DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

COMMENTS, QUESTIONS AND SUGGESTIONS ARE INVITED AND WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The Editor will also undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

ETHICS IN RETAIL STORE MANAGEMENT.

Thursday night was the favorite night for chain store advertising in Martintown. The great Federated Stores had taken a whole page in the *Martintown Bugle* to feature the low prices at which popular identified merchandise was to be offered over the week-end. The biggest and the blackest type announced that a very popular tooth paste was to be sold for 25 cents a tube, just one-half its regular price.

Individual competitors of the great Federated Stores—competitors who did not regularly make cut prices their principal selling appeal—once more gnashed their teeth in mortal anguish. Twenty-five cents for this popular fifty-cent tooth paste was below the lowest known wholesale cost. Either the great Federated Stores had obtained a special and secret concession or they were deliberately using this tooth paste as a loss leader in an effort to convince the people of Martintown that theirs were the stores at which prices were always lowest.

Follow us now to the glistening, sparkling Federated Store on one of the busiest corners in the center of Martintown. It is Friday morning. Sure enough, the popular tooth paste is on display, but the great red and white price ticket above it reads, "Special—31 cents."

We overhear a woman customer indignantly saying, "Why, you advertised that last night for 25 cents."

The salesman is apologetically explaining to her, "I'm sorry, madam, you see those advertisements are made up at headquarters and we haven't yet been told that the price is 25 cents. However, if that is what the advertisement says, you can, of course, have the tooth paste for 25 cents."

We see other people buying the tooth paste and paying 31 cents for it. We wonder what they will think if, when they get home, they chance to pick up last night's *Martintown Bugle* and read that the Federated Stores offer to sell the tooth paste for 25 cents. We can also hear the telephone wires of Martintown buzzing with the conversation of bargain-seeking housewives.

"Why, did you pay 31 cents? They advertised it, you know, for 25 cents. I'd take it right back. Those people aren't to be trusted, are they?"

Nobody but the manager of this store and his salespeople knew of a meeting which had taken place at 8:30 Thursday morning before the store opened.

The manager has the floor, as he usually does in meetings with his salespeople.

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"This store is not making the showing that it should. We ought to be doing twice the business we are doing here and making twice the profits. It's up to you people to do something about it. If you don't, there won't be any jobs here for you or for me either. This store isn't going to stay open long if it doesn't make money. Now there is a big ad appearing in the *Bugle* to-night offering "Yujaw" tooth paste for 25 cents. That tooth paste costs us 28 cents and we have been selling it, as you know, for 31 cents. We will keep on displaying it and selling it for 31 cents."

"What if somebody comes in and says we advertised it for 25 cents," speaks up one of the manager's bright young men. "Why that's easy. I'm surprised at you, John."

Then followed the instructions to give the explanation which we overheard when we first walked in the store.

Before concluding that this is a damning indictment of the chain store method of doing business and that all chain stores should be forthwith legislated out of existence, listen to this.

Come with me to Patrick O'Callahan's drug store in a residential neighborhood in Martintown. Patrick O'Callahan, incidentally, is a man who at meetings of his fellow retailers speaks the loudest and longest on the chain store evil. In fact, creditors of Patrick O'Callahan are strongly of the belief that he is devoting so much of his time to keeping track of what his competitors are doing that he has precious little time left to operate his own business.

But here, after a long interval, comes a customer into Partick O'Callahan's store. Let's follow her in and listen to what she says to him and what he says to her.—"I'd like a tube of Massogum tooth paste," she begins pleasantly.

A look of incredulous amazement upon Patrick O'Callahan's face leads an unbiased observer to the belief that here is a man of histrionic ability who would be considered a find by a Belasco or a Shubert.

"My dear Mrs. Hurley, are your gums infected or do you want something to keep your teeth clean?" Any one who had seen the flashing white smile of the beautiful and charming Mrs. Hurley would have known the answer to that question, as indeed Patrick O'Callahan did.

The real difficulty was that Patrick O'Callahan had had a dispute about an invoice of the Massogum Company. When this had not been settled to his entire satisfaction, he had forthwith resolved that each and every customer who asked for that tooth paste in his store would be urged with all the power and fighting spirit at his command, to purchase a substitute or competing brand.

Of course, there is no such city as Martintown. There is no *Martintown Bugle*. There are no Federated Stores. There is no Patrick O'Callahan and there is no Massogum Company. Nevertheless, the incidents related above are all true, with the exception of the names and places used.

My purpose in relating these two incidents is to show that unethical, sharp and dishonest practices are not a characteristic of the chain stores as such or of individual stores as such. When they do occur, as indeed they do, unfortunately, there are the expressions of individual policies in management.

In the two instances reported above, the names, Patrick O'Callahan and Federated Stores, could be interchanged and the actions herein set down would be just as true.

This all leads to the general conclusion, which is coming to be more and more recognized by keen-eyed, sharp-witted merchants, that both chain stores and individual stores succeed not so much because of the particular form of their organization but because of superior management.

Superior management, either in chain stores or individual stores, is quick to recognize that unethical, sharp and dishonest practices are not only undesirable from the moral standpoint but that no business of lasting and permanent profitableness can be created on any but a policy of fair and honest dealing.

REPORT OF THE COMMITTEE ON UNOFFICIAL STANDARDS.

ZINCI PHOSPHIDUM.

Zinc Phosphide.

A compound of zinc and phosphorus corresponding to the formula, Zn_3P_2—258.19.

Description and physical properties.—A grayish black, partially crystalline powder possessing a slight metallic luster. It has an odor and taste faintly resembling that of phosphorus.

Zinc Phosphide is insoluble in water or alcohol. It is soluble in dilute hydrochloric or sulphuric acid with the liberation of phosphine.

The specific gravity is 4.7.

When heated strongly in the air the compound glows and leaves a white residue of zinc phosphate.

Tests for identity: A solution of Zinc Phosphide in hydrochloric acid responds to the tests for zinc.

Tests for purity: Five-tenths of a gram of Zinc Phosphide is treated with 15 cc. of dilute hydrochloric acid. The compound dissolves and leaves only a slight oily gray film in the solution (*acid-insoluble impurities*).

A portion of this solution yields a white precipitate with potassium ferrocyanide T.S. (*iron or copper*).

With ammonium sulphide a white precipitate is formed (*lead or copper*).

When mixed with an equal volume of hydrogen sulphide T.S. the solution shows no color or turbidity (*arsenic, cadmium, lead, etc.*).

AVERAGE DOSE: Metric, 0.008 Gm.—Apothecaries, 1/8 grain.

BISMUTHI SUBIODIDUM.

Bismuth Subiodide.

Bism. Subiod. Basic Bismuth Iodide, Bismuth Oxyiodide

Bismuth Subiodide is a variable combination of bismuth, oxygen and iodine, chiefly the basic salt BiOI, and contains, when dried to constant weight at 100° C., not less than 30 per cent of iodine.

Descriptions and physical properties.—An orange-red to brick-red, amorphous or microcrystalline powder. It is odorless and tasteless, and is stable in the air.

Bismuth Subiodide is insoluble in water, alcohol, ether or chloroform. It is soluble in hydrochloric acid, first forming dark colored bismuth triiodide which then quickly dissolves to a yellow solution. Sulphuric acid or nitric acid causes decomposition with liberation of iodine.

Tests for identity: When heated in a porcelain crucible, Bismuth Subiodide darkens and gives off violet vapors of iodine, leaving, after prolonged heating, a light colored residue. When well mixed with several times as much dried sodium carbonate and heated in contact with charcoal, it is reduced to brittle globules of metallic bismuth. A solution of Bismuth Subiodide in a slight excess of hydrochloric acid, when mixed with a large volume of water, pro-

duces a white or yellowish white precipitate, which is blackened by the further addition of hydrogen sulphide.

Tests for purity: Boil 1 Gm. of Bismuth Subiodide with 20 cc. of a mixture of equal volumes of acetic acid and distilled water. Cool and filter. Add 2 cc. of hydrochloric acid, precipitate the bismuth by the addition of hydrogen sulphide, boil the mixture and again filter: the filtrate leaves not more than 0.005 Gm. of residue on evaporation and gentle ignition (*alkalies or alkaline earths*).

To 3 Gm. of Bismuth Subiodide in a dish add 3 cc. of nitric acid and heat on a water-bath, adding more nitric acid, as necessary, until the dark scales of separated iodine have completely volatilized. Bring up to the original volume with nitric acid; no insoluble residue remains (*insoluble foreign salts*). A white precipitate is produced when the solution is poured into 100 cc. of distilled water. Now filter, evaporate the filtrate on a water-bath to 30 cc., again filter the liquid, and divide the new filtrate into portions of 5 cc. each. These portions do not respond to the tests for *lead, copper, sulphate* or *silver*, under Bismuth Subcarbonas, U. S. P. X.

To 2 Gm. of Bismuth Subiodide in a porcelain crucible add 2 cc. of nitric acid and heat on a water-bath, adding more nitric acid, as necessary, until the dark scales of separated iodine have completely volatilized. On evaporation and ignition, the residue does not respond to Bettendorf's Test for *arsenic*, U. S. P. X, page 430.

Boil 1 Gm. of Bismuth Subiodide with 20 cc. of distilled water for one minute and filter: five-cc. portions of the filtrate yield no opalescence or turbidity at once on the addition of a few drops of nitric acid and silver nitrate T.S. (*soluble iodides* or *chlorides*), nor a red color on the addition of a drop or two of ferric chloride T.S. (*acetates*).

Add 0.1 Gm. of Bismuth Subiodide to 5 cc. of sodium hydroxide T.S. in a test-tube of about 40 cc. capacity, then add about 0.2 Gm. of aluminum wire; insert in the upper portion of the test-tube a pledget of purified cotton, and over the mouth place a piece of moistened red litmus paper, and then warm the tube on a water-bath during fifteen minutes; no blue color of the paper should be discernible (*nitrates*).

Assay.—Place about 0.5 Gm. of Bismuth Subiodide, previously dried to constant weight at 100° C. and accurately weighed, into a flask, add 30 cc. of tenth-normal silver nitrate solution, rotate to mix, and then introduce 5 cc. of nitric acid and again rotate the flask. Boil gently for about three minutes, add 50-cc. distilled water and allow to cool. Add 2 cc. of ferric ammonium sulphate T.S. and titrate with tenth-normal potassium thiocyanate until the supernatant liquid remains reddish after it is well shaken. The difference between the number of cc. of tenth-normal silver nitrate added and the number of cc. of tenth-normal potassium thiocyanate used, multiplied by 0.01269, represents the amount of iodine present in the weight of Bismuth Subiodide taken.

Preserve in closed containers, protected from light.

AVERAGE DOSE: Metric, 0.5 Gm.—Apothecaries, 8 grains.

BISMUTHI OXIDUM HYDRATUM.

Hydrated Bismuth Oxide.

Bism. Oxid. Hydrat. Bismuth Hydroxide

Hydrated Bismuth Oxide is bismuth oxide (Bi_2O_3) with a varying amount of water of hydration. When dried for twenty-four hours over sulphuric acid, it yields upon ignition not less than 89.60 per cent, nor more than 96.28 per cent of bismuth oxide (Bi_2O_3).

Description and physical properties.—A white amorphous powder, without odor or taste.

Hydrated Bismuth Oxide is insoluble in water and in alcohol. It is completely soluble, without effervescence, in nitric acid or hydrochloric acid, and in a mixture of glycerin and sodium hydroxide solution.

Tests for identity: Hydrated Bismuth Oxide responds to the reactions for bismuth U. S. P. X, page 440.

Tests for purity: Boil 1 Gm. of Hydrated Bismuth Oxide with 20 cc. of a mixture of equal volumes of acetic acid and distilled water. Cool and filter. Add 2 cc. of hydrochloric acid,

precipitate the bismuth by the addition of hydrogen sulphide, boil the mixture and again filter: the filtrate leaves not more than 0.005 Gm. of residue on evaporation and gentle ignition (*alkalies* and *alkali earths, iron, zinc,* etc.).

Add 3 Gm. of Hydrated Bismuth Oxide to 4 cc. of warm nitric acid: No effervescence occurs (*carbonate*), and no residue remains (*insoluble foreign salts*). A white precipitate is produced when this solution is poured into 100 cc. of distilled water. Now filter, evaporate the filtrate on a water-bath to 30 cc., again filter the liquid and divide the new filtrate into portions of 5 cc. each. These portions do not respond to the tests for *lead, copper, sulphate* or *silver* under Bismuthi Subcarbonas, U. S. P. X.

The residue resulting from the ignition of 2 Gm. of Hydrated Bismuth Oxide does not respond to Bettendorf's Test for *arsenic*, U. S. P. X, page 430.

Agitate about 0.05 Gm. of Hydrated Bismuth Oxide with 5 cc. of a solution of equal volumes of distilled water and ferrous sulphate T.S. and cautiously superimpose the mixture upon 5 cc. of concentrated sulphuric acid, U. S. P. X, page 484, in a test-tube: no brownish red zone forms at the line of contact of the two liquids (*nitrate*).

One gram of Hydrated Bismuth Oxide shows no more chloride than corresponds to 1 cc. of fiftieth-normal hydrochloric acid, U. S. P. X, page 462.

Assay.—Dry about 1 Gm. of Hydrated Bismuth Oxide over sulphuric acid for twenty-four hours, weigh accurately in a tared porcelain crucible, ignite at red heat and weigh the resulting bismuth oxide. The residue of bismuth oxide (Bi_2O_3) corresponds to not less than 89.60 per cent, nor more than 96.28 per cent of the original weight of Hydrated Bismuth Oxide taken.

Preserve in closed containers, protected from light.

AVERAGE DOSE: Metric, 1 Gm.—Apothecaries, 15 grains.

CERII OXALAS.

Cerium Oxalate.

Cerii Oxal.

A mixture of oxalates of cerium, didymium, lanthanum and other associated elements, which yields, when heated to redness, not less than 47 per cent of residue.

Description and physical properties.—A fine white or slightly pink powder, without odor or taste; permanent in the air.

It is insoluble in water, alcohol, ether and in solutions of potassium or sodium hydroxide; insoluble in cold, diluted sulphuric or hydrochloric acid, but dissolved by these acids when heated.

Tests for purity and identity: When heated to redness it is decomposed, leaving not less than 47 per cent of reddish brown residue.

Boil Cerium Oxalate with potassium hydroxide T.S.; an insoluble precipitate of hydroxides is produced. Filter and supersaturate the filtrate with acetic acid; the addition of calcium chloride T.S. produces a white precipitate, insoluble in acetic acid but soluble in hydrochloric acid.

From a solution of Cerium Oxalate in diluted hydrochloric or sulphuric acid, potassium hydroxide T.S. solution added in slight excess, precipitates white hydroxides, which do not redissolve in a larger excess of the reagent, but gradually turn yellow in contact with air. Ammonium carbonate T.S. added in slight excess to a similar acid solution produces a white precipitate of the mixed carbonates of cerium and associated elements, which is somewhat soluble in a larger excess of the reagent.

Dissolve 0.1 Gm. of Cerium Oxalate in 1 cc. of sulphuric acid and add 2 cc. of potassium sulphate T.S.; small, colorless crystals of double sulphates of potassium and the rare earth elements in the mixture are deposited after some time.

No effervescence occurs when Cerium Oxalate is dissolved in diluted hydrochloric acid (*carbonates*).

A solution of Cerium Oxalate (1 in 50) in diluted hydrochloric acid does not respond to the Test for heavy metals (U. S. P. X, page 439).

A solution of Cerium Oxalate (1 in 25) in hot dilute sulphuric acid (1 in 3) meets the requirements for the Test for arsenic (see U. S. P. X, page 428).

Boil 0.3 Gm. of Cerium Oxalate with 15 cc. of potassium hydroxide T.S. and filter. No precipitate is produced in 5 cc. of the filtrate by boiling with an excess of ammonium chloride T.S. (*aluminum*) or in another 5-cc. portion of the filtrate by the addition of sodium sulphide T.S. (*zinc*).

AVERAGE DOSE: Metric 0.5 Gm.—Apothecaries, 8 grains.

METHANOLUM.

Methanol.

Methyl Alcohol.

A liquid containing not less than 99 per cent by volume, at 15.56° C., of CH_3OH.

Description and physical properties.—A transparent, colorless, mobile, volatile liquid, with a characteristic odor, and a burning taste.

It is very easily volatilized at temperatures above 40° C. and boils at 64.5 to 66° C. It is highly inflammable and burns with a pale blue smokeless flame.

Specific gravity: not above 0.800 at 15.56° C.

It is miscible with water without any trace of cloudiness, also with ether, chloroform or alcohol.

Tests for identity and purity: Diluted with an equal volume of distilled water, it does not affect the color of moistened litmus paper.

Mix 25 cc. of Methanol with 10 cc. of alcohol and 25 cc. of water, add 3 drops of phenolphthalein T.S., and titrate with fiftieth-normal sodium hydroxide solution. Not more than 0.5 cc. of the latter should be required to produce a faint pink color.

Dilute 25 cc. of Methanol with 25 cc. of water and add 1 drop of methyl red T.S. Not more than 0.2 cc. of fiftieth-normal sulphuric acid should be required to produce a pink color.

Evaporate 50 cc. of Methanol in a platinum or porcelain dish and dry at 100° C. for one-half hour; the residue does not exceed 0.001 Gm.

On mixing 10 cc. of Methanol with 5 cc. of potassium hydroxide T.S., the mixture does not at once assume a yellow color (*aldehyde*).

Place 25 cc. of Methanol in a porcelain dish, carefully protected from dust, and allow to evaporate spontaneously until the surface of the dish is barely moist; no red or brown color is produced upon the addition of a few drops of sulphuric acid (*carbonizable impurities*).

Mix 10 cc. of Methanol with 5 cc. of distilled water and 1 cc. of glycerin and allow to evaporate spontaneously from clean, odorless, blotting paper; no foreign odor is perceptible when the last traces of Methanol have left the paper (*empyreumatic impurities*).

Cool 10 cc. of sulphuric acid in a small Erlenmeyer flask at 10° C. and add gradually with constant agitation 10 cc. of Methanol. No more than a slightly brown color should develop.

Cool 20 cc. of Methanol to 15° C., add 0.1 cc. of tenth-normal potassium permanganate and allow to stand at this temperature for ten minutes. The pink color should not entirely disappear.

To a mixture of 4 cc. of water and 5 cc. of alkaline mercuric potassium iodide T.S., add 1 cc. of Methanol. The turbidity produced should not be greater than that produced by 0.01 mg. of acetone in 5 cc. of water and 5 cc. of alkaline mercuric potassium iodide T.S.

To 10 cc. of Methanol add 0.5 cc. of aniline and 5 cc. of potassium hydroxide T.S. and heat the mixture to boiling. No disagreeable odor of phenylisocyanide (*poison*) should be emitted (*chloroform*).

Dilute 5 cc. of Methanol with 10 cc. of water and add 3 cc. of sodium hydroxide T.S. and 10 cc. of iodine T.S. Warm the mixture to about 40° C. and keep it at that temperature for 15 min. No yellow color or yellow precipitate should be apparent (*alcohol* or *acetone*).