

THE DEPARTMENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

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LIMIT THE NUMBER OF DRUG STORES?

"SHOULD PHARMACISTS ADVOCATE THE PASSAGE OF LAWS TO LIMIT THE NUMBER OF DRUG STORES THAT MAY BE OPERATED BY PHARMACISTS, OR OTHERS, IN ANY COMMUNITY WITHIN THE STATE?"

This important question was debated by four able speakers before an audience of about two hundred at a meeting of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION held at the New York College of Pharmacy on Monday, November 8th.

Such a measure is to be introduced in the New York State Legislature this winter, and keen interest in the subject is manifested not only by pharmacists of that State, but also in other States where legislation of like character is likely to be presented.

President C. I. Eddy, of the New York Branch, appointed Secretary Robert P. Fischelis, of the New Jersey Board of Pharmacy, C. H. Waterbury, former Secretary of the N. W. D. A., and Hieronymus A. Herold as judges.

The affirmative side was defended by Peter Diamond and Dean Jacob Diner, of Fordham University College of Pharmacy, and the negative by Arthur S. Wardle, a prominent pharmacist and former President of the N. Y. State Pharmaceutical Association, and Augustus C. Taylor, N. A. B. P. Vice-President and Chairman of District No. 2, who is also the President of the District of Columbia Board of Pharmacy and Chairman of the N. A. R. D. Committee on State Pharmacy Laws.

The judges voted unanimously in favor of a decision for the negative side.

Mr. Wardle dwelt strongly on the effect such legislation would have on the colleges of pharmacy in the State. Such a law would bring about a smaller registration of students; the faculty would suffer, and pharmacy as a whole would fall to a lower standard.

(The paper read by Mr. Taylor is given herein as the N. A. B. P. office was fortunate enough to secure a copy of it and believes the arguments will prove of general interest.—L. R. H.)

LIMITING THE NUMBER OF DRUG STORES—THE NEGATIVE.

BY AUGUSTUS C. TAYLOR.

"In support of the negative, I am constrained to base my opposition on the following principal grounds:

1. The danger involved in asking for such intimate government control of pharmacy.
2. The danger of sacrificing, even in the least, the principles of democracy.
3. Existing laws are all-sufficient to safeguard and promote the welfare of pharmacy.
4. Legislatures cannot enact a law limiting the number of drug stores that may be operated by pharmacists or others in any State.

"I take the stand to-night to defend pharmacy against what I conceive to be a dangerous experiment in law-making. That a majority of the druggists of the State desire such intimate government control of pharmacy, I will be slow to believe.

"It is natural enough that a question of this sort should come before us at this time, for we are at the peak of a wave of a belief that government interference is a cure-all for business ills. Groups of people all over the country are calling on the Government to save the cotton grower, to save the wheat grower, the cattle man, the importer and, strange enough, this belief in the power of the Government comes very soon after this same 'all-powerful' has demonstrated its inability to manage successfully private business and is continuing to demonstrate its inability to run its own business efficiently.

"Reaction against too intimate government control of industry is apparent on every hand. Every other line of industry is fighting against this paternalism and protesting against the rule of politics and politicians over business. President Harding said, 'Less government in business, more business in government.' Governor Ritchie states, 'The broad purpose of government in its relation to business should be to keep the door of opportunity and endeavor open to all on equal terms, and to restrain those that would deny this.' John W. Leary declares, 'After experience with the results of restrictive and regulatory legislation designed to correct the mistakes or bad practices of a minority, it became clear that legislative control was harmful to the progress of good business.' Julius H. Barnes says, 'Organized business believes that progress in rightful industry is served best not by rigid government regulations but by enlightened ideals.'

"If you admit that our business has reached such a deplorable stage in its development—which I will not admit—you must consider from every angle the direction in which government interference will carry us. We will have to admit that this interference will not cease with this simple regulatory measure. *The essence of government is restraint.* Every government agency seeks to expand its jurisdiction over the liberties, possessions and personal concerns of the citizen. I have been unable to find a single instance where government restrictions have been asked by industry with the result that it stopped there, but I can name many instances where a simple government regulation has become restriction.

"Our local public utilities offer a familiar example of this. They started by asking certain privileges, of which restriction of competition was one, and their position to-day is that of being politically controlled and administered servants. There is nothing more certainly established than the tendency of government to ever enlarge and strengthen its grasp on power. We certainly have no guarantee that this regulation which we ask will not carry us as far as former interference has carried these utilities. We may as well expect the worst to happen, and before going any further, consider what this worst will be.

"About 1880 the railroads of New York State and some other States asked for restrictive laws—laws to restrict competition, laws to keep the undesirable competitor from entering the business of railroading, so that they could make more money. They had no trouble in having these laws passed, but they soon found themselves in a worse fix with nobody benefited. Every right granted the railroads under these State laws carried with it obligations. The rights contracted; the obligations expanded. The railroads were obliged to ask for federal legislation. They got that, and more. They found themselves in a very short while under the control of a bureau—a commission responsible to nobody—a despotic and tyrannical form of government

control. The commission has each year increased the demands upon the railroads until to-day the commission controls everything the railroads do. Such is bureaucratic control.

"To emphasize my argument: Recently another bureau of the Government—the Federal Trade Commission—decided that a man could not call his business the 'Geneva Watch Co.,' because all the Swiss watches he sold were not made in Geneva, although purchased from wholesalers in Geneva. A man can run a lunch room in the same block with this man and sell Irish stew, Vienna sausages, Italian spaghetti and chili con carne and still call his place the 'Paris Café.' There is no sense or reason in such hair-splitting.

"If you want this autocratic control of pharmacy instead of a government of reason, you have but to advocate this law.

"To repeat, it has been clearly demonstrated that government methods are not practical business methods. If an organization cannot manage successfully within itself, we cannot expect this form of remote control or regulation for which we ask to be successful. We certainly cannot expect to find in any government an organization of druggists, or even professional men, familiar with the problems of our business. When we ask for restriction of this form, we are asking for something that, to the average politician, will appear to be the granting of privilege, and, when we ask for privilege, which in his eyes will amount to monopoly, we must expect rigid control, and we certainly have enough before us to give us an idea as to what form this control will take. Our business would be controlled as completely as the average utility. This control most certainly would include the control of profits, hours, methods and equipment. We might even imagine the pharmacist passing entirely from the active field of his business and profession and, finally, becoming merely the operator of a community dispensary.

"This proposed law is a paternalistic measure and as such would be administered by some bureaucratic agency. President Coolidge says, 'Of all forms of government those administered by bureaus are the least satisfactory to enlightened and progressive people. Being irresponsible they become autocratic, and being autocratic they resist all development.'

"To you men who believe in the possibility of what you earnestly desire to see accomplished by the passage of this proposed measure, I want to give this warning that it is beyond human intelligence to tell what the reactions will be until after they have occurred. Who could have anticipated the bewildering number of reactions and of economic and social complications that have followed the placing of prohibitory alcohol legislation on our statute books?

"The proposed law is communistic because it penalizes the pharmacist of superior qualities. It will shackle personal initiative. It will put a check on business individualism. It will sacrifice the many conscientious pharmacists for the sins of the few. It is individual initiative that lifts the successful pharmacist above the failure. It is triumph over obstacles, opposition and competition that makes any fight worth while. It is the zest of the contest that transforms any endeavor from drudgery to enterprise. It is through enterprise and not by aid of government restrictions that pharmacy can make progress toward a proper position in industry.

"We cannot expect it to be the chief concern of a government to save a body of men from suffering the consequences of their own faults and deficiencies. We naturally feel sorry for the failures and incompetents, but we are waving the red flag and creating bolsheviks and communists when we undertake by political laws to produce equality at the expense of quality. We cannot equalize men by law. The ideal in the minds of those that planned our civil policy was to create a system under which each citizen might prosper in proportion to his individual efforts and endowments without either special help or special coercion on the part of the State.

"Democracy, as we in America understand it, gives every man an equal chance. Democracy in America has been sustained by the love of its citizens for the institutions it represents. Prof. James H. Beal, whose writings prove him to be a profound student of law and government, says: 'It is dangerous to surrender even the least of the principles of democracy for the promise of some immediate special benefit. It is dangerous to adventure upon a path that has always led to disaster.'

"We have too many laws. We are being 'lawed' to death. It is a mania—a disease—that manifests itself in legislatures, in Congress, in civic and social associations, organizations, corporations and nearly every human activity. Always there must be law to control, hedge and limit the individual. So great and wide have become the ramifications of the written statutes that it is wholly impossible for anyone to know the law or be a law-abiding citizen. It is now

almost impossible for a human being to take a step in any direction in this country without having a restrictive law of some kind confront him. Too much law is worse than no law, for too much law is tyranny. History tells us that tyranny always fails.

"Existing laws, properly interpreted and properly enforced, will give the relief sought by this proposed measure. All the essential factors of the proposed remedy are within our control. We must cease these futile attempts to correct economic faults that arise in our business field by statute law.

"If we approach these faults or evils that arise from time to time with a clearer vision and greater wisdom and strive with courage and determination to correct the evil, we will find that our existing laws are sufficient. It will take effort certainly, but it is marvelous how difficulties smooth away before earnestness and faith in success. Don't surrender control of your most intimate concerns. Restraint is galling. We can correct these economic faults better by requiring higher educational requirements and an organized apprenticeship training. A man brave enough to select a career involving long and arduous preparation would have something of the pride in his calling that makes a man jealous of his honor and solicitous of his work.

"The drug business unhampered can work out its own salvation. It can do it better than can the legislator or the bureaucrat. It sees the problem better from all angles and can do so because its own self interest compels. The direction of our efforts is more important than the speed of our progress. With our strong city, county, State and national associations of pharmacists, we have the machinery whereby we should be able, without government regulation, to determine the method by which social satisfaction is to be attained, with the preservation of the drug business as an independent unit of the business world; with a full opportunity for the development of the individual.

"With the greater unity in action and unity of purpose that has developed throughout the ranks of all associations of pharmacists during late years, we are in a position to combat any situation that might confront us. We must strengthen our independence of government control. We must not endanger our liberties by advocating the passage of this regulatory measure.

"I am forced to believe that selfish motives inspired this law. There is a constant conflict between our selfish interests and our better selves. We broadcast our theories and generous impulses but we shrink from letting even ourselves examine too closely our selfish purposes and desires.

"Is it because of envy—envy of success—that we seek this monopoly or is it fear? Fear which, in its final analysis, is nothing but selfishness? We are not thinking how this measure will contribute to the happiness of the world. We are thinking merely of how to save our own skins. We are trying to take a bomb-proof job behind the lines. We should be happy to stoutly defend that which we love. I am glad that the souls of men are judged in heaven by some other standard than wealth or social position.

"A State law limiting the number of drug stores would be unconstitutional because it would not be a proper exercise of the police powers of the State. The courts have held, and these decisions are controlling, that no legislation is valid that seeks to give an advantage to any special class of traders.

"In *State vs. Donaldson*, 41 Minn. 74, the court held that 'in the absence of some other regulations, a statute merely limiting the sale of patent medicines to a particular class would not and could not have any natural or reasonable tendency to protect the public. Such a law would not go far enough to amount to a police regulation. It would merely be giving a certain class of men a monopoly of the trade. This is not within the police power of the State.'

"The court held to the same effect in *Noel vs. People*, 187 Ill. 587: 'There is no question but that the State has authority to control and regulate the sale of patent or proprietary medicines, as well as harmless household remedies, provided it adopts such measures as have a tendency to protect the lives and health of the public and do not unjustly discriminate in favor of a certain class.'

"*Comm. vs. Payne Medicine Co.*, 138 Ky. 164: 'Protection of the lives and health of the public is the main and first consideration of the legislators in enacting pharmacy laws, not the selfish interest of the retail druggist in obtaining more business by limiting the number of drug stores.'

"It follows logically and inevitably that if the courts have held that the legislature cannot

enact a law for the benefit of a certain class of traders, it would be idle for pharmacists to advocate the enactment of such a law, or one limiting the number of drug stores that can be operated by pharmacists or others. It is useless to do a useless thing, and if I had no other ground except the decisions of the courts to stand on in this debate, I would be entitled to a decision."

GENERAL NEWS ITEMS.

Secretary Christensen wires that his western trip is taking longer than he expected because of requests by several States for aid in preparing proposed legislation. It seems reasonably certain, he reports, that prerequisite and other progressive legislation will be enacted this winter in Nebraska, South Dakota, Colorado, Arizona, New Mexico and California. Your Secretary expects to be back at the office by December 10th.

Mrs. W. E. Bingham, beloved wife of the Secretary of the Alabama Board of Pharmacy, passed away at her home in Tuscaloosa on October 31st, after an illness of but a week. The suddenness of the parting, after forty-eight years of happy life together, has been a great shock to Mr. Bingham, and the sympathy of all N. A. B. P. members is extended to him and his family in their great loss.

Mrs. Bingham is survived by her husband, W. E. Bingham; her son, Ellison H. Bingham; her daughter, Mrs. E. G. Wilson; and two grand-children, Raymond Bingham Wilson and Mary Hairston Bingham.

John E. Guess, Secretary of the Louisiana Board, is working for coördination of the Board and the Colleges in his State and is at present planning four joint conferences a year. It is gratifying indeed to receive reports of this nature, as it proves that getting together once a year and talking over our problems is worth while. Two States have held or planned joint conferences as a result of the suggestion made at the Philadelphia convention.

J. S. Puller, a member of the Mississippi Board, spent several weeks in the East and in Canada, under the disguise of being on a hunting and fishing trip. One of his friends reports that judging from the labels returned from that region, "Shep" enjoyed other scenery as well.



Mississippi Fishermen, also Board Members.

Charles Wilson, Secretary of the Mississippi Board of Pharmacy, a successful pharmacist, and a good fisherman, spent some time on the Gulf Coast trying his luck with the finny tribe. Judging from the pictures brought back, it is thought that some one must have had fish "to hire." (Note—Mr. Wilson is the third from the left on the snapshot shown. Leave it to your judgment whether the fish are real.)

STATE BOARD OF PHARMACY NEWS ITEMS.

Alabama.—Out of one hundred and two candidates taking examination in October, seventy-eight were granted full registration and eleven assistant registration. Just a few college graduates were included in the class and all of them passed. After the special examination meeting to be held in Montgomery on December 29th, all candidates must be graduates of a high school and a recognized pharmacy college before being admitted for examination.

Arizona.—"Secretary H. C. Christensen paid the Arizona Board a visit November 10th and 11th, and his talk was of great value to the members. Mr. Christensen visited us about ten years ago. We always enjoy him and his store of knowledge and good judgment; he is doing a big work," writes Arthur G. Hulett, Secretary of the Arizona Board.

Twenty-eight candidates took the November examination for Licentiate and three for Assistant. Eight candidates from other States were accepted by reciprocity.

Arkansas.—The Board met at the Hotel Marion in Little Rock on November 8th and 9th. Owing to a change in the regulations which now require all applicants to be graduates of class "A" schools, no candidates presented themselves for examination. Some of the schools will graduate small classes in June and these are expected to appear before the next meeting.

Most of the time of the Board while in session was spent in making plans for the better enforcement of the present pharmacy laws.

Colorado.—The final report on the September examination of the Board shows thirty candidates taking examination for Registered Pharmacist, of which number six were successful, and four candidates taking examination for Assistant Pharmacist, of which number three were successful. The twenty-five failures in these examinations had the following preliminary pharmaceutical education: Six were graduates of a two-year pharmacy course; two had had one year of pharmacy schooling; one had only a half-year of pharmacy schooling; nine had taken a short course of approximately three months; seven had no training outside of practical experience.

Connecticut.—Secretary Lerou announces that sixteen out of a class of forty-four taking examination at Hartford in October received certificates as Registered Pharmacists. Eight of the successful candidates were college graduates. At the November examination, eight out of a class of sixteen were successful in obtaining full registration, and two of those passing were college graduates.

District of Columbia.—Eleven candidates passed the October examination and have been granted certificates as Registered Pharmacist. The following reciprocity applicants were also accepted at that meeting:—John Temple Risher, of Mississippi; Miss Ray H. Couleman, of Maine; Abe Schnider, of Virginia; Creed Winston Parker, of Missouri; Peter Fred Besse, Jr., of Louisiana; Engel Raymon Gledhill, of West Virginia; and Roy B. Schlosser, of Maryland.

Georgia.—J. B. Pendergrast of Atlanta, Ga., has been appointed as a member of the Georgia Board of Pharmacy to succeed J. T. Selman, who has been an active worker in the N. A. B. P. and is Vice-President and Chairman of District No. 7. Mr. Pendergrast is a member of Marshall & Pendergrast of Atlanta and has made a good record in pharmacy.

Mack D. Hodges was elected Chairman of the Georgia Board.

The next meeting will be held in Atlanta on December 15th and 16th.

Idaho.—F. A. Jeter, Commissioner of Law Enforcement, announces that the next Board examination will be held on January 4, 1927.

Indiana.—Members of the Indiana Board have been attending group meetings throughout the State. Russell B. Rothrock reports a great success at the Evansville meeting on November 10th. John A. J. Funk, President, attended a group meeting in Huntington on November 15th, another in Muncie on the 16th, and still another at Terre Haute on the 18th. A great deal of good was accomplished at each meeting.

Louisiana.—At the fourth quarterly meeting of the Louisiana Board, held at Tulane University, New Orleans, November 17th and 18th, sixty-eight applicants were examined. Thirty-seven passed as Registered Pharmacists; eleven as Qualified Assistants; twenty failed.

Seventeen of the applicants were graduates of colleges of pharmacy; four of the graduates failed, but two of these made the requirements for Qualified Assistants.

In honor of the meeting of the Board, The Parker-Blake Company, Ltd., of New Orleans, gave a Friendship Banquet at the Roosevelt Hotel on November 18th, where Edward H. Waldsorf, President of the Board, made an eloquent address in which he emphasized the importance of eliminating the cut-rate evil and the necessity of placing every drug store in charge of a Registered Pharmacist.

Maine.—At the October meeting of the Commission of Pharmacy a class of nine candidates was examined; only one passed successfully.

Governor Brewster recently re-appointed George O. Tuttle as a Commissioner of Pharmacy for three years. Mr. Tuttle was appointed last February to fill the unexpired term of the late

L. M. Chandler, of Camden. The appointment of Mr. Tuttle for a full term is very pleasing to the druggists of Maine, as he has been an active worker in pharmacy circles for many years.

Minnesota.—Six candidates have been granted licenses as Registered Pharmacist and eight as Assistant Pharmacist as a result of the October examinations.

Maryland.—An examination meeting was held on November 3rd and 4th at the University of Maryland, thirty-eight candidates presenting themselves for the full grade and twenty-six for the assistant certificate. Report of results is not ready for publication as yet.

Massachusetts.—The Board recently issued a statement that it had been found necessary to prosecute before the courts an unusually large number of persons who were not registered as pharmacists but who were advertising their places of business as *bona fide* drug stores. Poisons had been sold illegally in some of the instances. A number of the persons and firms have been fined for the violations. The Board is also making an effort to educate the public in this matter by bulletins warning against having prescriptions compounded in a drug store that does not post its permit.

Mississippi.—The Governor has not yet appointed a successor, on the Board, to the late Jefferson D. Harpole, whose death occurred in August. Due to illness of the Chief Executive, this appointment will probably not be made until some time during the coming year. As the present term of the Governor will expire in 1928 and appointments to the Board of Pharmacy are made for the period of the governorship only, there is even some speculation as to whether a successor will be appointed for such a short time.

Many of the more aggressive pharmacists of the State are of the opinion that the law relating to appointments on the Pharmacy Board should be changed so that one new man will be appointed each year, instead of appointing an entirely new Board every four years. Thus a majority of the members on the Board at all times will be experienced in its work. Under the present plan, just when the Board reaches its maximum efficiency, politics becomes a factor and the entire membership is replaced all at once.

The next meeting of the Board will be held at the New Capitol in Jackson, Miss., on January 4 and 5, 1927. All applications must be in the hands of the Secretary at least ten days prior to that time. All applicants for registration, whether by examination or otherwise, are required to appear before the Board in person.

Montana.—Adoption of the "New Type of Examination Questions" as outlined at the Philadelphia Convention was considered at the October meeting, but action has been postponed until a later date. The work of the Commonwealth Survey was also discussed and commended. The Capper-Kelly bill was reëndorsed and provisions for its favorable passage were adopted. The Board adjourned subject to call of the President as the legislature meets this year and important legislative matters may come up that need action.

Nebraska.—Thirty-three applicants were examined at the November meeting of the Board, and four reciprocity candidates were interviewed. Twenty-one of the examination candidates were graduates of recognized pharmacy colleges; the remaining twelve had no training outside of experience. The results of the examination are incomplete at the time this goes to press.

The Board was pleased to have as a visitor at this meeting, Secretary H. C. Christensen, of Chicago.

The Retail Druggists' Association of Lincoln gave a dinner on November 5th in honor of the Board. Dean R. A. Lyman of the University of Nebraska College of Pharmacy, and Secretary Will Brookley, of the Nebraska Pharmaceutical Association, were also guests.

New Mexico.—Twenty-seven applicants appeared for examination before the Board in Albuquerque in October, and three of this number were granted registration. Harry R. Chowning, of Arkansas, and M. Eugene Guyn, of Kentucky, were granted reciprocal registration. Three other candidates were granted registration under the twenty-year experience clause.

North Dakota.—Two candidates passed the examination given on November 9th and 10th and have been granted certificates.

The Legislative Committee also met and reviewed the proposed changes on the pharmacy law to be presented at the coming session of the legislature.

Ohio.—At the October meeting, eighty-four candidates took the examination for Registered Pharmacist and fifty-five were granted certificates; twenty-one took the Assistant examination and thirteen were successful.

Harly F. Pence, of Indiana; Norwood H. Meyer, of Michigan; Herman Schiff, of Pennsylvania, and Leo A. Leithauser, of Michigan, were granted reciprocal registration.

The next meeting will be held in Columbus on January 11, 1927.

Pennsylvania.—The Board has granted Registered Pharmacist certificates to eighty of the two hundred and sixty-three candidates taking the examination in October; sixty-two out of one hundred and nineteen Assistant Pharmacist candidates were successful and have been granted registration. Five reciprocal applicants were also accepted.

South Dakota.—At a recent meeting of the Board, fifteen candidates were examined for registration as pharmacists. All of the seven who passed were graduates in pharmacy (Ph.G.).

L. E. Highley, of Hot Springs, was elected President of the Board. B. H. Newmayer, of Vermilion, formerly held this office.

Utah.—As a result of recent Utah examinations, the names of two have been added as Registered Pharmacists to the list of registration, also one Assistant Pharmacist.

Virginia.—The smallest class of candidates for several years was examined at the November meeting. As a result, thirteen from a class of seventeen have been registered as Pharmacists, and four from a class of eleven have been granted Assistant Registration.

Wm. S. Bond, of Tennessee, Verne R. Fulmer, of Virginia and Frank T. Stone, of D. C. were granted reciprocal registration.

The University of Illinois School of Pharmacy was placed on the list of approved schools.

Wisconsin.—Seventy-nine applicants were present at the recent examination of the Wisconsin Board at Madison, and thirty-three out of this number were successful.

The next meeting of the Board will be held the third Monday in January 1927.

ANTI-FREEZE SOLUTIONS FOR AUTOMOBILE RADIATORS.

The Bureau of Standards, U. S. Department of Commerce, has completed a study of anti-freezing solutions in automobile radiators. The following table has been compiled by the Bureau by which the effectiveness of these solutions can be checked.

TABLE GIVING THE FREEZING POINTS AND SPECIFIC GRAVITIES OF CERTAIN ANTI-FREEZING SOLUTIONS.

	Percentage (by volume) in water and freezing points.									
	10%		20%		30%		40%		50%	
	C.	F.	C.	F.	C.	F.	C.	F.	C.	F.
Denatured alcohol.....	-3	+27	-7	+19	-12	+10	-19	-2	-28	-18
(90% by vol.).....	(0.988)		(0.978)		(0.968)		(0.957)		(0.943)	
Wood alcohol.....	-5	+23	-12	+10	-19	-2	-29	-20	-40	-40
(97% by vol.).....	(0.987)		(0.975)		(0.963)		(0.952)		(0.937)	
Distilled glycerin.....	-2	+29	-6	+21	-11	+12	-18	0	-26	-15
(95% by wt.).....	(1.029)		(1.057)		(1.085)		(1.112)		(1.140)	
Ethylene glycol.....	-3	+26	-9	+16	-16	+3	-24	-11	-35	-31
(95% by wt.).....	(1.016)		(1.031)		(1.045)		(1.058)		(1.070)	

EXAMPLE ILLUSTRATING USE OF TABLE.

In order to illustrate how a non-freezing solution is prepared, assume that the lowest temperature anticipated is 19 degrees above zero Fahrenheit and that denatured alcohol is to be used. By reference to the table in the line marked "Denatured Alcohol," +19 degrees F. is found in the 20 per cent column. If the radiator holds 3.5 gallons, 20 per cent of this must be alcohol and the remaining 80 per cent water; 20 per cent of 3.5 gallons is 0.7 gallon or a little more than 5.5 pints. This amount of denatured alcohol should be added to 2.8 gallons or a little more than 11 quarts of water. A solution thus prepared should have a specific gravity of 0.978 at 60 degrees F. and will not begin to freeze until its temperature is approximately +19 degrees F. If the denatured alcohol to be used is 188 degrees proof instead of 180 degrees proof (that is, contains only 6 per cent of water instead of 10 per cent) the amount required will be approximately 4 per cent less or 5.3 pints.