knife, which singularly enough had not been stolen, he ran up the three creaking flights of stairs to the pair of rooms he occupied with his foster-father. He was still breathing deep as he heard a familiar tread on the landing. Henry Evans, unshaven and roughly garbed, entered the kitchen.

His quizzical eyes sought Georgie's.

"Scrappin' again, eh?" he asked. "But you ain't marked this time. Lucky for you the cop came. That kid was bigger 'n you."

"'The bigger they are the harder they fall,'" retorted Georgie, using one of Evans's favorite aphorisms. "How'd you know, uncle?"

"I seen it from the street, an' I seen you get up an' run with the others. The cop went by laughin'. G'wan get supper, kid. You're late."

"Oh, I forgot. Smoke your pipe, uncle, an' leave it to me."

Evans jammed fresh tobacco into the bowl of his old brier, watching Georgie clattering about the room. Five years had passed since they had sailed from Panama for New York.

Evans was gray and careworn. The boy of twelve appeared fourteen. His well-knit figure gave promise of future power far above the average. With all his grime and tatters there was the ineradicable stamp of class.

Evans's fortunes in New York had been checkered. Upon reaching there with Georgie he had secured a post as assistant foreman in a knitting mill in the Bronx, and for nearly four years affairs were quite prosperous. True to his plan for Georgie's rearing, he put the boy to work as soon as he could.

Because of the State laws regulating child labor, he had not been able to place Georgie in the mill; thus, through the vigilance of a lynx-eyed truant officer, Georgie had enjoyed the benefits of two years' schooling. Evans accorded this perforce with inward grudging, jealously reflecting that it was more than Danny had received from life.

After Georgie was ten Evans had no difficulty in getting him a job as messenger in the office of the knitting mill. The pair occupied a comfortable three-room suite in a modest apartment. In the vernacular, they "just got by." Evans's pay remained stationary and the boy received three dollars a week.

Occasionally the reflection came to Evans that he ought to look around and try to get a better job, but he recurrently put it off and drifted. Not only did he feel the cautionary fear that walks with mediocrity in the thronged metropolis, but he was fettered by the apathy which attends those who constantly fight a bitter inward battle.

Ten months previously Evans had encountered rough waters. A wave of industrial depression rolled over the country. As always in such crises, New York suffered incalculably. The knitting mill, at best a struggling establishment, closed its doors.

Evans joined the job-hunters. He and Georgie had to leave the comfortable rooms. They lodged where they could. There were times when Evans was hungry, but Georgie never was.

At last, through grace of his remarkable physique, Evans got a steady job as "heavy helper" in an East Side warehouse.

Mere muscle is the cheapest commodity that is bought or sold.

Georgie peddled morning papers. Between them they contrived to pay the rent for the two wretched rooms on Orchard Street and to maintain the humble table.

Georgie noted Evans's silent depression and guessed the reason therefor. He smiled at him.

"Cheer up, uncle!" he called. "We're livin', ain't we? Things 'll get better an' we'll get a couple o' better jobs."

"Sure, kid!" replied Henry, with forced cheerfulness. "I'm jes' a little tired, that's all. Supper 'll put me on my feet."

"I sh'd think you *would* get tired!" the boy answered with an admixture of sympathy and admiration. "I heard little Pat O'Hearn's father tellin' about you; he works there, you know. He says you're a human dray."

Evans smiled bitterly at the unconscious irony as he drew up to the table. However, the nourishing food restored his spirits and he was soon chatting as usual with the boy.

Suddenly Georgie, pouring reminiscences of the crowded day, paused, arrested by a sudden thought. He flung a question across the table.

"The little Strunsky boy's goin' to have a birthday party Monday night, an' he's asked me. He says he's the only one now, 'cause his two little brothers died last year. His mother cried the other night about it, an' she hugged him so hard it hurt him, an' told him he must have a party. It's the first one he's ever had. I ought to have a birthday party; I'm bigger 'n he is. When's my birthday, uncle?"

Evans was caught fairly off his guard. His face went gray; the hand that held his coffee-cup fell to trembling.

"Your birthday, Georgie?" he mumbled. "Well, now, you've got me there. I never heard."

The boy's brown face was shadowed with disappointment.

"Aw, uncle!" he exclaimed. "Ain't that too bad? Wisht you'd asked my mother before she died. She died when I was little, didn't she?"

"Yes."

The man's answer was scarcely distinguishable. It was growing so intolerably hard to lie to the boy!

"An' she asked you to take care of me, an' you allus have," pursued the youngster affectionately. "Funny about mothers. Mrs. Strunsky is big an' fat an' homely, but Isidor loves her."

Evans was silent.

"Seems lonesome without a mother," continued the boy musingly. "'Most all the boys have one. Was my mother pretty, uncle?"

"Yes," Evans answered with an effort. "She was a good-lookin' woman."

"I have the funniest dreams about her," Georgie pursued. "Course I know they're only dreams, 'cause me 'n' you an' her was allus poor. But we are allus in a grand room, me an' her, an' she is all dressed so pretty, bendin' over me, an' she has hair an' eyes like mine. Was her hair an' eyes like mine, uncle?"

"Yes, Georgie; yes!"

"W'at's the matter? Yer coffee too hot?" cried the boy solicitously as Evans spluttered and set down his coffee-cup.

"No, no! The coffee's all right," answered his foster-father, wiping his mouth with his bandanna, his hands trembling. He continued with his dinner while the boy pursued his train of thought.

"Mebbe those things I see in dreams I've seen some time through a window. W'at d'ye think?"

The boy's eyes questioned Evans's.

"Oh, I dunno."

Evans's voice was husky. The situation was intolerable. He rose from the table.

"Done?" he asked.

"Yep!" with alacrity. "The heat's got ye, ain't it, uncle?"

"A little, mebbe."

"Let's go over to Seward Park, uncle. The band's playin' there to-night."

"All right," assented Evans laconically. "It's bakin' up here."

"I'm goin' to take along that lath an' finish that sword. I'm goin' to give it to the little Strunsky boy for his birthday present. Ain't it a hummer to begin with?"

The boy turned over the lath for Evans's inspection. Then he covered the food left on the table.

"Yes; that 'll make a dandy sword," agreed Evans, trying to be genial. All the way to the park he chatted pleasantly with the boy, endeavoring to beat back the recurrent thought that in the game of life he had, to use his own words, bitten off more than he could chew.

They arrived at the park where they

often went these hot summer nights. They found a seat under an electric light. Georgie, intent upon finishing the sword, whittled away industriously.

The band played; myriads of chatting, laughing men and women and boys and girls swarmed past, enjoying the diversion and the cool of the breeze sweeping in from the ocean.

But in spite of himself Evans's mind delved among the shadows conjured by the boy's questions.

His glance assayed the jumble of unkempt humanity, the flotsam and jetsam of the metropolis, swirling about the park. Then his mind's eye visualized quite another picture.

A great white house stood among beautiful vernal surroundings. Broad driveways led to it, hedged by gracious trees; flowers bloomed in spacious gardens. This last picture embraced the birthright of the boy who sat beside him, who through his own act was now hobnobbing with the gamins of the tenement quarter.

Evans mentally cringed. It had not been quite this that he had expected or desired for the boy. Hard times had done it, he made excuse. And who was to blame for hard times but the men "higher up," the Chapples of the world? Thus he reasoned, shirking responsibility.

The turmoil in his mind, the heat, and the taxing physical labor of the day had made him really ill.

"Georgie!" he called to the youngster, who had laid the unfinished sword upon the seat and was talking with a group of boys near by. Georgie ran toward him.

"Uncle, are ye sick? Ye're all white!" he exclaimed, terror in his voice.

"Yes, it's the heat. We'd better go home," mumbled Evans.

He woke next morning in a depth of depression he had never previously known, for it embraced a black doubt of himself. Georgie had risen at five, and after preparing the breakfast had left to sell his papers. Evans drank his coffee and filled his pail, the thoughts of the previous night still mulling in his seething brain.

At this moment there sounded through this quarter of the giant city a fanfare that, unstrung as Evans was, set him cringing. Blatant, barbaric, overwhelming, blared the whistles, the tyrannical summons to toil, blowing for the sweating millions in the Titan town. They screamed and growled and bleated their alarum through the dead summer air, hastening the steps of the hurrying human swarms.

There was something savage in the sound, something sinister. It was as if there were but one privilege beneath the brassy sky, and that to labor in hope or pain, as happened; weary whether under the driving impetus of imperious ambition or the deadening weight of sorrow; to labor till evening and the deep rest of the long night.

With the discordant blasts a spark of enmity kindled in Evans's eyes. It was the bestial voice of the taskmaster, the taskmaster of toil that he had served since childhood for a pallet and a crust, the taskmaster that had slain his boy. He cursed deep in his throat and hurried out of the house.

At six o'clock, after a harrowing day, Evans, dead tired and with every muscle aching, left the warehouse, trudging toward his rooms thirty blocks away. His brow was clouded; his eyes were dull. The depression of the day had endured.

Suddenly behind him there rose a great hue and cry. A man came running toward him like a hunted rabbit; pursuing him was a crowd that already choked the sidewalk and overflowed upon the street. The mob swelled with every instant. The air was filled with angry cries and imprecations. Momentarily the pursuers gained upon the quarry.

The man ran to Evans and clutched him about the waist.

"Helpa me! I no do it! Helpa me!"

There was mad terror in the fugitive's wailing voice, his flaring eyes, his contorted face. The mob raced toward them with shrill clamor.

The white-hot rage against mob vengeance stimulated the jaded Evans. He dropped his pail, seized the man, and flung him bodily into the boarded doorway of a vacant store. He leaped in after him and stood before the wretch with outstretched arms.

"Stop!" he cried.

With the swift interruption the mob halted irresolutely. Evans's face was grim-set; his eyes flamed. The fugitive, a small, poorly dressed Italian, cowered behind him, shivering with fright and moaning unintelligible words.

"You dirty cowards!" challenged Evans, his voice hoarse with passion. "After

one man, eh? You don't get it over, d' ye hear? W'at's the police for?"

A burly, red-faced teamster in the front rank assumed the role of spokesman.

"Who are you?" he demanded with a curse. "We want that man!"

Evans stood on firmly planted feet, his great hands clenched, all weariness forgotten. He stood indomitable, defying their tensed muscles, their angry faces, their curses.

"Come and take him!" he roared.

With their concerted rush he was forced back against the boarded door; the sobbing wretch whom he was protecting groveled about his feet. Desperately he sought for and found firm footing. His iron fists thudded in tremendous blows. Down went the burly teamster with two more men on top of him. A cry went up and the rear guard of the mob scattered as several policemen came running down the street.

Suddenly a burly form came hurtling through the press toward Evans, gained the doorway, and whirled to face the vengeful leaders who were whaling away with frenzied swings.

Evans now had an ally, and a good one. Their bruising defense held the mob.

"Kill the kidnaper!" bellowed a stentorian voice.

"Yes!" blurted the burly teamster as he unsteadily gained his feet and glared at Evans out of one sound eye. "You makin' such a fuss over a dirty bum that tried to steal a kid! He otta be strung up!"

Just then several policemen reached the spot. A sudden weakening seized Evans, even as he dodged out of the way of the bluecoats who would otherwise requisition him as a witness. He lifted his rough hand and wiped away some blood that was trickling down his cheek, as he ran around the corner, mingling with the fleeing mob.

So he had rescued an alleged kidnaper? This was the crime that had roused the blood-lust of the mob. A murderer would have roused no more passionate resentment. A kidnaper! The word pierced his soul like keen steel.

"What's the matter, old man? Pretty nearly did you up, what?"

Evans had stepped mechanically into another doorway. He whirled to face a middle-aged man in a linen motor-coat, the man he had dimly visualized as his ally, fighting by his side in the doorway.

Evans recoiled.

"Chapple!" he cried.

"Evans! Just the man I came to find!" exclaimed his former employer warmly. "But whoever would have thought I'd meet you like this, fighting a gang shoulder to shoulder? Remember the old boy days, Henry? We can go some yet, eh? So you were holding off the whole mob?"

Evans's labored breathing was ample excuse for his silence.

Chapple continued:

"I've been trying to find you for several weeks, Henry. I heard you were around this quarter—it was through a lucky accident—and I've been running you down. I was coming just now from the place where you're employed—they gave me your address — when I saw the excitement. I left my car down the street, thinking it would be safer. Say, Henry, I've been looking you up because I want you to come back."

Into Evans's moody eyes leaped a light strangely speculative.

"You want me back?" he asked.

In his voice was a hint of exultation.

"I sure do!" emphatically replied Chapple. "I've never had a foreman in that weave-room that was your equal." He looked at his watch. "I've an engagement now. When can you run over to Chappleville and see me about it?"

"To-morrow's Saturday," replied Evans. "There's a half-holiday with us summers. How's the afternoon, at your office?"

"Good! Well, so-long! I'll expect you."

With a wave of his hand he hurried away toward his automobile. Evans trudged on toward his rooms, his head bent, thinking hard. Finally his chin lifted while he breathed a deep sigh.

"I'll risk it," he muttered. "I'll bet my head he'd never know him now."

He reached Orchard Street. Picking his way through jostling crowds of children, he looked for Georgie, who ordinarily sat upon the rickety steps of the building awaiting his coming.

The boy was not there. However, as Evans mounted the last flight of stairs which led to their rooms he heard him whistling.

"Hello, uncle!" called Georgie. "You was late, so I started supper. Say, ain't it jim dandy it's cooler to-night? Where's your lunch-pail?"

"Georgie, I have sure got to get me another one," acknowledged Evans, remembering.

And he told the story, with the omission of two details—the alleged crime for which the mob was chasing the Italian, and the arrival of the ally in whose automobile Georgie had ridden at Culebra—and before.

"Say, Georgie," said Evans as they sat at the supper-table a little later, "I've got to be away from the city to-morrow afternoon on business. I'll be back in the evening. Be good, an' be right here when I get back, an' we'll go to a picture show, have a little treat for ourselves. Is it a go?"

"It sure is, uncle," answered the boy. "It 'll be fine to go to a film. Gee! I wish they had got a 'movie' of you punchin' the heads off that mob! Gosh, uncle! How you can fight! I remember the time you licked Latterner, down in Culebra. You told me to stay right there, an' I did, but you can bet your sweet life I looked."

"Oh, I know you looked, all right," laughed Evans. "That's the kid of it."

"Does that cut on your face hurt any, uncle? You otta have a piece of plaster for it."

"No, Georgie; it don't hurt none. You be a good boy to-morrow an' we'll have a spree in the evenin', sure."

There was odd animation in Evans's eye and tone. He fairly breathed unaccustomed eagerness. The dark mood had vanished; his look was now that of a man who sees ahead.

"Oh, I'll be good! You're feelin' better 'n you have been, ain't you? Must be some good luck."

"Maybe. You wash the dishes an' I'll wipe 'em before I smoke."

He quit work at one o'clock the next afternoon and hurried home to don his threadbare best. Georgie was there to act as master of sartorial ceremonies. There was a wistful look in his eyes. He would have liked to accompany Evans, but he did not voice the desire.

Evans's natural kindly domination accounted for that. Georgie had learned early that the man whom he knew as his uncle "ran the ranch."

In the tube, hurtling under the Hudson to New Jersey, Evans considered with knitted brows. Under the lights of the car, whizzing past the gray, wavering shadows, his visage was dark and forbidding. The eyes had again grown haggard. Though freshly shaven, the settled lines of the face revealed the owner's years.

The look of suffering was accentuated. Evans was hurrying to a spot of bitter memories. His mood was that of an acrid determination.

"It's time," he breathed. "I'd ha' thought it might be hurryin' things a little, but I guess not. Oh, yes, Mr. Chapple, I'll come back!"

Having crossed, a trolley-car took him in thirty minutes to Chappleville. He got off at the mills and entered the office. Everybody was away but Chapple himself. Evans had remembered the manufacturer's old habit of continual "grinding" when he suggested the engagement the previous evening.

"I'm glad to see you, Evans!" greeted the head of the Chapple Mills, Incorporated. "Come on in."

He led the way from the general office into his sumptuously appointed private quarters.

"Have a cigar, Henry," he invited, producing a box of the long, black Havanas that Evans remembered. Lighting one himself, he leaned back in his swivel chair and looked across at Evans, who had taken a seat opposite.

"Well?" he inquired, smiling slightly.

The faces of both men in that moment looked tired and old. It is the toll which time extracts from humanity, leaders and rear guard.

"Well," repeated Evans, "I'm here to talk business, like you suggested. I'm a little older, but I guess I'm just as good as I ever was. Anyway, you can try me out."

"I have no fears of that," returned Chapple. "Hank Evans will always be dependable from the ground up. He can run that weave-room the way I want it run, and his word is as good as his bond."

Evans nodded—and inwardly winced.

But his lips closed hard; he had a deep, irrevocable purpose in this summer afternoon call; he would see it through.

Chapple leaned forward, tapping his fingers nervously on the arm of his chair, an old habit when warming to his subject that Evans remembered. In his succeeding crisp words was revealed the dynamic, unequivocal American business man who "puts it over" and has no patience with

assistants who fail to assist in that swift-moving process.

"I've had a dozen men in that job since you left. The last one has been here six months. He's all right, with one exception. He's dead from the head down. I want a live one. You're it."

"Well," Evans reminded him with an ironic smile, "I ain't such a much in little old New York just now, you know. I told you; I'm in a warehouse, hostlerin' pig iron an' such."

"I don't care about that," Chapple flung back impatiently. "I know New York. Unless a man blows in dragging luck by the back hair, he's in Dutch. Town suffers from heredity; you know the Dutch settled it away back.

"Your business is your own and I'm not asking you about it. You may have been a white-wing all these years; I don't care. I want you for my foreman now. Week from Monday morning to start. Pay the same as you had; more later, maybe. We are not raising wages very fast these days; business is on the bum. Will you come?"

"I sure will, Mr. Chapple. Thank you."

"No thanks; I'm the one that owes 'em. I need you. I'll give that gink his notice Monday. If he wants to take a loom I might let him, if he's got a family. It's a hard world for a lunkhead. Oh, how about a house? Will you want one?"

"Yes; I guess I could use it."

"Married?"

"No; but—"

Chapple swept on:

"The one you had is taken—"

"Oh, I wouldn't want that—"

"I have another," Chapple interpolated hastily. "It's better than that one. You can have it at the same rent. Say, did you see the New York morning papers?"

"No; I never thought to get one."

"Look!" grinned Chapple.

He tossed across to Evans a newspaper carrying a prominently featured story of a kidnaper on the East Side the previous evening being saved from death at the hands of an infuriated mob by two gallant unknowns.

"Only thing they need is our pictures," smiled the manufacturer. "My, my! But that brings back the old days! Remember when you and I together licked the whole Donaldson gang? And neither of us had a mark, except that our mothers thought the butcher mistook us for Hamburgs? Those were the happy days!"

"They were all that!" agreed Evans with unction.

Chapple sighed. Suddenly the light died in his face, leaving it again a little gray, a little careworn.

"Well, Henry, a lot of water has run under the wheels since then," he said. "We're getting along, and the dearest objects in life for both of us— Say, old man, I've always wanted to tell you personally when I met you how sorry I was about your boy.

"The news was a shock to me; that and your going away. I knew how it must have floored you. He was such a splendid, manly little fellow! I was sorry then; I am sorry to-day."

"Yes." Evans's tone was mechanical.

The shadow deepened in Chapple's face.

"I got mine, too, you know, Henry. You heard how—I lost—my boy?"

Evans nodded slowly.

"Life's changed for me since then," added Chapple, his tone very low. "I've always had an odd idea that it's our sons hand down the immortality—and now I must get to the end of it alone. But the worst of it was his mother. It almost killed her; she aged in a week, and now she's old —old."

Evans struggled, with closed lips, against a giant, wrestling impulse—an impulse which surged against him with crushing force—an impulse which battered against his iron will while it screamed that he rise before this man that was so mocked by fate and tell the truth.

In that moment the issue was decided. Chapple pulled out his watch.

"Well, I must go. There was an accident this morning and I must try to adjust things."

"An accident?" repeated Evans with dry lips.

"Yes. In the weave-room. Not so very serious." There was wonder absolute in Evans's next words.

"I was speaking to you about that old machinery the morning—that Danny was killed. Ain't it never been fixed?"

"I took it up with the directors right after that and made it strong. I wanted twenty thousand dollars to put the mill in shape, but I couldn't get but five. We made it go as far as we could."

As far as they could!

"An' there ain't been any more spent since then to safeguard the machinery?" asked Evans, his eyes averted.

"Not yet," Chapple answered rather absently. "But there really ought to be. We will be running into a lot of lawsuits. I must take it up with them again."

Lawsuits! Still the question of dividends at Chappleville was paramount to the consideration of human life!

In that instant, even as Chapple rose to move toward a telephone which stood on the table, Evans negotiated a swift mental process of elimination. The lusty impulse to tell Chapple the truth died, throttled by Chapple himself, unknowing. Evans's fixed intention, formed years previously and the reason for his call this summer day, remained, more than ever deadly and irrevocable.

The ghost of his own voice seemed to float to him out of the black past:

"Lay there! You're the substitute for my dead boy! Work as he did; sweat as he did; jump to the whistle like he did! Your father killed my boy, damn him! You're mine now!"

Evans rose, put on his hat, and turned toward the door. Then he whirled to face Chapple, who was just taking up the telephone.

"All right," he said. "I'll be here a week from Monday. An' say! I've got a little nephew with me in New York; he was with me in Panama, an' he ain't afraid o' work. My sister's boy; she died up in northern New York right after Danny was killed, an' she left the kid to me. Could you give him a job?" Chapple considered.

"How old is he? You know the child-labor laws are stricter than they used to be." "Georgie" was large for his age.

"Fifteen," replied his foster-father.

"Sure! Fetch him along; we'll make a place for him in the weave-room," answered Chapple and turned again to the telephone.

Jerome Chapple had employed, as an embryonic weaver, the son and heir he mourned as dead.

CHAPTER IV.

HUNTED.

ABOVE the growling thunder of the looms a voice, keyed to surmount the reverberations, reached Henry Evans's ear. He turned to confront Jerome Chapple.

"Is that the boy you were speaking to me about, Evans?"

Evans gazed for an instant before he could command his voice.

"Yes, that's him," he called back above the clacking din.

It was his second day at his new job.

"He's a fine boy," returned the manufacturer, his tone warm with admiration. "I've been watching him."

The boy turned at that moment, during a respite in the instructions that were being imparted to him by one of the veterans in the great weave-room of the Chapple mills. Brown, frank, superb, his sturdy body incased in a brand-new pair of aggressively blue overalls, he returned the look with no trace of self-consciousness. He smiled at the two men candidly, then crossed over to them.

As Georgie came Evans stood rigid, the breath struggling in his throat. He would have given worlds to send the boy back to the loom. For Chapple's eyes were fixed upon the handsome little face with a curious intentness. Evans's shrinking soul was a seething flame of dread.

Would Chapple recognize his son?

In Evans's own vision, distorted by his sense of guilt and this paralyzing fear, the boy seemed at this moment but an expanded growth of the little creature that he had drawn from the river in Chappleville nine years previously. With the mental exaggeration summoned by this crisis it seemed to him that Chapple would recognize the boy, turn on him, and denounce him and summon the hands to exact reprisal for one of the most atrocious of crimes. Another kidnaper would be hounded—but this one would go down facing them like a man; fighting for his right, for justice to himself. Evans's face grew gray in that terrible moment; his big hand clenched at his side.

Then, as if it were from far away, the boy's clear treble floated to him above the growling roar of the looms; as if from a great distance he beheld Chapple gazing down into the little face—with only kindly interest.

"Oh, uncle, Mr. Cavanaugh says I'm learnin' faster 'n any boy they've had here for years an' years," cried Georgie proudly. "He says there was only one other boy that learned it as fast, an' that was your little boy, Danny, that you've told me somethin' about."

"I'm glad to hear it, Georgie," stumbled Evans, assailed by the brine of another bitter memory. "You jes' keep on—"

He broke off, choking; his grimy hand went involuntarily to his stinging eyes. He felt a touch upon the arm, almost a rough caress, from the hand of Chapple.

Then the mill-owner, relieving the situation, bent lower over his unknown son.

"What's your name, little man?" he called.

"Georgie Evans, sir." The boy was looking earnestly into Chapple's eyes.

"Why!" he cried suddenly, his face flaming with recognition. "I know you now!"

"Why, yes, sonny. I'm Mr. Chapple. Your uncle works for me."

"Oh, sir, I don't mean that. Don't you remember down to Culebra, once, when you was in a automobile with a lady, an' I asked you for a ride? An' you gave me one an' brought me home? Gee, that was fun, that ride!"

"Well, well!" Chapple exclaimed, his eyes wide with surprise. "Of course I remember you. You had a lunch-pail and it rattled. Well, I should say so!"

"Yes, sir; that was me, all right. Say, have ye got a automobile now?"

"Oh, yes," laughed Chapple.

"Georgie," cut in Evans, "I think Cavanaugh wants you now; he's lookin' this way. I guess you'll have to get back on the job."

"Good-by, sir; glad to met you. I'd like to see that automobile," said Georgie to Chapple, and scuttled back to his loom.

"Come on in the office a minute, Evans," requested Chapple. "I want to talk over some things with you."

After he had discussed some arrangements with his new foreman he abruptly reverted to the subject of the boy.

"By George, Evans!" he exclaimed. "That kid of yours sure makes a hit with me. He's a little dandy! There's good stuff in your family all right. But he isn't getting his chance?"

"W'at d' ye mean?"

"How much schooling has he had?"

"I've learned him all I could an' he was in school in New York two years."

"Good as far as it goes. But it ought to be a good deal more. He's a fine boy."

Evans shot him an oblique glance.

"He's had two years; Danny never had any."

"The pace is getting swifter all the time," rejoined Chapple. "Seems a pity when you run across a brain like that not to see it developed. The call is for trained men these days. You're making good wages; why not put him in school?"

Evans's lips closed in obstinacy beyond Chapple's ken.

"He's got to work, same as Danny did. W'at's more, he ain't kickin' any."

With an inward impatience at what he deemed Evans's provincial mulishness, Chapple swung to another tack.

"I don't know when I've seen a youngster that so captivates me," he declared. "What wonderful eyes he has! He reminds me of somebody or other, hanged if I know who!" Evans was silent, inwardly keenly on guard.

"Your dead sister's boy, eh? If he looks anything like her, she must have been a beauty."

"She was a good-looker. She wasn't a blond like me; she was dark."

"Where did she live?"

"Let's see," fumbled Evans. "Up-State, New York; funny name— Oh, yes, Gouverneur. Husband worked in a talc-mill there."

"Leave any other children?"

"Oh, yes. She's got three—no, four."

"*Got?*" echoed Chapple, staring. "I thought you told me she was dead."

"Why, of course she's dead. W'at am I talkin' about? Breakin' into the old game again has got me woozy in the bean. I mean *he's* got 'em, of course."

"Where is he now? What's he done with them?"

"They're—they're in institutions somewhere. I don't know where he is. When my sister went he all got broke to pieces."

Evans passed his hand over his sweating forehead. He felt like a badgered witness upon the stand. He was shaken with inward tremors. Evans's agitation was increased by recognition of the fact that the reason Chapple was so industriously applying the probe was because of his subconscious recognition of his own son.

The agonizing process continued. Jerome Chapple gazed at the floor, frowning intently, chin in hand.

"I wish I could place in my mind the person that kid looks like," he said. "It's some one I know well, I'd bet the mill!"

Evans tried hard to render natural his answering tone.

"Oh, you run across cases like that every day. Lot's o' people look like each other, Mr. Chapple."

"Sure!" acknowledged the mill-owner. "What's the use of bothering about it? It will come to me some time."

Evans writhed mentally.

"He must have been your sister's favorite," pursued Chapple, adhering with uncanny persistence to his subject. "She must have asked you to take care of him, I suppose?"

"Yes, that was it. She was dyin' an' she was concerned more about him than any one else. He was the youngest."

"When did she send for you?"

"Before—no, right after—Danny—was killed. I got the letter the day I was leavin'. She said she was dyin' and to come; there was somethin' she wanted me to do for her."

"Then you didn't go right to Panama?"

"No. I went up there first."

"How old was he?"

"Three."

Chapple calculated in a flash.

"Why, Henry, you're off there! The accident was nine years ago. That would make him twelve now. You told me when I engaged him at your request the other day that he was fifteen."

"What am I talkin' about?" floundered Evans. "I'm fuddled to-day; I'm tryin' to think looms straight. He was six when I got him; sure, he was six."

With a great inward relief, while Chapple's eyes twinkled in sudden laughter, he heard the next question.

"Say, Henry, I haven't caught you in a whopper for policy's sake, have I? You didn't tell me that kid was fifteen just to get him in here, did you?"

"Indeed not, Mr. Chapple; he's fifteen all right. He was six when I got him. I got twisted for a minute on his age."

The manufacturer's eyes continued laughing.

"Well, say, Evans, you're a hot foster-father, you are! You don't seem to know a deuce of a lot about that boy."

Now Evans's eyes fairly met Chapple's; in their depths was an enigmatic expression.

"I know all about him," he replied.

Chapple turned to his desk.

"Ah, what's the difference?" he rejoined. "Here's all this work piled up and I'm wandering along like a census-taker collecting all the facts you don't know about this younker of yours. Can't help it, somehow; the little cuss has got my goat. Beat it out of here, Henry, and let me toil."

Evans walked out under a tug of fresh apprehension. Unknown to himself Jerome Chapple recognized his son. At what moment might not this subconscious knowledge leap to flaming certainty?

A counter reflection flew to reassure his harassed mind. Upon the previous night he had visited the cemetery to view Danny's unmarked grave, over which he intended later to erect a humble stone. In the Chapple lot, near the entrance, he had noticed a splendid monument and read the inscription in the moonlight.

It conveyed a heart-broken tribute to the memory of Redmond Chapple, whose body was supposedly drifting somewhere in the adjacent Atlantic.

After all, what had he, Evans, to fear? The Chapples could look for no miracle to bridge death. Their vision would no longer embrace flesh and blood for the loved one gone; it was turned in vague and wistful hope to the hereafter.

And that thought, too; was it not monstrous? Evans felt faint and weak and sick as he returned to the weave-room. The brutality of his course was a crushing weight. He bowed beneath it; his knees trembled under it.

Entering the great room, he paused, considering. Why not return to Chapple's office and tell the truth, tear the boy from his heart, and be rid of this weight of guilt forever?

His eyes dilated under the stress of the impulse. Then, as if drawn by a shadowy gesture from the unknown, his gaze turned to the far end of the long aisle in which he stood amid the thunder of the looms.

Upon the raw of memory glowed luridly a picture, a terrible tableau of nine years gone. The spot upon which he looked was peopled with a shrieking, sobbing throng of weavers, crowding about the victim of an accident. He pushed at the outer fringe, striving to thrust through, sick with a nameless dread. He heard a name called, the name of the victim, the name of his own son.

Then bull-like he went charging through to kneel by the side of a mangled little figure, to gather it in his arms, to see the blue eyes open in response to his wild appeal that Danny speak to him. They were

misty with pain, those eyes, but infinitely courageous.

Evans reeled where he stood, sick with the vertigo that had assailed him when he had first stepped back into that great room on the previous morning, the room of tragic memories. As then, he again heard the ghostly whisper of nine years before, the whisper of one passing into the final shadow, the whisper of his boy:

"Don't worry about me, dad. I'm all right."

Henry Evans opened eyes that were deep wells of pain. Slowly the color returned to his blanched cheeks. He turned his face from the door leading to the office and walked down the aisle toward the loom on which Georgie was working.

"I got my load," he muttered. "Chapple and his kind laid it on me. He must carry his."

That night, after supper at the hut which he had meagerly furnished, he took Georgie for a walk. The youngster chattered gaily of the progress he was making on his loom. Evans listened sympathetically, visualizing the triumphs of his own boyhood. Even with this weight of guilt pressing upon him, he was able to enter into the varying moods of youth, because throughout the stern years he had retained youth's fresh heart. Because of this two boys had idolized him, and with each of them he had been equally a comrade in infancy and succeeding childhood. Father or foster-father, he was also pal and playmate.

Their way led past the stately Chapple mansion, situated over a mile from the village, back in a winding country road and surrounded by beautiful grounds. A picturesque grove screened from the view of the Chapples the village surrounding the mills which supplied their revenue.

Evans glanced toward the big house, white and imposing in the brilliant moonlight, the veranda deserted. There was something stark in its appearance, too—as if something were gone from it, leaving it desolate. Surrounded by rose-bushes and trellised with green vines, it stood sad amid beauty, like tragedy brooding in a bower.

Deep within Evans, as evidenced by his wistful attitude toward childhood, dwelt the spirit of an untutored poet. He looked toward the lonely house and vaguely sensed its message. His hand fell upon the arm of the chatting boy; its pressure made Georgie wince. He looked up wonderingly, questioningly.

"Kid," said Evans, a little catch in his voice, "there's where Chapple lives, that big house. Ain't it grand? Wouldn't you like to live in it an' ride in autos an' go to school, an' maybe some day own it all yourself, an' the mills, too?"

Georgie stopped and looked intently at the house for a long time. Then he answered in words that struck a chill to Evans's heart and blanched his cheeks:

"Uncle, it's queer, but it seems to me as if I *had* lived in that house once. It's all a part of the dreams I have sometimes. Ain't that funny?"

While an unseen hand seemed clutching at his throat Evans found himself wondering dully at the supreme folly which had lured him back to Chappleville.

CHAPTER V.

THE BIG RESOLVE.

IT was two days later when Evans, on duty in the weave-room just before noon, looked down the long center aisle to see Chapple talking with Georgie at his loom. Just then the manufacturer left the boy and walked up the aisle to Evans.

"I thought you told me that boy was six years old when his mother died and you took him?" he queried.

So it was the quiz again! Evans mentally gathered himself. He was cooler this time; the previous experience had taught him wariness. Besides, common sense told him that Chapple's possible wildest fancies could never grasp the incredible truth.

"Why, he was," he replied without hesitation. "What's the idea, Mr. Chapple?"

"I just stopped by his loom to talk with him, and I asked him about his mother. He said he didn't remember her. Then I asked him about you coming for him, and he did not remember that either. Strange that a six-year-old boy wouldn't retain such details, isn't it?"

It was uncanny, this persistence of Chapple's! It was the prying of his sleepless subconscious suspicion, as if a voice whispered to him continually out of the great mystery. For an instant Evans's soul quaked fearfully. Then he faced Chapple emboldened. His eyes looked straight into his employer's. Between him and the truth lay the pale, accepted pall of death.

"Oh," he answered easily, "that ain't to be wondered at. The poor little chap got a fearful clout on the head from a tumble when he was about two. My sister wrote me about it at the time. He was backward after that an' didn't sense much when I was up there. He stayed that way for about a year after I got him, an' then he seemed to come out of it all of a sudden."

"I see," said Chapple. "A strange case. Well, he didn't lose any time growing a brain after he got started."

He walked on toward his office, leaving Evans with an uncomfortable feeling that he doubted his words. The foreman was shaken with internal perturbation. He was more than ever conscious during these days of a demoralizing process, of the weakening of moral fiber. He had been molded by nature for straight thinking, straight dealing. And this course of his, built upon deceit, entailed so much of lying!

At that moment there ululated the siren of the mill, announcing the noon hour. With the inharmonious howl of a rabid witch it spelled a brief respite from the slavery it symbolized, the slavery of toil that is the heritage of uncounted generations. Evans cringed at the sound, winced as always since the tragedy that had knelled the joy of earlier years.

Since the day that Danny had gone, the scream of whistles had for Evans typified death. If he had deteriorated into a living lie, what brutal force had made him so? He shut his teeth hard and walked down the aisle to eat his lunch with Georgie.

There fell a Saturday in the latter part of October. Georgie had made the best use of his two months in the weave-room and was now in charge of a loom. He was enthusiastic over his new responsibilities and as proud as a little peacock.

The mill, as usual on Saturdays, closed at one o'clock.

Evans's face wore a grave look as he walked home with Georgie from the mill.

"Boy," he said, "I want to take you somewhere along toward evenin'. Tell you what we'll do; we'll take our baths an' rest up a little, an' then put on our best things an' start out before supper."

"Oh, uncle!" cried the boy. "You takin' me to some treat?"

"No, Georgie," replied Evans gently; "not this time. You'll see."

The little fellow looked up into his face and what he saw there held him silent. Extraordinarily susceptible to his foster-father's moods, he was similarly mute when they started out from their home four hours later. Evans walked down the main street with Georgie and stopped at a florist's. There he bought a half-dozen roses.

Georgie watched, saying nothing. He walked with Evans to the bridge and beyond. They proceeded on a picturesque road toward the cemetery upon the hillside. The way was lined with stately trees gorgeous with turning autumnal foliage. The air held a heady tang; above them fleecy white clouds went sailing in an azure sea.

Finally Evans broke the silence.

"You've heard me tell something of my little boy Danny," he said. "You've heard what a smart boy he was in the mill. It's made you proud these last few weeks to hear men say that you an' him was the smartest boys that ever worked in the Chapple mills."

"Yes, uncle."

"You remember Danny—was killed—in them mills. In the weave-room where you work. He got caught in the gearin'. I was careful to get you on a loom that's protected; a lot of 'em ain't. None of 'em was then."

"I know, uncle. An' I'm always careful goin' around, like you've told me so often."

"I've noticed you are, an' I'm glad. Danny tried to be careful, too. Well, down in Culebra, do you remember I gave you a package o' things to play with one day, 'cause I made you stay in? I never expected to give 'em to any other little boy. They was Danny's that he used to play with."

"I've got 'em all yet, uncle," exclaimed the boy eagerly. "I never lost one of 'em."

Evans's hand fell gently upon the sinewy shoulder as they neared the cemetery gate.

"God bless you, sonny!" he answered fervently. "I gave 'em to you because you'd taken his place, away down deep inside o' me. An' to-day I'm takin' you to where—he's sleepin'. Take these flowers, Georgie; I want you to lay 'em over him. I've always brought 'em alone before, every week."

He thrust the roses into the boy's hand and pursued the path to the tiny green mound where the dust that had been Danny was lying. They stood there for a moment under the boughs of a brave oak. A breeze

whispered in the branches; there came floating down several varicolored leaves to join their fellows scattered upon the ground, done with summer's destiny.

Evans stood with face as rigid as marble, looking down at the grave upon which lay several withered flowers. His wound of years before bled as freely as if freshly inflicted. Would it ever scarify?

"Shall we go now, uncle?" asked the boy.

He was standing near by after having reverently laid the roses upon Danny's grave.

Henry Evans nodded; he could not trust himself to speak. They walked together down the path which led to the egress.

They had nearly reached the gates when Georgie's awed whisper arrested Evans's attention.

"Look, uncle, over there. There's a lady at that big monument cryin' awful. Do you s'pose she's lost a little boy, too?"

Evans's gaze followed the boy's gesture.

For him on that gruesome day there had been reserved a fresh torture of conscience.

Beside the stately memorial standing in the Chapple lot knelt a woman whose profile was in plain view of the watching pair, a woman with gray hair and with face buried in her hands.

Witnessing her silent grief stood the son she mourned as dead and the man whose deed and word had willed it so.

"Come, Georgie; come!"

The boy looked up in quick amaze at Evans's agitated tone, hardly distinguishable. Grasping Georgie's arm, he hurried the boy to the gates and out of the cemetery. Standing by the road was the Chapple automobile. Upon the front seat was a chauffeur whom Evans instantly recognized.

He was the man who had leaped and cheated death upon the night when the motor-car containing Redmond Chapple and himself had plunged from the near-by open drawbridge into the river.

Evans trembled as he walked by with the boy. The chauffeur gave them an idle glance that shifted up the road. Evans walked down the highway at a pace which set the youngster to a dog-trot.

"Don't talk, Georgie!" he commanded irritably a few minutes later. "I don't get you. I'm thinkin'; lemme be!"

He thought through the long hours of the night while the boy lay peacefully sleeping on the cot beside his bed; slept and dreamed the white dreams of childhood while the soul of the man writhed in torment. In the darkness he saw again and again an accusing shape; again and again he closed his eyes, and the damning apparition burned through the curtaining lids. The sad eyes, the ashy cheeks, condemned him.

Gray-haired, bowed, bereft, she bent toward him out of the black night, this mother, her fantom voice demanding that he recall her living son from the realms of shades.

He battled silently, as in a nightmare, setting against the apparition that other, that of his boy murdered through gross neglect in the Chapple mills. Again and again he recalled the image of those last moments, when he had sat by the side of his dying son, had watched the boy breathe his last.

It was of no use. Continually there recurred, overwhelming alike his defense and his love for the boy of his adoption, this fresher image, the image of the mother despoiled, demanding what was the birthright of the world, the privilege of her own.

The darkness lightened; there came the gray of the dawn. Through the open window streamed a chill light. Wearily Evans stirred upon his bed, stirred like a man grown old.

Leaning upon an elbow, he looked at the face of the boy, sleeping upon the cot. It was an indescribable look—for it was a look of renunciation.

Stretched upon the torturing rack of conscience, Evans had finally capitulated.

CHAPTER VI.

THE BREAK.

THE boy wakened to find Evans staring at him. The wistful look drew from Georgie the response of his ready love. The dark eyes, with their long, curling lashes, danced merrily. A whimsical smile curved the corners of the finely modeled mouth.

Georgie bounded out of bed, ready as Danny had been in the old days for an interval of Sunday-morning play before they should rise.

"Look out, uncle, I'm a comin'!" he shouted, and with a joyous whoop he leaped

upon Evans, playfully mauling him amid boyish laughter.

Mechanically Evans fought back, as was expected of him, forcing his dry lips to smile, averting his eyes that the child might not behold the pain in them. As he writhed in the foolery they had both loved his soul cried out in agony that it was the last time. The last time—and his life was twice bereft.

At breakfast he was silent till they were nearly ready to rise. Then he spoke with an effort.

"We'll walk over to Chapple's house this afternoon, Georgie, me an' you."

"Oh, good!" cried the boy, with an ecstatic glance out through the window at the azure sky and bright sunshine of an ideal autumn day. "Goin' to see him on business?"

"Yes," Evans told him low.

During the morning he sat in the kitchen and smoked, his wistful eyes following the boy as the latter moved about in various employments, or sat and read a tale of adventure Evans had recently bought him.

The foster-father's mind now worked dully, mechanically. It was benumbed by the acute suffering of the previous night. He calmly weighed the possible consequences of his disclosure to Chapple. He knew that the penalty exacted for kidnaping was bitter, entailing a long term behind the bars. But he was prepared to pay it, if required.

He looked out at the sunlit beauty of the world. It might be that for many coming years, perhaps for the rest of his life, he would view it only in patches infinitely remote because seen from within the shadow of gray imprisoning walls.

In this possibility his spirit, at last mercifully numbed after torture long endured, acquiesced with apathy. He had borne much, but the scene in the cemetery the previous afternoon had rent his iron will.

Now, overwhelming all else in his mind, was the compelling image of the mother he had robbed, the woman who mourned as dead her living son.

Again Evans cringed as he had cringed when that son had directed his gaze to the kneeling, weeping woman. Let them throw him into prison to rot and die there; she should have her son!

His haggard eyes turned to the clock.

"Nearly one," he said. "Georgie, are you hungry?"

"A little," answered the boy.

"Get yourself some lunch. I don't want anything now. We'll have dinner—when—we get back."

Presently they were walking out on the winding country road that led to Chapple's mansion. The carpet of grass, still green, which fringed the roadway, contrasted oddly with the varicolored glories amid the turning leafage of stately trees. Above their heads sounded the harsh honks of a flock of geese winging to the south.

Georgie, a stalwart little figure in his neat blue coat and knickerbockers, with his shoes freshly shined by his own hands that morning, walked by Evans's side, talking gaily. His foster-father, busy with his own thoughts, could not have told what he said.

They reached the great white house and turned into the driveway bordered with stately poplar-trees. Evans beheld Jerome Chapple walking bareheaded up and down in the veranda, alone. An icy hand seemed to clutch his heart. He walked on, unfaltering.

"Georgie," he said—and in this crisis his tone was wholly steady, even impersonal—"I've got to see Mr. Chapple on an important matter. You walk around the lawn; look at the gardens if you want to, till I call you."

Obediently Georgie left him and strolled across the lawns toward the gardens. At their edge he descried the figure of an old man, clad in rusty black frock coat and trousers, a wide-brimmed, soft, black hat upon his head, bending over a bed of chrysanthemums.

It was Sunday, to be sure, but old MacDougall, who had served as the Chapples' gardener for nearly twenty years, had a soul. He loved and tended his flowers like children—and for one's children there is no forgetting nor "resting on the seventh day."

The boy paused and stood watching the old man for a moment, sturdy legs planted well apart, hands thrust in his coat-pockets. The blue of the sky vied with that of the strip of ocean visible from this gentle elevation. A crisp breeze blew softly.

"Hello, mister!" called Georgie.

The old man straightened and turned. Georgie looked into shrewd, puckered gray eyes on either side of a nose which he mentally decided was like an eagle's. The

eyes smiled; so did the clean-shaven mouth. The lower part of the wrinkled face was fringed with sparse gray whiskers.

"Why, hello, little feller!" responded the gardener. "Who might you be, now?"

He had a squeaky voice with a pronounced Scotch burr that the boy found fascinating.

"I'm Georgie Evans, sir," replied the youngster. "I work in the weave-room in the mills. My uncle's foreman there. We have been there two months."

"Evans," repeated MacDougall musingly. "Say, boy, does your uncle happen to be Henry Evans, that used to be at the mill years ago, and 's jus' come back?"

"That's him!" answered Georgie eagerly. "He's up on the veranda now, talking with Mr. Chapple. He came to see him on business an' he told me to walk around."

MacDougall shaded his eyes with his hand and peered toward the veranda.

"Why, that's so!" he answered. "I'd know Evans anywhere."

He gazed a moment at the two men; a woman stood beside them. Then MacDougall turned again toward Georgie.

"Evans had a fine little boy once; he worked in the mills an' got killed there," he said. "Let's see; that must ha' been nine or ten year ago."

"Yes, I know. Danny."

The gardener was looking at him with a puzzled expression.

"You're his nevvy, eh? Where'd you come from, sonny?"

"My mother she died up in northern New York an' asked my uncle to take care of me, an' he has."

"Funny!" commented the old man. "You remind me of some one, I dunno who. There useter be a mighty nice little feller up in that house, too—Mr. Chapple's little boy. He's somewhere out there."

His gesture indicated the strip of blue sea.

"That so?" asked Georgie. "Got drowneded, eh?"

"Yes. It was jus' the time Danny Evans was killed. There was an open draw an' the Chapple automobile ran off into the river. The chauffeur an' the poor little kid, Redmond, was in it. The chauffeur was saved, but they never found Redmond's body. It was carried out to sea."

"Wa'n't that too bad?" rejoined Georgie, bending over the chrysanthemums.

The old gardener continued to regard him earnestly.

"Pick one or two, if you want 'em," he invited. "Now I know who you remind me of! It's your eyes; they might be Redmond Chapple's!"

He sighed and turned again to the inspection of his flowers.

"Ah, well, we come and go," he said. "In a few years we'll all be restin'."

Meanwhile, Evans had proceeded to the veranda in which Jerome Chapple was pacing. The manufacturer turned at his foreman's step. His face was lined and care-worn.

"Hello, Evans!" he called cordially, a smile lightening his visage. "Something come up, eh? Want to talk with me?"

"Yes, Mr. Chapple; somethin' I want to go into."

Evans's tone was clear and even; almost cold. His soul in that instant was adamant.

"I see you brought your boy with you," observed his employer, his glance turning to Georgie, who was walking across the lawn toward the old gardener.

"Yes. I told him to walk around an' amuse himself till I called him."

A shadow crossed Chapple's face.

"Quite right. I see he's headed for MacDougall. He'll be in good hands. The old fellow likes little chaps. He was regular 'chums' with my boy."

Evans was silent, rallying his will for his story. Chapple gazed out toward the distant line of sea and sky with the look of one who visualizes the past. Evans cast one glance toward the boy, now talking with the gardener, then looked back toward Chapple.

The manufacturer's sad eyes reverted to him. He moved his shoulders as if easing a load.

"Life dealt us both an awful wallop, old man," he said. "We had and we lost. Some say it's better to lose than never to have; I don't know. It depends. What was it you wanted to talk to me about?"

In that instant slow, lagging steps sounded near them. They turned to behold a woman who had come unobserved up the driveway.

"Why, Mrs. Conrad! What's the matter?"

Jerome Chapple's voice was startled. There was ample reason. In the hollow eyes and haggard features of the poorly dressed visitor there was expressed tragedy. Evans stared at her; she was a stranger, but the name brought a memory of recent significance.

"Take this chair," urged Chapple. "You look ill."

"I'll stay here an' tell you w'at I came for. Joe's dead."

"Dead?" echoed Chapple, his tone horrified, his face paling. "Why, I thought he was getting well! The doctors said—"

The woman's throat was torn with a dry sob, at once repressed.

"Thought won't bring him back, Mr. Chapple. He was a good man to me—an' now I'm left alone with four children, an' I ain't got any money. You was so kind when he was hurt—I thought I'd come to you."

Chapple's ready hand was searching his pocket. Brow and eyes were clouded with concern.

"When did it happen, Mrs. Conrad? It's a shock to me."

"This mornin', sir. He'd been sinkin' since midnight. The doctors said it was worse 'n they knowed about at first; he was all crushed inside."

Chapple thrust a greenback into her palm. His free hand sympathetically patted her shoulder.

"This will tide you over, Mrs. Conrad," he said, "and I'll take care of the funeral expenses and look out for you. I am deeply sorry; Joe was a fine man. You used to weave; I'll get you back on the looms—"

"There's the children, Mr. Chapple. The oldest is only ten," she interrupted.

Her firm voice had begun to quiver; her eyes were filling now.

"That *does* make it hard," acknowledged Chapple, for the moment nonplused. "Well, I'll be able to help you along; you can get some one to stay with them part time while you're breaking in the oldest; we'll manage somehow. Don't worry, Mrs. Conrad; I know it's hard, fearfully hard, but I'll see you through. And I'll stop in to see what I can do. There—there!"

His hand sympathetically pressed the woman's toil-worn palm while she bent, her thin form shaking with sobs as her grief found belated relief in tears.

"God bless you, Mr. Chapple!" she cried brokenly. "Whatever would I ha' done if it hadn't been for you? I didn't know which way to turn—when Joe went. I'll pray for you, sir."

The manufacturer watched her pass weeping down the driveway.

"Poor woman!" he muttered. Then he turned to Evans.

"What was it you wanted to talk about, Henry?" he asked.

"About Joe Conrad an' his widow!"

The low, tense tone riveted Chapple's attention. He shot a glance at Evans's face, and his eyes widened. The foreman's visage was as grim as if carved in granite, but the eyes burned with a sinister glow.

"I don't understand you. What possible connection has your call with that man's death? Did you come here for that?"

"No, I didn't come for that. It don't matter now what I come for. I'll talk about *that!*"

His air was that of a man holding himself under severe restraint. The strong spirit of Chapple leaped to the challenge. His lips hardened to a straight line; into his eyes crept the glint of steel.

"Explain yourself!" he demanded.

By a mighty effort Evans retained calm, though his big hands clenched and unclenched at his sides.

"Listen here!" he said. "This Conrad is the man that was hurt jes' before I come here, ain't he? He was busted at one o' your unprotected looms, an' he's been lingerin' along till now?"

Chapple nodded, waiting. He was now, as always in crises, a man of ice, one of those men who crash through to the material rewards of this world.

Evans's speech dropped to a low snarl, like the muttering of some dread creature of the jungle. He stepped a pace nearer Chapple.

"Now Conrad's dead, an' his widow comes to you as her friend, an' you give her money an' send her away with a pat on the back. An' you're goin' to let her slave on yer looms, an' her poor little brats can worry along the best they can till they are old enough to go on 'em, too! An' she, the poor fool, is goin' to *pray* for you!"

Chapple's strong hands twisted in his pockets. His face paled; his eyes blazed into Evans's own. Two men of rare physical power, of indomitable spirit, of

arrogant nature, they faced each other upon a common elemental ground of antagonism.

The manufacturer's words, carefully chosen as he held under his mounting rage, came with the sting of a whip:

"If you came here lugging a propaganda for the down-trodden, Evans, you'd better get off it. Who made you the champion of the hands? I guess they can tell their own troubles. It's the old idea of 'hate the boss.' Too bad you don't own the mill. You might have done it; we started together. Now, if you came here to insult me, you leave, and leave quick!"

Evans's answering tone was raised a trifle.

"If tellin' you the truth is insultin' you, Chapple, you'll hear it. Then I'll leave, fast enough. That woman 'll pray for you! Well, you need it. You murdered her husband jes' as you murdered my boy!"

"Why, you're crazy—"

Suddenly Evans's tone fell flat, grave, invested with a judicial quality.

"Maybe not you, personally, Chapple, but the company you head; it murdered 'em both. My boy was killed through that machinery bein' unprotected. I spoke to you about it that very mornin' in the weave-room; you told me, 'The directors wouldn't stand for it.'

"After he was killed what did you do? You needed twenty thousand dollars to put that machinery in shape, an' the directors allowed you five. You made it go 'as far as you could.'

"You fellows have put dividends above human life, an' one human life is worth so much more than all the thousands it 'd take to guard it that only God Almighty could do the countin'. So you saved your money, you an' your directors, an' here's another hand dead on the looms!"

At last Chapple, gray and trembling, had no words. Evans swept on, a new terrible note in his voice. It was born of the overwhelming memory of his own tragedy. His bitter speech bore in upon the raw of Chapple's heart.

"Let me tell you something. I lost my boy through the injustice of capital that wouldn't spend a dollar to safeguard human life. You an' your directors was to blame. But there's a God in Israel; He passes it on!

"There was a bridge-tender down yonder on a summer evenin' nine years ago. He took the orders of the 'men higher up,' like me an' millions of others. He worked through a sixteen-hour stretch. He went to sleep on the job; he left the draw open. My boy's dead; *where's your boy now?*"

The question came in a hissing whisper. Evans's eyes were lurid with a cruel hate; under the spur of rage and agony reborn he was merciless.

He gloated as Chapple stood wordless, shuddering as if he had received a mortal blow.

"I quit my job, Chapple, right now!" concluded Evans.

The manufacturer mastered himself by a supreme effort.

"Good!" he answered. "You'd better leave here, quick!"

Evans tramped down the veranda steps. His sullen gaze turned toward the gardens.

"Georgie!" he called.

At the entrance to the grounds he looked back. Chapple stood in the veranda watching them. Evans looked down at Chapple's son, the son he had brought there to restore to his father—and his mother.

But in this moment Evans's spirit was a monster that leered. Engulfing him was a wave of bitter hatred for the Chapples of the world.

"He can go to thunder!" Evans muttered as they stepped out upon the road. "He'll never see him again!"

CHAPTER VII.

"VENGEANCE IS MINE!"

HENRY EVANS departed from Chappleville with the boy the next day. There was hate in his heart; he raged silently against society, against conditions, against Providence. From now on it was himself and the boy against the world.

Herein lay Evans's weakness. His iron strength was rendered negative through misdirection. He was a critic rather than a builder of a plan. As yet his mind was not constructive. He could perceive and weigh the injustice of life, but his creative faculty was not yet developed to form an upbuilding campaign for the correction of evils.

So he went with Georgie back to the squalor, the grime, the hopelessness of

Orchard Street in the East Side of New York. He reentered the sordid scramble for existence. The wretched rooms they had inhabited were taken by other unfortunates. They found two others, equally ill-favored.

Evans's place at the warehouse was filled. He resumed the weary trudging in search of work. Georgie sold papers and ran errands. For several days his foster-father experienced the shame of subsisting on the boy's meager earnings.

Just before they were to be evicted for not paying the rent for their miserable quarters Evans found another job. He took his place as a laborer in a street-construction gang. The wolf had been again rebuffed, but throughout the winter the beast remained sniffing about their door.

It was a hard winter. Evans's work was not steady; there were many bitter days of idleness. In this welter of want, in the teeming warrens of the metropolis, the asset of his splendid muscles was one shared by countless others equally as needy. The approach of spring found him discouraged, morose, always with the enemy that was himself tearing at his vitals.

There were times when Evans watched Georgie, bravely busy with his tasks, that life seemed unendurable. Thanks to his splendid constitution, and the fact that in their vicissitudes Evans invariably placed the boy's comfort ahead of his own, Georgie's health did not suffer.

He pursued his days manfully, cheerfully, uncomplainingly. This fact was an added irony in the mind of the man whose act had robbed the boy of his birthright. Evans suffered incalculable tortures, but shut his teeth and plodded doggedly on while the inward storm raged.

It was early in April when there came to Evans a gleam that set him dreaming, for it indicated a way out of darkness. He was reading a newspaper one evening when his eyes encountered an advertisement. It offered for rental a small truck-farm on Long Island, distant some thirty miles from New York.

Evans dropped the paper and stared out of the dingy window. Was it months or years since his spirit had been possessed by a lifting dream? But it had come to him now, and he reveled in it.

The next day was Sunday. He turned to Georgie.

"Kid," he said, "I'm goin' to run out on Long Island in the mornin'. I'll be back toward evenin' at the latest."

"Some luck, uncle?" asked the boy.

"I hope so; can't tell till I see," answered Evans.

He was tearing the advertisement from the paper.

It was after ten o'clock when he arrived at the home of the owner, a prosperous farmer named Ezra Coombs, who lived next door to the smaller place. The family had gone to church. He remained till they returned, which they did in a large touring-car.

Evans stated his case to the farmer, a portly, gray-bearded man with shrewd eyes.

"I'll be open an' above board with ye," he concluded with a slight smile. "Of course I'd have to be, anyway. You're a business man, an' for that very reason I expect I'm a fool to come.

"You've told me the rent in your ad., and you want half of it in advance. I seen the farm on the way over; the rent's reasonable, all right. Me an' my boy could work the place for a nice profit.

"But I ain't got that rent money. All I could pay you, as an earnest of the deal, is twenty-five dollars. Me an' the boy would dig in, with some odd jobs around at the start for our own livin', but I'd guarantee we'd meet that by fall."

"What do you know about farmin'?" asked the owner, who had been watching him keenly.

"I was brought up on one."

"Twenty-five dollars in advance is a kind of a joke," commented Ezra Coombs.

Evans turned away, sick at heart. For the lack of a few sordid dollars he must go back to gloom and hopelessness.

"Wait a minute," called Coombs.

Evans remained in suspense while he considered.

"There's several men applied since I put in that ad.," finally said the farmer. "I like your looks better 'n any of 'em. I think you'd make a go of it, an it 'd turn out a good thing for both of us. I'll take you up, Mr. Evans. Like to have you stay to dinner with us."

Seated in the smoker of a train, proceeding back to New York in the afternoon, Evans's eyes glowed with hope for the future, with returning faith in his

fellow men. He had taken the trip with no definite expectation that he would be successful. Coombs's acceptance of his personality in lieu of cash reestablished to an amazing degree his belief in himself.

Early in the following week he removed with Georgie to the truck-farm. Immediately the boy was wild with delight over their new environment. The air of the island was redolent of peace and health. Turbulent, fetid, congested Orchard Street was a spent, unsavory dream.

The growing boy threw himself with enthusiasm into the duties of the new life. He worked like a little Trojan, shoulder to shoulder with his foster-father. Evans found it no easy task to lead him to needed hours of diversion suited to his years.

Back in the vocation of his early days, close to the soil he had always loved, Evans reveled that summer in a return alike of incentive and of energy. He toiled early and late, interspersing his labors on the truck-farm with odd jobs for neighboring farmers which yielded a good living for the boy and himself.

For them both the deep tan lent by the kindly sun replaced the pallor of the city; their appetites were prodigious; their ambition for each day's duties was measureless. And in the nights Evans slept the dreamless sleep of the child stretched upon the cot beside his bed.

There were plenty of evidences during those busy summer months that Evans, after his years of drifting, had begun to find himself. In the beauty and fragrance of his new surroundings there were at once balm and inspiration. An indication most significant of the process was the passion for cleanliness that Evans developed through the summer.

He and Georgie kept the interior of their cottage spick and span, and every week end saw a scrubwoman there to have the place "fit for Sunday," as Evans expressed it. Hands and arms and faces were rigorously scrubbed before each meal, and Georgie soon learned that it was useless to protest against the washtub which Evans now dragged into the middle of the kitchen floor every night for them to "take turns."

"Our work's dirty," he told the boy on one occasion, "but water's the cheapest thing there is, an' soap ain't much more. What's yer kick? I ain't askin' you to do somethin' I ain't doin' myself."

Which canny catering to the "play-fair" instincts of boyhood turned the trick. Thereafter Georgie, jealous of his rights, did not demur, content to have a companion in misery.

Through the sunlit, favoring months Evans was obsessed by an indefatigable impulse. The autumn found his dreams realized. His yield had been abundant, and good prices prevailed. He met the amount outstanding on his rent and banked a liberal sum.

Nature, the great mother, had welcomed a prodigal son returned. In his eyes gleamed the steady light of resurrected purpose. His face was set a new way—the way of the kindly, fruitful soil.

Amid the rich, elemental aroma of the soil from which he sprang, the man was undergoing the process of regeneration.

Evans, his future assured by will of steady brain and hand, settled down to the simple duties attending the waiting through the white winter. He thought early of a duty toward the boy, a duty acknowledged now. There was a schoolhouse near by; he arranged that Georgie should regularly attend it.

Now, during the bleak days when he sat alone smoking in his tiny kitchen, he became more and more acutely sensible of a disturbing influence. It was one that had returned because he now had time to think, and it was inextricably woven with the regenerative fabric of his new life. It came in the form of a question that knocked quietly, now more insistently, at the door of his soul.

At first he was as a man who places his fingers at his ears to shut out a sound. But as the days passed he dropped his hands and found himself listening.

The winter waxed and waned. The sun swung higher, melting the clinging snows mantling the level, and girdling the gentle slopes of the little rolling hills. Overhead sounded the harsh cries of geese and ducks, winging north. The mourning winds gave place to breezes that murmured softly of peace and plenty to come. The air held the indescribable foretaste of germinating spring.

There came a night when Evans sat in his little kitchen, with folded arms. From the near-by bedroom came rhythmic breathing. Georgie lay there sleeping.

A memory drifted through Evans's mind. So he had sometimes sat, on distant

nights, in the kitchen of his hut at Chappleville and smiled to hear Danny breathing as he lay asleep in the adjacent room. And to-night Evans smiled again.

A lamp glowed upon the table. He rose and extinguished it. He moved his chair close to the window and sat looking out at the glory of the world, lighted by a full moon.

The question knocked at the closed door of his soul; knocked confidently now, after a siege of years.

The man opened wide the door and the question entered and held grave communion with his soul.

For hours Evans sat there, white and rigid, fighting his silent battle. The glow of a May dawn was born before he rose from his chair.

He stood for a moment softly shuffling his feet, waving numbed arms to restore circulation, for he had not stirred in hours. With a firm step he left the house to feed his chickens and perform other simple tasks. Reentering the cottage, he went to the telephone which he had installed the previous autumn.

"Hello!" he called. "This Mr. Coombs? This is Evans. I'm called away. If I'm not back by mornin', will you send a man to look after things? If I'm not back by then, I don't know when I will be, an' I'll write. Sudden? Oh, yes, kind o'. Thanks. Good-by!"

He looked about the room, the abode of his new life, as one looks in parting upon the face of a dear friend that may not be seen again. Then he passed into the bedroom.

He bent above the sleeping boy. All the big soul of him was in his face. His rough hand, with a motion like a mother's, caressed the child's brow. His tone was a brooding benediction.

"Little scout!" he called. "Little scout, wake up! Mornin' has come!"

"Evans! By the great Lord Harry, I knew you'd return!"

Henry Evans, standing in the veranda of his former employer's mansion at Chappleville, stared in surprise at the unexpected cordiality of this greeting. Jerome Chapple's hand was wringing his own, Chapple's eyes were smiling into his. Evans had heard the rush of footsteps down the hall following his sending in his name by the butler, and had braced himself to withstand anger which he did not doubt endured from their last parting. For this reception, the exact opposite of that anticipated, he was hardly prepared.

"You knew I'd come, Mr. Chapple?" he questioned. "Why, did you expect me?"

It was Chapple's turn to stare.

"Why, Henry, haven't you seen the advertisement?"

"What advertisement?"

"I've been running personals in all the New York papers for two months, asking you to communicate with or call on me. I have been using a fine-tooth comb trying to find you."

"I haven't seen one of 'em."

"Then you came back of your own accord?"

"Sure, Mr. Chapple. I'm running a truck-farm out on Long Island. Me an' the boy came in this mornin' an' caught the tube an' came right over. I went to the office; you always used to hang out there Saturday afternoons. The watchman told me you was home. The boy is down by them rose-bushes with your gardener—"

"So you came back on your own hook?" eagerly interrupted Chapple. "That makes it all the better—"

"No—" began Evans; but Chapple swept on unheeding.

"Henry, there's only one man can head that weave-room, and that's you. I wanted to get hold of you to offer you that job again, at increased pay. I hold a grudge, you think? Why, man, that's what I've been moving heaven and earth to get hold of you again for; not only to get you back, but to tell you that you were right!"

Astounded, Evans gazed at him, while Chapple enjoyed the other's wonderment.

"Henry," continued the manufacturer, voice and eyes now grave, "I wanted to tell you that the things you told me, in this veranda, on that fall day when we last met, were right, and I take pleasure here and now in acknowledging it. I fought against them for a long time, but I gave in. And let me tell you what you and yours have done, and you'll realize that the little chap that's sleeping on the hill did not live and die in vain."

Silently Evans listened with the friendly pressure of Chapple's hand upon his shoulder.

"I lashed the directors to action. I did it the day after a night in which I suffered the torments of the damned, for it had

come to me that, as you said, we were *murderers*. The mills are being fully equipped with full safeguards for machinery. We have raised the wages of all hands. There has been a mass meeting of employees to voice their gratification. We are improving the settlement and public buildings.

" As for the question of dividends, there is a spirit now on the part of the operatives that assures a bigger margin of earnings than ever. We found the way, old man, and through the rough handling that you gave me.

" And that's what I wanted to say to you. Now when will you be ready to come back here to work?"

" Mr. Chapple," slowly replied Evans, " I'm mighty glad to hear all this, an' it's a big thought to me that the change has all come from—from Danny. But I can't never come back."

" You can't come back?" repeated Chapple. " Henry, I've *got* to have you. The pay—"

" It ain't a question of pay. I brought the boy with me to-day to—"

Evans's gaze had turned to Georgie, standing with old MacDougall by the rose-bushes, his back turned to them. Chapple's eyes followed Evans's. Into them leaped the old wistful look, the look Evans remembered they had worn when Chapple had talked to the boy in his own mills.

" How he's grown!" exclaimed Chapple. " Such a boy as mine would have been had he lived—or yours."

" Yes," replied Evans.

" What's he been doing?"

Chapple continued to watch Georgie, all the old fascination renewed.

" Helpin' me on the truck-farm. I sent him to school this last winter."

Chapple whirled about. His face was alive with a great hunger.

" Evans," he said, his voice a concentrated appeal, " that's a splendid boy. Mind, old man, I don't say it to hurt you, but—you can't give that boy his chance. Lord love you, I know you're making a *man* of him, but he ought to have it *all*—college and the whole thing. What was good enough for us isn't enough for the coming generation. With opportunity—well, you'd be proud of him, Henry. Of course, you're proud of him now, and justly, but you know what I mean.

" I'll tell you what; why not come back here, you and the boy, and you take your foremanship and let me take the boy? I'll bring him up as I would have brought up my own; I'll train him; I'll legally adopt him; I'll make him my heir."

He waited, oddly agitated, while Evans faced him. In Henry's eye was a strange light.

" Chapple, that's what I came here to see you about to-day—about that boy."

" Yes? " Wonderment was in the mill-owner's tone.

" I'm thinking of the truth of that old sayin', ' Blood is thicker 'n water.' You've jes' proved it. But never mind that now. You've told me things about the mill that promise humanity 'll be better off there. If you get that boy, will you bring him up to serve humanity?"

" I will!" The manufacturer's voice attested a solemn covenant.

" I believe you," said Evans simply. " Well, Chapple, you get the boy. As for me, it's up to you whether I go back to my farm or go to prison."

" What do you mean?"

Chapple stood rigid; his face paled. It was as if an incredible truth, long dormant in his subconsciousness, were trying to break into the light of divining reason. Evans's glowing eyes held his own.

" The penalty for kidnapin' runs from ten years to fifty. It's up to you; you can hand me over if you like, an' I'll go without a word. I done what I done because I thought it was justice to me, because injustice killed my boy.

" So I paid it back with w'at I know now was added injustice. But you can't pay back them things; God takes care of 'em. So I've come to make a wrong right, an' I'll take the consequences."

" Evans!" cried Chapple, his voice shaking. " What do you mean?"

Still Evans's steady stare held his own; Chapple looked into a face that seemed carved from granite.

" Listen!" continued Henry. " You've looked into the eyes of the boy you knowed as Georgie Evans; you've spoke of 'em. You've wondered who he reminded you of. Think now, Chapple, think hard, about his eyes. What eyes do they remind you of—eyes you look into every day?"

Chapple's head was bent for a moment; then he fell to trembling violently. He stared in amaze, as if in a waking dream, into Evans's face.

"My wife's!" he whispered.

"I kidnaped Redmond Chapple when Danny was killed," continued Evans deliberately. "I had been to my boy's new grave; I was 'most crazy. I was near the river when your machine plunged in. I ran there, seen your boy in the water, swam across with him, left the village the next day, and took him to Panama.

"As far as I could send him, he's a comin' *man*. I turn him over to you. But I owe you for all the years you've lost him; for his mother that's old before her time; for that monument up in the cemetery. I owe you an' I'm ready to pay. Send for your officers."

Chapple stood swaying, slowly grasping the truth. His eyes devoured the unsuspecting figure of the boy standing with the gardener across the lawn. He stepped impulsively forward, as if to run to him. Evans's hand interposed.

"Not yet," he implored. "Don't tell him till I'm gone—either way."

The manufacturer turned blindly away, his face a welter of emotions. The gladness at this resurrection, the grief of empty years, the rage at ruthless despoiling—all these warred in his breast.

He whirled, his gaze seeking a distant hillside flecked with the white and gray of marble and granite set in memory of loved dust that rested there. He visualized therein a stately monument, reared in love of the boy who stood unknowing on his lawn, his son restored from the dead.

And whose hand had rescued him from death? The hands of the man who stood with him in the veranda; the man half mad at the time at the death of his own son in Chapple's mills; a death since acknowledged by Chapple himself as caused by gross injustice.

There was a grave in the cemetery on the hillside, an unmarked grave, from which could issue no miracle of earthly resurrection. Through Evans's act Chapple was reunited with his own; but for the rest of his life, whether in the open or behind gray prisoning walls, Evans was through his full, free act twice bereft.

Jerome Chapple turned to Evans, who stood silently waiting. His hand grasped Henry's in a crushing grip. He spoke with difficulty.

"Henry, you are fortunate that you can make this restitution. Some things can't be undone—the grave on the hill that I and the others dug—and filled. My load is heavier than yours. You're free to go, Henry. I'll wait till then before I call the boy—and take him to his mother."

Evans left the veranda and walked down the driveway. At the entrance he turned. Jerome Chapple, running across the lawn, waved his hand. Evans returned the salute, then glanced toward the rosebushes where Georgie stood with MacDougall. The boy had not looked around.

Evans strode down the road. In his soul already stirred the beginnings of a strange peace. From his mind rolled back like a sullen ebbing wave, above which brooded a receding shadow, the dictum of Moses:

An eye for an eye; a tooth for a tooth.

In its stead, invested with majestic comforting, sounded the thunderous message of the God of Israel, of Christendom, of the world:

Vengeance is Mine; I will repay.

He turned again toward the mansion on the hill. The boy he had surrendered was on the point of being engulfed in an old man's hungry arms.

(The end.)

On the Editorial Carpet

Where We Gather in the Hut, Tell Our Troubles, Help One Another, and Sing Some Old Songs.

IN summer, balmy summer, when the days get long, it is up to the fiction to get short. What reader wants to pick up a novel in the dog-days, when swinging in a hammock is brisk exercise, and hoisting iced tea over the lower lip is regarded as husky weight-lifting? *Echo* answers, "Nobody." Thank you, *Echo;* you're right.

Hence it is that in our July issue we shall slough the usual novel, and publish in its stead

12 SPLENDID SHORT STORIES.

Short stories that will deal with almost every phase of the railroad business as well as of human nature—stories of pathos, humor, adventure, action; dramatic stories, powerful stories, ludicrous stories—and every one guaranteed to make your eyes hang out on your cheeks as you read.

Look over the list!

* * * *

ROBERT FULKERSON HOFFMAN, your old favorite, returns with a tale about an engine-runner's boy that will make a lump come into the throat of every one who loves a little child.

George L. Catton, a newcomer, gives us a mirth-provoking account of the adventures of a couple of yaps—only they weren't so yappy as people thought. Mr. Catton talks in screamingly funny railroad slang.

Ellis Mackenzie, who will also be heard from again, contributes another chuckleful yarn—about a train-crew that just couldn't make its eyes behave when the sandman came round.

Charles Wesley Sanders—hello, old-timer! Glad to see you back—has a yarn to spin about an engineer who loved to fight, only he wouldn't; only he did— Oh, well! Read about it yourself.

William H. Seymour is back again with his circus patter. "The Guy without a Goat," he calls it.

Olin L. Lyman has invented a new character—*Blinky Mike,* the brakeman's bane, a tramp prize-fighter.

CHARLES W. TYLER writes a powerful story about a telegrapher who was game to lay down his life in the course of duty. A big, tense theme, handled with all the masterfulness of a star writer.

Edgar Young will tell you the latest experiences of his famous boomer pal, *Barnsy.* He's railroad-building this time.

John C. Russell reduces to writing the inimitable *Spike Malone's* recollections of high-wheelers.

Buckley Olcott will double you up with his tale of mother's boy, *"Carrie" McGorry,* who tried out a job of firing. Puzzle: how long did *Carrie* last?

H. Keith Trask, a recent acquisition, and a very welcome one, writes a tale revolving about the manufacture of locomotives. It is a different story from any you have read before.

And *J. E. Smith's* humor bubbles as spontaneously as ever in his forthcoming "Observations of a Country Station-Agent."

BUT the fact that the July issue is the great short-story number of the year for readers of railroad fiction by no means argues that there won't be just as many articles, and just as interesting and authoritatively written, as ever.

Let's run over the list. The genial baggage-man, the best friend of the summer tourist, is written up by Theodore Benton, whose work you already know, if you have read those brilliant articles, "The Railroad 'Fix-It' Man," "Railroad Time and Timepieces," and "Railroad Chiefs Who Rose from the Tracks."

Roger Fison describes the transition from the era when the operator wrote all messages out by hand to the present, when he beats them out on the trusty thrashing-machine.

"J. E. M." comes to bat with another interesting paper about earlier days. In this paper he deals

with old times on the West Shore. It is written in the same fascinating vein as his previous articles, "Old Times on the Erie," "Old Times on the Gould Southwestern," and "Old Times with the Morse Men."

C. H. Claudy concludes his series on signal practise with an article on one of the most remarkable products of human ingenuity, the interlocking system, a mechanical brain, so-called, which renders it impossible for any one to set a wrong signal. There will be still another article on signal practise, following the close of Mr. Claudy's series; but more about that next month.

Frank M. O'Brien will interestingly outline some of the ways by which slick crooks have been trimming the railroads for free transportation, menacing them with fake accident-claims, and stealing their freight. These are new tricks that every responsible railroad man had better get wise to.

Charles Frederick Carter, whose article on "Standardizing the Nation" is this month's leading feature, will make you open your eyes when he itemizes, in the July number, the total direct and indirect cost of railroad regulation. A billion dollars a year—wow! That's Mr. Carter's figure, and he says he can prove it. See if he can.

BEAR in mind, in reading this, that I've listed only a portion of the next magazine's contents. You can buy the July issue secure in the knowledge that the half has not been told.

THE RAILROADER'S MAIL-BAG.

IN the April magazine Mr. J. E. Bradley, of Justin, Texas, set our readers the following problem: "Tank-car—tank 8 feet in diameter, 36 feet long—contains oil to the depth of 14 inches. How many gallons of oil are there in the tank?"

Our readers have answered the puzzled Mr. Bradley numerously, with enthusiasm and in detail. Practically all of them must have been right, too, because nearly everybody reported the same answer, within a few gallons. Not, however, that the editor knows of his own knowledge whether this answer is correct. His proficiency in mathematics is confined to the presumptive ability to make change.

Of the many solutions received, that of Mr. Pendleton was selected for publication, both because his was one of the first to come to hand and also because he accompanied the text with a diagram, which we reproduce herewith.

By the way, if anybody else runs up against a similar practical problem in railroading which stumps him, just let him write the RAILROAD MAN'S for an answer, and if the editor can't give it to him it is practically a dead moral certainty that an appeal to the readers will fetch out a satisfactory response.

Not knowing whether Mr. Bradley meant a straight or curved end, I enclose a very simple method for finding amount of gallons contained in part of car, assuming the car to have straight ends.

This method will possibly be of interest to the readers, as it can be used for water capacity of reservoirs, steam space, and amount of water in stationary horizontal boilers, and the method will prove accurate enough for almost any case arising.

402 Prince Street, C. H. PENDLETON.
Alexandria, Virginia.

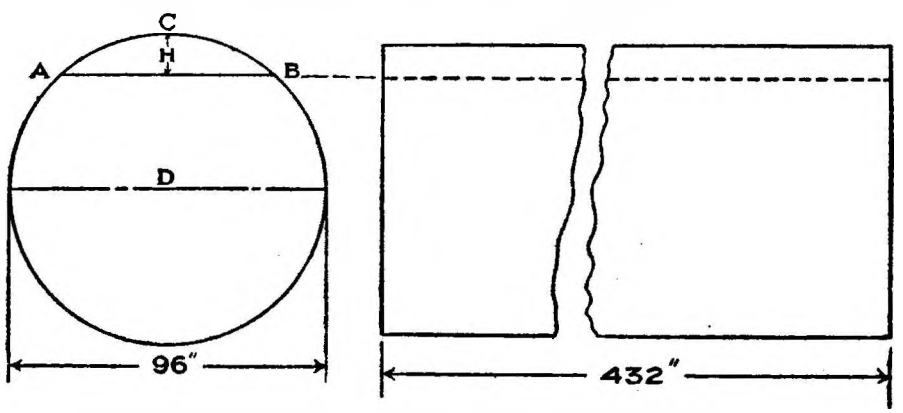


DIAGRAM ILLUSTRATING MR. PENDLETON'S SOLUTION TO THE TANK-CAR PROBLEM.

MR. PENDLETON'S SOLUTION.

Let h represent depth of oil, 14 inches
Let D represent diameter of oil-tank, 96 inches

Area of segment A B C, times length of tank, gives cubic capacity of space represented by segment A B C, 36 feet long.

$$\frac{4}{3}h^2 \sqrt{\frac{D}{h} - .608}$$

Supposing fuel oil is meant and allowing 231 cubic inches per gallon.

$$\frac{4}{3}h^2 = \frac{4 \times 196}{3} = 261.33$$

$$\sqrt{\frac{D}{h} - .608} = \sqrt{\frac{96}{14} - .608} = \sqrt{6.249} \text{ say } \sqrt{6.25} = 2.5$$

261.33 x 2.5=653.325 square inches
653.325 x 432=282,225 cubic inches=space occupied by oil in tank.

$$\frac{282,225}{231} = 1,221.75 \text{ gallons approx.}$$

ADDRESSES WANTED.

Readers of the RAILROAD MAN'S MAGAZINE *who make requests to locate missing relatives through these columns must abide by the following:*

All requests must be written in ink and a complete description of the missing person given, as well as full name and age.

We will not publish these notices unless they are signed by the nearest living relative of the missing person, and we must be assured that every effort has been made to locate him through the various brotherhoods or associations to which he might belong.

The person making the request must also give his or her complete address.

IT is letters like these below from Mrs. Elwood and Mr. Brosz, that go right to a fellow's heart and make him feel that, after all, he's doing some practical good in the world. Both correspondents appealed to the RAILROAD MAN'S MAGAZINE for help in locating loved ones, and both received the help for which they asked. Subject to the usual conditions—namely, that inquiry be made by the nearest relative, and then only after every other means of tracing the missing person has been exhausted—the RAILROAD MAN'S MAGAZINE is always glad to appeal to its readers to help in locating those who have been lost track of. This appeal is printed under the caption, "Addresses Wanted."

Kindly accept my heartfelt thanks for your kindness to me in publishing in your September issue of the RAILROAD MAN'S MAGAZINE that information was wanted concerning Mr. Matthew M. Weeks. Mr. Weeks is at present here, having seen your notice while on the Mexican border, and he also joins with me in once again thanking you for your kindness. With best wishes for the future success of your magazine, and once more thanking you for your kindness, I remain

Respectfully yours,
MRS. HANNAH M. ELWOOD.

538 Fifth Street,
Oakland, California.

Have located my brother, J. E. Brosz, through your ad. in the RAILROAD MAN'S MAGAZINE. Wish to thank you for your favor.

P. L. BROSZ.

Max. North Dakota.

"OLD TIMES ON THE ERIE."

THAT sure was one good article "J. E. M." wrote, dealing with "Old Times on the Erie." (Remember it?) I wish you could peek through our correspondence files to read the appreciative letters from old-timers who pick up the story where J. E. M. left off; but of course it is as impossible to let any one do that as it would be to publish all those letters here in their entirety.

However, here are a few passages from one reminiscent correspondent, and possibly the most interesting one at that. By the way, did you read J. E. M.'s previous articles—"Old Times on the 'Gould Southwestern,'" which appeared last month, and "Old Times with the Morse Men," in this issue?

In reading a recent number I find an article entitled "Old Times on the Erie," by J. E. M. I close my eyes and the hand of time turns backward over thirty years, for it was in the late 70's and 80's that I was on the Eastern Division of the Erie, and the incidents of which J. E. M. writes come vividly before me. The attempt to rob paymaster C. N. White seems as fresh as though of a much more recent date. While the tale as told by J. E. M. does not accord in detail with the facts as I remember them, still he has made a very readable and interesting story of it.

As to the personnel of the office force at Jersey City, I can speak with no little certainty, as my father E. O. Hill, was superintendent. He had as his assistant Mr. Henry Bristol. The despatchers were E. H. Lewis, Uncle Abe Wandel, and U. K. Still. After Abe Wandel died, Stephen Smith was transferred from Newburgh to fill the vacancy.

H. A. Walcott was not a despatcher; he was division clerk in the superintendent's office. He had with him W. H. Johnson and A. W. Houghton.

My! My! Old-timer, how one's mind flows back as events pass in review! J. E. M., having been an operator in those days, of course, remembers Emerson Horton, who was at Ridge-

wood Junction, and how he could pick the banjo and dance the clog. Do you remember the song he composed detailing his misfortunes. Emerson used to flag for Mike Derrig, a nervous, irritable little Irishman, and was entitled to promotion, but hadn't the nerve to take the responsibility, having been with Derrig too long; so he thought he would learn telegraphy, and applied for the position as a watchman at the gravel bank east of Ridgewood where there was an instrument, and there he learned, but when put on the wire, fell down by reason of his nervousness. So he went back to the gravel-pit for a time, and there he composed a song, giving his troubles in verse, to the tune of "Grandfather's Clock," as follows:

To better my condition I accepted a position
As an operator on the E-ri-e.
I had not been working long till things they did go wrong,
I had trouble with a lad who signed Eg.
So the work was so arranged that Tom and I exchanged,
And what do you suppose was the result?
From the division operator, this lightning manipulator,
I received an O. F. Gross insult.

CHORUS.

How they tittered, how they laughed,
When they put it up my back on the telegraph!
I did not retaliate, I had nothing at all to say,
So I stepped into the pay-car and drew my pay.

You can run a train through a fog, pick the banjo, dance the clog,
Get the numbers of the engines as they pass;
And perhaps you have the gall to turn the switches and the ball,
But you're a failure when it comes to pounding brass.
I'd advise you to resign, go back running on the line,
Never put your hand upon the key again;
You professional electrician, consult some eminent physician,
And he'll tell you you have nothing on the brain.

There were several other verses that I do not recall. Horton surely was a character.

Among my most cherished and valued possessions is a set of engrossed resolutions presented to my father, E. O. Hill upon the occasion of his resigning his position with the Erie Company in 1886. I also have his watch in the gold case, presented to him at the same time, and while the movement is much older than I, it still keeps railroad time.

F. W. HILL, M. D.

Montana Mines, West Virginia.

ANENT MR. TYLER'S STORIES.

WE have with us this evening a champion of *Hiram*, the hick telegrapher, Mr. Charles W. Tyler's side-splitting creation. As to Mr. Tyler's other stories, there is no division of opinion; everybody agrees that they can't be beat; but every now and then a subscriber tells us that so far as the *Hiram* series is concerned, he's not interested. Personally, I think that all the "ops." are for *Hiram* to a man. Take a hand in the discussion if you like.

I certainly agree with C. S. W., in the December number, regarding Charles W. Tyler's stories. They are great—the best I ever read; but I cannot agree with him on the *Hiram* stories. To me they are very interesting, for I can remember very distinctly some of the stunts I pulled when I first went to work, and I see now that I wasn't very far from being in *Hiram's* class myself. I don't think it would take a search-warrant to find some of these *Hirams* on the payroll of every railroad in the country.

R. B. BLAKE.

435 Broadway,
Lorain, Ohio.

HERR IS EXCELLENT.

WE'RE always glad to hear from a first-letter man, such as Mr. Gray assures us he is. A correspondent of this type has a fresh point of view and a spontaneity that are not always apparent in those who write letters more or less habitually—although we want to hear from the latter class also.

This is the first time in my life I have ever written to any magazine to tell them how much I thought of their ability as editors and how much I like the brand of goods they put out.

I read about all the monthlies, but like THE RAILROAD MAN'S best. That may be because I was once on the road myself, and remember enough to make the reading of your stories seem true to life.

I am especially fond of *Honk and Horace* and "The Trouble Special." The "Running by the Red Lights" series, by H. H. Herr, was excellent, and would be very pleased to see something more by him.

I certainly wish THE RAILROAD MAN'S a long life and a happy one. I thank you for letting me get this off my mind.

MARK GRAY.

Indianapolis, Indiana.

SONGS BY BARDS OF THE RAIL.

IN THE GOOD OLD DAYS.

WHY did not we live in the good old days,
When the stage-coach traversed the quaint highways?
Then the railroad train was a distant dream—
Man had not fathomed the power of steam.

The post-boy was the telegraph op.,
He could relay a message along.
The coach-wheels would go round
With a clattering sound.
"Hot-boxes" never gave him a thought.

There was the public! Good old dears,
Now the railroader's load,
The cause of his tears.
They never could ask if the train was "on time,"
But would wait on the stage-coach
With a patience sublime.

"Mine host" of the inn would give them the hail
To come in and sample his home-brewed ale;
The "con" did not cry "Twenty minutes to eat!"
Then, "Time's up; every one please take their seat!"

Now Fred Harvey's houses perhaps have the style,
But they are not to be found at every tenth mile.
Hark! the post-boy is blowing the last tally-ho,
A "gee-up" to the horses. Then off they go.

In due time all at their homes would arrive
To take such a journey and still be alive.
The old folks would soliloquize and talk,
Remind us that God gave them legs to walk.

We never should fail to think of the past,
When your forefathers lived at a pace seldom "fast";
They lived their lives, they did their part.
We can copy their virtues, we can take them to heart.

As the years roll on our ideas grow dim.
We all have our goal, we are all out to win.
Some laud the future, with its up-to-date ways,
But I long for the "coach" and the good old days.

A. S. HOME, in *The Railroad Telegrapher.*

JIM MAHONEY.

JIM MAHONEY, he's a dandy; he runs Engine 48—
Biggest one on th' division, an' he never comes in late.
We run down to see him passin'—gee, it does make lots o' fuss!
An' Jim blows the whistle fer us—yes, sir, blows it jest fer us!
Jim Mahoney, he's red-headed; an' he's nice—he'll wave an' grin
When he sees us standin' watchin' "48" come pullin' in;
An' some day when we get bigger—maybe near as big as him—
We'll run engines, too, an' whistle when we pass th' kids, like Jim.

—Galveston News.

THE SONG OF THE WIRE.

SING, wires! Sing!
Ye iron threads of life, what tidings bear ye now?
Is 't fortune's smile, or fortune's frown,
Or the blight of a broken vow?
Sing, wires! Sing!
If not on evil bent—

And yet I know your whisperings low
Are not unbidden sent.
Of joy or pain, of weal or woe—
Whate'er the message be—
Of death or life, of peace or strife—
Ye vary not your key.

Telegraphica.

THE SIGNAL AND THE ANSWER.

AS I sat in a village home to-day,
Reading some poems to friends whom I knew,
A train up the track was making its way,
And mine hostess saw it. The whistle blew,
And she flew to the door—there to wave her hand—
A signal to him who was in command
Of the engine that pulled its heavy load
Around the long curve of the iron road.

As the train was passing the village through,
She waved to her husband—the engineer—
A hearty salute—one of loving cheer;
Who caught the signal, and the whistle blew
Responsive answer, that to her should tell
That he was still safe, and that all was well.

'Twas a beautiful sight! It me impressed—
That signal from her to her loved and best,
The answer he made to her waving hand,
Which messages each could well understand.

It comes to me now, with this lesson sweet,
As I musing sat in my cot to-day,
That we may with loving messages greet
The friends who may pass us along life's way.
A kindly word or a wave of the hand
Is something the poorest can understand.

It cheers up the heart 'neath the burden's load
Of care and toil, and—too often—the pain
We have to endure 'mid the weary strain
Of cares that beset us along our way.
Friends daily pass; some are passing away!
A loving word, or a wave of the hand,
As they pass us—bound for the other land—
May bring us answer, a signal to tell
To our listening hearts that "all is well!"

C. A. CRESSY, in *Locomotive Engineers' Monthly Journal.*

MAN FAILURE.

THE engine may fail and the track may wear,
There are metal and tools to remake and repair;
The target may break and the switch go wrong,
But a bolt and a blow will help them along;
When men fail the system is crippled all through—
Man Failure, that's where the doom points at you!

Ties may wear out and tie-bolts may rust,
That is a matter repair gangs adjust;
Pistons may rattle and valves spring a leak,
The doom of the system's when men have grown weak,
When men fail to answer with thoroughness keen—
Man Failure, that's where you lose the machine!

As the strength of the chain is the strength of each link,
You cannot move earth if the men fail to think,
If the men fail to measure each moment of life,
Right up to the keenest demand of the strife;
If men fail to master with soul and with brain—
Man Failure, that's where you throw off the train.

—*Baltimore Sun.*

THE TELEGRAPH.

"TICK, tick! Tick, tick! Tick, tick!"
Hark to the voice of the telegraph wires
Ticking out every word!
A be-in-a-hurry, impatient voice
That over all others is heard;
Now 'tis a message of sorrow and care,
And then of pleasure and song;
A tender thought or a parting prayer,
Or a whisper of cruel wrong.

"Tick, tick! Tick, tick! Tick, tick!"
The wail of battle, the horror of fire,
The speed of a horse or a ship,
The crash of markets, the flight of kings,
The word from a baby's lip;
The flood, the plague, the earthquake shock,
The sorrow that's on the sea,
Are met by a mother's loving thought,
Or a lover's wedding glee.

"Tick, tick! Tick, tick! Tick, tick!"
And the winds blow through them day and night;
(Do the winds know what they say?)
And the sunshine glints, and the rain sweeps by,
And the white snows on them stay,
And the birds rest there and plume their wings.
(Do the birds their story know?)
Do they feel the thrill of the mighty things
That under their small feet go?

"Tick, tick! Tick, tick! Tick, tick!"
Above the snow of the cotton plant,
And above the northern wheat,
And over the mighty mountain chain,
And the prairie fresh and sweet,
And over the thousand-streeted town,
And the desert wild and free,
And over the mighty forest trees,
And under the roaring sea.

"Tick, tick! Tick, tick! Tick, tick!"
They clasp all earth in a loving ring,
And they answer all desires,
For there isn't a language they cannot speak—
The wonderful telegraph-wires!
They will girdle the earth and cross the sea,
And the nations bind, until
The world shall answer in every tongue
Their messages of good-will.

LILLIE E. BARR, in *New York Ledger,* 1884.

THE SIGN-PAINTING FIEND.

I TRAVEL East, I travel West;
I have no sectional disdain.
I name no region as the best;
I love the mountain as the plain;
I love the sail-encumbered main.
My heart has room for any place
Where I may bargain to obtain
Good outdoor advertising space.

The roadside wall that erst was dressed
With idle vines; the leafy lane;
The farmhouse eaves, where many a nest
Of swallows hung in sun and rain;
The wide barn-door, the sluggish wain,
The marsh's edge, the cliff's gaunt face—
Say, are these not, glimpsed from the train,
Good outdoor advertising space?

Behold! On mountains I attest
The merits of Quack's Cure-All-Pain;
On cataracts, to service pressed,
I blazon Simpson's Shingle-Stain.
In meads I tell of oils from Spain,
Or whiskies from the Scottish race,
Or French face-powders for the vain—
All scenes are advertising space!

L'ENVOI.

Success to those who strive and strain
Through arctic seas and bergs apace!
Their glory soon would prove my gain—
The Pole's grand advertising space!

William S. Wells.

Have You Headache or Other Pain?

By Dr. E. L. Abogado

IF you were to take a place in a thronged thoroughfare and ask every person who passed what pain meant, you would undoubtedly receive as many different answers as the number of persons you asked.

One man's definition would be nothing more than a description of the agony he endured in stooping. One woman's answer would be simply a revelation of the fact that she suffered from severe headaches. Another man's explanation of pain would stamp him as a dyspeptic. Another woman's definition would tell you scarcely more than that she was a rheumatic.

And so on, until, in your quest for a definition of pain you had covered the entire category of human ailments.

Now then, if you asked each one what he or she did for the alleviation of pain, you would have a "remedy" for such pain as each individual was then suffering from. And if you were a physician, here is the thing that would strike you as the one incongruity of it all—**the preponderance of the cases in which the so-called "remedy" is not a remedy at all, but a cause of still more serious and painful conditions than those which it was expected to relieve.**

However, before we take up the consideration of the remedy which it is my purpose to treat of briefly here, let us for a moment inquire into the requisites of a true remedy.

It is obvious that any remedy that has to do with the alleviation of pain should confine itself primarily to the accomplishment of that one thing, such other benefits as might be derived from its use being incidental. In other words it should be a "pain specialist." In my opinion this would be the ideal remedy and you will, therefore understand what I have in mind when I say that I have found such a remedy in a simple tablet put up under the name of anti-kamnia tablets. In the best sense of the word, anti-kamnia is a "pain specialist." These tablets are especially prepared with the one end in view of bringing sure and speedy relief from pain in whatever form pain exists. And I know from my own experience that they do it.

While, as I have stated, the primary purpose of the ideal pain remedy should be the alleviation of pain, it should not be lacking in other remedial benefits, because pain is frequently so closely allied with other pathological conditions that they are well nigh inseparable. For instance, the most prominent symptoms of most diseases are pain and fever. And while I do not wish to be understood as advocating anti-kamnia tablets as a "cure-all," I do most emphatically wish to call attention to the fact that they are equally as effective as fever reducers as they are as pain relievers.

I use them with most gratifying results in the treatment of all kinds of headaches, migraine, la grippe, and its after-effects; as a sedative in indigestion, gastralgia, dyspepsia, hysteria and insomnia; as an antipyretic in intermittent and malarial fevers, bronchitis, pleurisy, etc., and for the pains in acute and chronic neuralgias. toothache, sciatica, rheumatism and gout.

Perhaps I should mention here that no physician's consultation or prescription are a requisite for taking anti-kamnia tablets. They may be procured at the corner drug store in any quantity desired.

It may be surprising for those of us who are inclined to run to the doctor with our every pain and ache to know that such relief as anti-kamnia tablets afford, has been at our elbow all this time.

A BIGGER JOB For YOU

Earn from $35 to $100 Weekly as a

TRAFFIC MANAGER

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