The Laundry Manual

1896-7

THE LAUNDRY MANUAL

CONTAINING

A COMPILATION OF ARTICLES

PUBLISHED IN THE

NATIONAL LAUNDRY JOURNAL

DURING THE YEARS 1896-97

CONCERNING THE METHODS OF CONDUCTING THE BUSINESS AND MATERIALS USED; ADVERTISING; FIRE PREVENTION AND PROTECTION; INSURANCE AND LAW.

PUBLISHED BY THE

NATIONAL LAUNDRY JOURNAL

INTRODUCTORY.

In presenting this work, we feel that it will be well received by the laundry fraternity at large. Many and various requests have been made for indexing, classifying or compiling a work of this nature. We have done all three to a certain extent.

Every article was very carefully selected by a practical laundryman, who devoted much time and energy to make it intelligent; selecting the most interesting and valuable articles published in the National Laundry Journal during the years of 1896 and 1897.

Many articles contained herein are the product of the brightest, best and most brainy men in the business, and their individual opinions and experiences are given therein. These opinions differ naturally, being formed from experience in different localities, under various conditions as to water, soaps, etc.; and as the best minds will differ even under exact conditions, we will not attempt to decide which is correct where differences appear, but leave that for the reader, reminding him that in applying rules or suggestions laid down herein he should take into consideration the relation of the conditions under which he must apply them, and the conditions under which they were applied by the various writers.

ADVANCEMENT IN THE STEAM LAUNDRY.

ITS MEN, MACHINERY AND METHODS.

It is a fact that something may be learned in almost every laundry one may chance to visit.

Laundering methods differ, so likewise do laundrymen. To-day one meets the very prototype of the "jolly good fellow," whose favorite toast is

Here's to those that wish us well,
And those that don't may go to—Cuba.

The sort of man who can draw more solid comfort out of a ten cent cigar than the president of the L. N. A. can get out of a box of real Havanas,

While snugly ensconced in his easy chair,
With never a worry, never a care.

To-morrow it is the man who is worrying himself to death over black specks or yellow edges, and having trouble all the time, most of it home-made; who lacking in practical knowledge himself, fails to take advantage of the sources of information open to him as to all, through the medium of the trade journal.

The laundry proprietor, manager, foreman, or forelady, who does not peruse their trade paper is surely failing in his or her duty, not only towards themselves, but towards their patrons or employers, as the case may be.

Many a successful business man in the various avocations of life owes his success to hints received and information obtained through the medium of his trade papers.

In making a round of the laundries, one who has seen the rapid rise and progress of the trade during the last fifteen or twenty years, cannot help but notice the remarkable improvement in the machinery, and the same may be said in regard to the materials used in the various processes. Let any laundryman take up a back number of his trade journal, compare its pages with those of the present issue and note the difference. On the pages of the latter will be found cuts and descriptions of much improved machinery, with the latest devices and attachments for perfecting the work. New starches, soaps, bleaches and blues, all better, probably cheaper, certainly more economical in use than anything that was to be had only a few years ago.

While looking through a large laundry in an eastern city the other day my attention was attracted to three bosom ironing machines, standing side by side, of which only one was in use, for only one was required. From ten to twelve hundred bosoms were being ironed per day by one operator on one machine. What more conclusive proof of improvement could be desired? It was a case of late, later, latest, or rather good, better, best, and not only was it an improved machine as regards increased output, but the quality of the work was as manifestly superior to that of the old machines as the quantity was greater.

A few years ago one hardly ever saw a shirt dampening machine in a laundry doing less than 2,500 shirts a week. Now they are common and may be seen in all well managed laundries of whatever capacity. The shirt press, too, that old screw affair, that either pressed them too much, or didn't press them enough, is now only a memory of the past. The modern shirt dampening machine, that saves all the trouble of wringing out, and dampens to perfection, and the shirt press that only requires the turn of a valve to get a uniform pressure all through and all the time, have taken their places.

The old style mangles, which necessitated the drying of the goods before mangling, or the waste of valuable time in putting them through over and over again until dry, are not now considered worth the room they take up and are rapidly disappearing, being replaced by the later inventions in the same line which will take the goods as they come from the extractor, be it a handkerchief or bedspread, finish it like new and as dry as a bone if run once through.

The old dry room, too, is under condemnation. It is going, going, going, and will soon be gone. Laundrymen who know their business are satisfied that two hours to dry a shirt is just one hour and thirty minutes too long. American ingenuity, which is well represented among our laundry machinery manufacturers, has solved the problem of quick drying, and a dryroom that will not thoroughly dry a batch of shirts, collars or other articles inside of half an hour is considered out of date. So exactly can the currents and ventilation be regulated in these improved dryrooms that when a dry lot is taken down and replaced by wet goods the variations in the thermometer with which these closets are fitted is hardly perceptible. Sixty pounds of steam pressure, showing 270° F. or thereabouts, on the glass, are dryrooms that not only save time and money, but by drying quickly, much better results are obtainable in color; long exposure to moist heat having a tendency to yellow cotton and linen material.

The improvements in laundry machinery within the last few years has been remarkable, and the same may be said in regard to supplies.

Thin boiling starch is now used in most laundries in preference to the ordinary thick boiling variety, and the manufacture of corn starch has been so perfected that the very highest grade of work in any finish can now be got with pure refined corn starch, this article being shipped into Troy, that city so famous in song and story for good laundry work; and used by the shirt and collar factories in great quantities.

There are those who hold that a proportion of wheat or rice starch improves the quality of the work and lessens the propensity of the fiber to crack or break when treated with it; but as so many laundries are obtaining the desired results with corn starch alone, the merit of this article may not be as well understood as it might be.

As the method of preparing the starch has much to do with the results obtained, a few hints as to the preparation of liquid starch may prove useful. However, as there are about as many formulas for making liquid starch as there are laundries, about every other laundryman having an infallible prescription of his own, time will not permit going into the subject more fully at present. Elsewhere a few of the formulas referred to will be given, with the pros and cons of the formulators, for starch having a good deal to do with the wear and tear of the goods, is always an interesting theme for discussion among laundrymen, and an exchange of ideas is, under all circumstances, a source of useful information.

"THE ENORMOUS AMOUNT."

FIGURES ON THE EXTENT OF THE LAUNDRY TRADE.

The great volume of business done by the laundry trade is a revelation to the average layman.

Taking the very conservative estimate that there are 5,000 steam laundries in the United States doing an average of $200 worth of work each week, this would mean $1,000,000 spent by the general public each week in laundry work, or $52,000,000 a year. This of itself shows what an important industry the laundry trade is.

But to keep the laundries supplied with the various materials and machinery necessary to turn out such an amount of work, also means that there must be very many business houses engaged in furnishing this material and machinery. Taking Chicago as an example, and it is the only place for which the writer at this time can give figures, it is found that there are five firms that manufacture laundry blue; five that make laundry wagons; seven that make starch; eleven that deal in general supplies; nineteen that make and deal in laundry machinery, and innumerable soap manufacturers. In addition there are a large number of firms that make engines suitable for furnishing the power needed in every well-equipped laundry.

These figures, however, only include Chicago, and do not include Cincinnati, New York, Troy, St. Louis, Rochester, San Francisco, Milwaukee or Philadelphia, all of which places are centers for the supply of anything needed in the laundry trade; nor do they include any of the numerous smaller cities that make special articles for the trade.

It is doubtful if even a lifelong laundryman fully comprehends how much money is spent throughout the country in his trade, nor the large amount of labor that has to be employed to carry on the business, a business that is not alone important from a monetary standpoint, but from a hygienic as well. The average laundryman no doubt is beginning to understand the importance of his trade in the commercial world, but the average layman has absolutely no conception of the enormous amount of business transacted by the laundry trade in the course of a year.

NOTED GERMAN EDITOR

ON THE VALUE OF THE STEAM LAUNDRY.

Among all civilized people, from the most ancient times until quite lately, the washing of the household linen has been effected solely by the manual labor of the housewife or washerwoman. The steam laundry, which in our days is graudually replacing this handwork, had not been dreamed of, and it was not until the latter half of this century that washing by steam on a large scale entered into the domain of accomplished facts.

Whereas, all other industries have been rapidly developed—thanks to perfected processes and plant—mechanical washing, in spite of all its incontestible advantages, has been evolved with singular slowness, and we do not hesitate to affirm that it still lags terribly behind in Germany in comparison with its adoption in other countries. In the United States, for instance, steam laundries have flourished for the last twenty-five years, very considerable sums of money have been invested in work of this class, and there is not a little American city of 8,000 to 10,000 inhabitants which has not one or two steam laundries.

In France, as in Germany, it is only recently this system of washing was adopted, and even to-day it is only the great public establishments, such as barracks and hospitals, that have given the attention it merits to a question of such high importance. Owing to the intelligent initiative of these establishments, the public has become convinced of the incontestible superiority of the work of the steam laundry over the home treatment of linen wherever it has been placed at their service.

In the first place, it is very evident that a great economy is realized by this mechanical operation, especially in large towns where the excessive cost of manual labor increases to a large extent the expense of the domestic wash. Moreover, the less the cost of cleansing the body linen, the greater is the inducement to more frequent change of linen. This is an important enough fact, from the commercial point of view, but the hygienic value of this more frequent change seems to us to outvalue all the other considerations.

The treatment of body linen by steam is an absolute preventive remedy against all diseases transmitted by microbes. The linen worn by diseased persons has often contributed to the spreading of epidemics, even when it has not been the direct and efficient cause of illness, either by the transmission of infectious germs to other linen, or directly to the washerwoman charged with the duty of cleaning the infected clothes. But as regards the mechanical work of the steam laundry, the workman is very little in contact with the articles to be washed, and is therefore better protected against contagion than in the old method, in which the whole operation had to be done manually. Again, the contamination by the more recently washed clothes of the linen already ranged in the wardrobe drawers becomes impossible, in view of the fact that the prolonged boiling by the mechanical process, under high temperature, has destroyed the infectious germ. It is far from being the same with the home process, for the means at the disposal of the washerwoman are quite inefficient to kill the microbes. Without the necessity of special arrangements or apparatus, mechanical washing totally disinfects the linen, and in this there is a reassuring fact for those timid persons who hesitate to confide their linen to strange hands.

The public showing itself lately to be more and more in favor of the steam laundry, a large number of these establishments have sprung up, especially in the larger towns, and have given full and complete satisfaction both to their customers and their shareholders. Many jobbing dyers and chemical cleaners have added this branch to their business, and thus to their own considerable advantage combine the washing of linen with the cleaning of garments, furniture, etc. The principles upon which this system of mechanical washing is based are naturally the same as those which come into play in the domestic practice, and all the economy arises from a reduction in the cost of working, due to a more rational use of expended force and a far greater rapidity of execution. Just as at home, the articles to be washed are steeped to begin with in warm water, either pure or to which a small addition of soda crystals or other detersive has been made. By this means, before the actual washing, the albuminous matters secreted by perspiration are eliminated. These matters are soluble only in cold or in lukewarm water; in hot water they coagulate and become insoluble. If, therefore, the dirty linen was put directly into the boiling lessive, these coagulated matters would be deposited on the tissue and retain upon it the dirt of every description, rendering the work of cleaning the soiled clothes considerably more difficult. It is, therefore, only after having steeped the clothes for several hours, followed by a thorough rinsing in plenty of water, that it is advantageous to subject the articles to a high temperature, and this is done in the rotary washing machines so well known to the majority of our members, with a lessive of soap and soda, or potash lye. If the articles are woven or embroidered in colors, for instance, table covers, serviettes, etc., boiling is avoided, and a temperature of 50 deg. C. (122 deg. F.) is not exceeded. After this comes another thorough rinsing, and the articles are passed into the hydro-extractor and then dried. The mangling is then done with a steam calender. The blued and well "whizzed" linen in this case is not dried thoroughly, and passes while still moist between the rolls of the machine. The ironing machines for cuffs, collars and shirt fronts have not yet received their letters of naturalization in Germany, and the work is usually done by hand.

The simplicity of the process employed is not the least important of the factors which will determine the generalization of this industry. The important role it is called on to play makes us believe it is about to become one of the greatest industries of modern times, and we foresee that in view of the publication of results obtained, this method of washing will be universally patronized by the public, especially if the members of the trade will keep up to date, and adopt all the progress that science puts daily at their service.

[The special value of this testimony in favor of the steam laundry lies in the fact that it is an entirely disinterested editorial expression of opinion. Dr. Lehne, editor of the Farber Zeitung (the leading journal of the German dyeing industry), is a scientist of world-wide fame, and even if this is not actually his own editorial, which it probably is, he has not allowed it to appear in a journal which hardly interests itself in the laundry industry, without weighing the pros and cons, and himself deciding emphatically in favor of the more scientific method of washing clothes.—Ed.]

PREJUDICE AGAINST STEAM LAUNDRIES.

Prejudice against machinery in the laundry business is gradually wearing away. What remains is largely caused by a class of back number men in the business who cater to the whims of their corresponding back numbers among the public by continually parading the old fogy sentiment in their advertising, as well as otherwise, the idea that machinery is highly destructive.

As for the mechanical side of the question, we can dismiss it very briefly. All experience and all scientific testimony bears witness that the speedy and effective action of the machine is less injurious to the linen than the rough methods of manual labor. It is also self-evident that the water in which the linen is treated is heated with less danger to the linen, by steam, than over the open fire with the possibility of overheating the sides of the vessel. "The washing machine," says a French chemist, M. Bailly, "in which the action is softened by the coating of soap always between the linen and the sides of the machine, wears the linen less and washes it better than the hand methods of the washerwoman.

There is another reason in favor of mechanical washing. The washerwoman rubbing the linen between her hands can only beat the water at a relatively low temperature, otherwise she would burn her hands. Hand washing, therefore, is done in only fairly hot water. Now, everybody knows that soap does not act well on the dirt and does not give all its detergent effect unless it is in boiling water. More than this, certain greasy or staining matters only become soluble in water brought up to a certain temperature, whereas they remain insoluble and absolutely fixed on the linen in merely hot water.'' It is evident from this that the washerwoman must bring a more violent action to bear on the linen than is requisite in the machine to get the same results, and therefore, the linen wears more in her hands.

But in some minds there is a prejudice against machinery in general, and it is to this the appeal is made. The word ''machinery'' has a terrible sound in some ears. To them, in this case, it is not suggestive of the reality—that is to say, energetic but gentle mechanical action. Instead, it suggests cog-wheels, and violently moving mechanism generally, and this is the picture the advertiser wishes to bring before the mind.

It may be safely asserted, therefore, that in ordinary washing, nothing is used that can in any way harm the linen. The rapid evaporation of boiling over the open fire may expose the linen of the old style washerwoman to the danger of forming hydro cellulose, and this is one more argument in favor of boiling by steam. For the rest it would take too long to discuss the precise action of certain bleaching agents and chemicals used for the removal of stains in the laundry: in similar cases, to get good results, both the old and new style laundry worker must use them; properly employed, however, these hypochlorites, etc., are not harmful to the linen or cotton fibre, and the modern worker is likely to make the more intelligent use of them.

There still exist, of course, many highly respectable laundries, where little use is made of machinery, which can carry on a trade without libeling their brethren in the business. This article is not directed against such, but against those who hope to profit by dishonorably feeding an old and stupid prejudice.—London Laundry Record.

THE PASSING OF A PREJUDICE.

It is one of the good signs of the times that the public generally has nearly gotten over the old prejudice against steam laundries. The people have come to understand that the premature destruction of shirts, collars and cuffs in the steam laundry is more imaginary than real, and that goods done by hand do not last any longer than those turned out by machinery.

Laundry processes as conducted in well regulated laundries do not injure the fabric, neither washing by machine or drying over a steam coil, nor starching by a machine or ironing by a machine is any way more destructive than the corresponding hand process. Ironing by machinery very closely resembles the same work done by hand. In the latter case there is a hot metal surface, flat or nearly flat, and there is an ironing board or table covered with cloths; in the machine there is a heated roll and a padded roll, or, in other words, a collar, for example, is ironed between two cylindrical surfaces instead of two flat surfaces. That is the only difference.

The machine, moreover, has its advantages over hand-ironing. It moves quicker, and maintains a uniform heat and uniform compression, things which the hand can never succeed in accomplishing. In fact there is no question but that it is simply a matter of experience.

KOREAN AND JAPANESE LAUNDRIES.

The hardest worked washerwomen in the world are the Koreans. They have to wash about a dozen dresses for their husbands, and, inasmuch as every man wears pantaloons so baggy that they come up to his neck like those of a clown, they have plenty to do. The washing is usually done in cold water, and often in running streams. The clothes are pounded with paddles until they shine like a shirt front fresh from a Chinese laundry.

The Japanese rip their garments apart for every washing, and they iron their clothes by spreading them on a board and leaning this up against the house to dry. The sun takes the wrinkles out of the clothes, and some of them have quite a lustre. The Japanese woman does her washing out of doors. Her washtub is not more than six inches high, and is about as big around as the average dish pan. She gets the dirt out of the clothes by rubbing them between her hands. She sometimes uses Japanese soap, which is full of grease, and works away with her bare feet. The Chinese girls do their washing in much the same way. The washing in Egypt is usually done by the men. The Egyptian washerman stands on the banks of the Nile and slaps the wet clothes with a noise like the shot of a pistol, on the smooth stones at the edge of the running water, and such fellah women as wash, pound the dirt out of their clothes in the same way. French women pound the dirt out with paddles, often slamming the clothes upon stones, as the Egyptians do.

GUATEMALA WASHERWOMEN.

An institution of the city of Guatemala, which no one can avoid seeing is a public laundry. At convenient distances along the principal streets may be found tile-roofed pavilions—one-story pagodas would perhaps describe them better. Most of them are circular in form, and all the roofs are supported on brick and cement pillars. A deep cement trough, waist high, runs all the way around each pagoda, save where there is a doorway, and this trough is kept brimful of water, by a pipe from a hydrant. Inside of the trough, and on a level with and facing it, is a row of shallow, rectangular tubs made of cement; they are not more than six inches deep on the trough side, and but one inch on the inner side. A level shelf, to hold the soiled clothes, is found on one side of the tub, another for the washed clothes on the other. So it happens that wash day with the Guatemala washerwoman is like an afternoon tea for gossip. The women go to these pavilions in the cool of the morning with their children on their backs and the laundry stuff on their heads. The children are bathed in the trough first of all—a wriggling, splashing process that sets everybody in sight laughing, including the youngsters themselves, and then, when they have been turned loose to accumulate a fresh layer of dirt in the street, the mothers begin the slightly more serious work of rubbing the clothes in the tubs, rinsing them in the troughs, and discussing the deeds and qualities of their neighbors who are not present.—Exchange.

"THE GOLDEN CITY"

AND THE DISTRESS THERE.

It seems that the greatest distress prevails among the poorer classes at Johannesburg (the "Golden City"), and a movement is on foot to establish a laundry where white women could work. At present, practically all the washing is done by blacks.

Apropos of this, the Johannesburg Star says that public laundries for women should, as they are in most great towns of England and the Continent, be supplied with water, washing tubs, drying rooms, and conveniences for ironing; and all should be able to come to them on a very small payment, or perhaps just at first, without payment at all. If such institutions were properly set up they would soon divert the trade from the Malays, who now make a favor of charging us four or five shillings a dozen, and the work would be done at a more reasonable price, and with considerably less damage to one's linen.—London Laundry Journal.

SOME LAUNDRY ITEMS.

FROM INDIA AND JAPAN.

"Advance" is the true motto of Japan to-day, whatever may be the words on her scutcheon. It is also the unanimous sentiment of the Kobe Laundryman's Guild, which recently "advanced" its charges an average 120 per cent. This was accompanied by a considerable diminution of the courtesy for which the nation is famous, and it brought the Guild into rather undesirable relations with the Prefectural authorities. As a local newspaper puts it, "The Governor has directly intervened between the soapsuds gentry and their intended victims. The complete victory of the washtub is not yet; their patrons objected to being both fleeced and insulted, and officialdom sees the reasonableness of the objection. The washermen were 'had up,' and Mr. Lufu ordered a general revision of the Guild by-laws, which will oblige the Kobe washermen to climb down to a probable advance of 20 per cent." One of their pleas was that the house-boys of foreigners want 25 per cent. by way of "cumshaw," an item of philological interest, which proves that the word "backsheesh" has not gone quite round the world. Let us hope that there is tribulation in store for the house-boy, for the probabilities of the truth of this bit of evidence are overwhelming.

AS TO ENGLISH AND AMERICAN MACHINERY.

INTERESTING REMARKS THEREON.

At a recent meeting of the Laundrymen's National Association of England, considerable discussion took place on the various machines shown at the exhibition recently held in London. The following remarks were made.

Mr. James Williams: I have listened to the excellent paper which we have heard to-night, with considerable pleasure, and without any attempt at flattery, with considerable profit. I walked through the exhibition and spent an hour, or an hour and a half there, and am quite sure, from having listened to the paper, I did not derive all the good that I might have done, and since the reading of the paper, I am looking forward to another visit for the purpose of enquiring into details of machinery to which the reader called special attention. There is one question which I should like to ask. You alluded in your paper to the relative merits of English and American machinery. Does our English-made machinery suffer at all in comparison with the American-made machine? I cannot lose sight of the fact that experts in every industry tell us we are losing ground on American competition. I have seen in American papers that this kind of thing is reversed, and that we are gaining ground. Now it is a common thing for America and other countries to send men to England to investigate our machinery. Are we holding our own? (Cheers.)

Mr. Bell: The question Mr. Williams has asked me to answer is rather difficult, but I may say that in my paper I separated the two items because while they are incomparable, there is no doubt that our present English well-made machines are decidedly ahead of the Americans, although there is not a machine we use up to date that has not been originally copied from the American cousins. Ours are made better, though theirs do the work equally well, and are cheaper. If I were buying for a wealthy firm I should certainly recommend strong, well-made English machines, simply because capital is no consideration; but for small laundrymen, I recommend American machines.

Mr. Simon: Comparing French and English laundries; where in England we have twenty steam laundries you won't find two in France or Germany. On the other side, the French machinery, like the American, is lightly built, and not in it compared with English machinery. We have had a lot of French people coming over here to see what machinery we make, but when Frenchmen are buying English machinery they are, against their will, forced to buy what they have over there. And again, at this exhibition I am told that a quantity of French gentlemen came from various districts to examine what is done in the baths in wash houses, so it is a proof they come over here to know what we are doing. Last year and the year before, the sanitary people sent to examine what was done in England and report on it.

AMERICAN LAUNDRY MACHINERY.

FROM A FRENCH POINT OF VIEW.

After all that has been said and written on the subject of washing machinery, particularly of its use in America, it will not be out of place to give some figures of the results obtained from the American machines, by which some light on the subject may be obtained. In fact, this is the only way to demonstrate clearly who is right and who is wrong—those who attack American machinery or those who defend it. We cannot do better than give extracts from the official reports of the laundry attached to the county building at Nanterre. The machinery is American and has been in use two years. In a period of 11 months 579,124 kilos of linen had been washed at a total cost of 22,196 francs 78 centimes, which means a cost of 3 francs 83 the 100 kilos—i. e., about 76 cents American money for every 220 pounds avordupois. It must be added that the saving effected in wear and tear of linen is estimated to be 12½ per cent on the old method. It can definitely be asserted that such a low price has never been obtained before, which should put an end once and for all to all discussion, and demonstrate clearly the advantages of American machinery—Journal des Blanchisseurs et Buandiers de France.

IT'S ENGLISH, YOU KNOW.

In France the supreme test of anglo-mania is to have your laundry "done in London, don't cher know." A man must have it pretty bad to risk the London smuts. But seriously, time was when French laundry work was considered the best in the world, and now the Frenchmen are hustling to learn American methods and buy American machinery.

THE AMERICAN MACHINIST.

The fame of the American machinist extends everywhere, says a contemporary. His ingenuity in planning and his skill in execution are known wherever man uses machines and tools. If there is any one branch of work in which he excels more than in another, it is in the building of special machinery, by which is meant machines not kept in stock or regularly manufactured, but specially devised and made for special uses. For instance, man designs some article of use which he works up by hand or by the aid of machinery. To produce this article in quantities, at such a cost that it can be sold at a profit, special machinery is required. The designer or inventor takes the article to the builder of machines and says:

"Can you make a machine that will make these things, and will you guarantee it to work?"

It is altogether probable the machine builder answers "yes" to both questions, because there is practically nothing that he cannot do. Special machinery is built for a wide variety of uses. As the knowledge of American skill in this direction, now long familiar, has spread, orders have come from all over the world, and special machinery is sent from here also for use in enterprises installed or conducted by Americans in foreign countries.

CHICAGO LAUNDRY MACHINERY.

The National Laundry Journal, which has many subscribers in England, Germany, France, Brazil, Switzerland and South Africa, reports on the export trade of laundry machinery from Chicago during the last two months as follows:

One whole plant to Johannesburg, South Africa; one to Arnheim, Holland; one to St. Petersburg, Russia, the first steam laundry to be set up in that country; an order for a laundry plant to Tokio, Japan, and a probable one for Honolulu, besides a large amount of machinery for England, Ireland, Scotland and Switzerland. Of this latter, there is always a brisk export trade going on, but the extent to which Chicago supplies the rest of the world with laundry machinery has hardly been realized by the general public, and it may be remarked incidentally that the steam laundry industry is as yet only in its infancy in most of the so-called civilized countries of the world.—Chicago Journal, Saturday, Oct. 24th.

FACTS ABOUT MACHINERY.

ITS PROPER CARE IS HALF THE BATTLE IN GOOD RESULTS. SOME GOOD ADVICE FROM EXPERIENCED MEN.

Everything that mechanical skill, adaptation of means to ends, and a thorough study of practical methods has achieved, is being employed to make the machinery supplied to the modern steam laundry as perfect as it is within the range of possibilities to accomplish.

Year by year there has been marked progress on well marked outlines.

It is a well known fact, however, that machinery in some laundries lasts longer than in others, and therefore the care and proper use of the plant becomes an object of considerable interest to every laundryman.

Speaking of the matter, a laundryman said.

"There need be little trouble with machinery in the laundry where skilled labor is employed. Of course, at odd times, the gearing on washers cause annoyance, but it is the annoyance which is common to all machinery. The washers themselves give little bother."

"How about the ironers?" queried the reporter.

"The ironing machines are all right. Starching, dampening, and the dryroom are more responsible than a little for faults laid to the door of the ironers."

"Then," continued he, "take the extractors. No man who knows how to load an extractor, should have any trouble with it. If it be not loaded properly it is the fault of the man running it, not of the machine, if the goods be damaged. It is quite possible with the very best extractors to tear the sleeves out of shirts or to tear them in two. You have seen men load hay? Well, an extractor should be loaded in the same manner—packed so that the goods will not get in a tangle, and then you can go ahead."

"What about the speed at which it is safe to run an extractor?"

"We run as high as 1,800 a minute. I would say there is nothing to be gained in overloading an extractor. There will be a positive loss in time."

Another speaking on the same subject said:

"If there be one thing more important than another in a laundry where every little thing is of importance, it is the care of the plant. With the perfected laundry machinery of the present day there is but little trouble where it is properly looked after; but just there is where it all comes in; everything should be watched so far as belts, power, etc., are concerned."

"Are there any special things in regard to washers, ironers and extractors to be looked after?"

"Certainly. In the case of washers, for example. Where the water is hard, especially, and a poorly saponified soap is used, a greasy lime deposit forms on the outside of the cylinder, which if not removed, will contaminate the goods by becoming detached, like scale in a steam boiler, and mixing with them.

"This in the ironing gives rise to spots. It has been attempted to cut out this greasy lime by running with dilute sulphuric acid, but the process has not been satisfactory. The acid cuts the grease, but it leaves the lime virtually untouched. We have found it much better to scour it off once a week, where necessary, with a hard wire brush. It removes it perfectly and there is no trouble. Soap will vary in quality and this is liable to arise in any laundry where the water is hard."

"How about the ironing machines?"

"Well, they should be especially looked after as regards oiling. When they are not kept oiled they will quickly get out of their fine adjustment and a machinist will have to be called in to set them right at 50 cents an hour. A girl will often let her machine groan and complain, just to avoid the trouble of oiling it. This should never be permitted, as it is destructive of the very best plant. As far as possible the oiling should be automatic.

"In regard to power where belting is concerned it is desirable in the ironing room not to have it overhead. The belts collect dust and in their revolutions distribute it all around."

This one says: "The ideal laundry, so far as the arrangements of the plant is concerned, as well as in other things, is one with all the departments on the same level. This is not always possible in a big city like Chicago, but where it is possible it has been estimated that it will save from 10 to 12 per cent in the cost of operating the plant. The saving is mainly effected in the saving of elevators, chutes, etc.

"I would say in conclusion that it is the small things which count in the handling of laundry machinery, as indeed in the handling of machinery of any kind. Oiling at the proper times, protection from dust and a careful supervision over belts are essentials if the even working of a plant is to be secured. The same care must be exercised over the plant in one department as in another.

"As to extractors? It will be found that if the goods be properly loaded there will be no trouble. As to speed, 1,500 per minute will be found a convenient speed with the ordinary extractor. The larger the extractor, of course the lower the speed.

"In regard to belting, it should be constantly watched. This is the custom with us. When a belt is driving but is not all right, the engineer makes a note of it, and when the power is off it is at once attended to."

"When you find the machinery in the laundry not doing its work properly," observed another, "in nearly every instance you will trace it to cheap help. Cheap and incompetent help, or absolute carelessness will be at the root of the evil. The work done by machinery in the laundry is in every instance much better done, and with less wear on the goods than it is possible for the same work to be done by hand. I am speaking, of course, of laundries where skillful help is employed and supervision exercised.

"Take the ironer, for instance; it does its work perfectly, and if the girl knows her business, cannot injure the most delicate fabric. Yet I have seen a girl in a fit of sulks jerk a shirt out of a machine in such a way as to tear it nearly in two.

"The prejudice against machines lingers only among a very few. A little while ago I had a letter with a bundle from a customer, in which he wrote: 'I want my shirt ironed by hand. Only a castiron shirt could stand your machinery.' If this man only started two of his shirts on equal terms—one to be ironed by hand and the other by machine—he would soon find the difference."

"What about the care of laundry machinery?"

"Well, it should be cared for like all delicate machinery, but especially should care be taken to insure absolute cleanliness. This is above all of primary importance in the ironing room.

"As regards the scale that forms upon washers, I do not know that it gives any trouble. It is insoluble and sinks to the bottom, where it becomes detached. It acts very much like the scale which forms in a boiler."

This one agrees in the main with his confreres, In discussing the question, he said:

"All standard makes of laundry machinery will work well with the care in regard to gearing, belting, etc., which is bestowed upon all machinery in motion, where good results are attained. It might be as well, however, if in the construction of ironers, some way was devised, to prevent the uncertain action of blowers, which often prevents a uniform heat.

"A main point is to have skilled operatives at every machine, but as a matter of fact you should have skilled help in every department of a laundry. Sins that are laid to the fault of the machine will be found much more frequently to have been committed by want of proper preparation of the goods. The chemical department of the laundry is every bit as important as the mechanical, and except goods are properly prepared for the machines, they will not turn out good work. Starching, dampening, etc., all have an important bearing on the work of the machines. If these preparatory things are neglected, then the machine should not be blamed for causes over which its makers can exercise no earthly control.

"In regard to the care of washers, they should be cleaned out thoroughly once a week. A little acid will remove any deposit which may form from the use of hard water.

"Above all, if cleanliness be next to godliness, in no place is this truer than in the steam laundry. In every laundry the greatest care should be taken to avoid dust in the ironing rooms. The floors should be sprinkled and swept every day before commencing work and washed once a week. Where it is possible not to have the power from overhead it is desirable, as the belting will collect dust and distribute it through the atmosphere.

"It will be found," concluded he, "that in every case where the goods are properly prepared and the help understand the work, laundry machinery of standard makes will trouble the laundryman very little."

The people want perfect work and the laundryman who does not change his plant to keep up with the times will be left first, last and all the time.

THE MODERN LAUNDRYMAN

AND HIS SPECIAL KNOWLEDGE.

The idea that anyone can run a laundry has died out with many other notions of the time of our fathers. There never was a time when more experience was required by all who aspire to success in the trade.

The modern laundryman has to have at his finger ends a number of things that never disturbed the laundryman of even a decade past. It never comes into the life of the laundryman of these end-of-the-century days that he can get along with a hand washer. Yet Munger, who started in the early sixties, had no washer at all, and all the delivering was done by boys who used to travel around upon street cars.

Up in the seventies the laundry supply man was virtually unknown. A laundryman in those days bought his soft soap from a wagon and the starch was bought by the box.

The decade previous to this the ironing machine was unknown. When it did come into fashion it was used only for polishing, the ironing proper being done by hand.

What a change has come over the spirit of our dreams since the days that immediately followed the war!

Machinery has shown everywhere its superiority over the old hand methods that are fast becoming memories of the past. However small the plant, it is. a machine plant; however small the laundry supplies, they come from supply houses that make a business of supplying them of the best. There are no chances taken now by the laundryman who hopes to succeed in business.

Every man in the business recognizes the fact that he must have good tools if he wants to produce good work, and that the smallest economy is that which takes chances on poor laundry supplies.

The natural reflex of this feeling among laundrymen is the generation of a healthy competition among machinery and supply dealers to put the best goods in the market at the lowest possible prices.

The improvement in laundry machinery and laundry methods has, as a matter of course, given rise to the employment of skilled labor to a degree never dreamed of in the old days. Help for a laundry cannot be picked up in the streets in these days as in the past. A laundry requires one good engineer, one good washer and many good ironers. The more practical knowledge the proprietor has, of course, the better, but if his business be at all large he will require this amount of skilled labor if he desires to get along without friction. Of course, in the matter of help the foreman is the most important factor. He should be a man of ripe experience, who can see at a glance where things have gone wrong in any department. That such men command good salaries is simply a matter of course. The $20 to $30 per week paid to such men is money well invested. It will not do to have to run to the machinery firm every time something goes wrong with a machine. The good foreman is always able to correct ordinary defects, and in that his main value consists.

The man who aspires to direct the operations of a large steam laundry in these days must be somewhat of a chemist. Of all the things that he will be called upon to deal with, there is not one that does not involve some chemical question. Commencing with the very water used, it goes through the whole gamut until the goods are turned over for delivery.

There is nothing of more importance to the laundry than a good supply of water. There are several points to avoid in a laundry water. One of them, and the chief one, is hardness. A hard water is always a source of trouble and expense. It uses up soap and softening agents. How much loss it may cause in a laundry may be estimated from the fact that a single grain of sulphate of lime can convert a soft water into a hard water. Until the earthy salts are neutralized, soap put into hard water only forms what is known to laundrymen as a lime curd, and has no washing value whatever. Many laundries have found by experience that in many cases throughout the country it is much more profitable to sink a well on their premises than to depend upon the city supply. The cost of well sinking has been estimated at from $1.50 to $2 per foot. Water has been found in our large cities, with but few exceptions, at depths of from 85 to 200 feet. The water has nearly all the time been found of a good quality for laundry purposes, and many laundrymen have rejoiced in their freedom from city taxes. Indeed, the water bill has been in many towns the cause of ceaseless annoyance and many have found that the first expense more than pays for itself where the soil is favorable for well-sinking at anything like moderate depths.

The laundryman, however, that determines on sinking a well should see to it that he is in the right formation to obtain the kind of water that he requires. There is no use of his sinking in a lime formation and expecting to obtain it. Water found in a lime formation is certain to be hard, while the softest water will be obtained from a sand or rock formation. Here again the technical knowledge of the laundryman comes into play.

A knowledge of the ordinary methods used for the testing of acids and alkalies, as to their strength, is of the utmost value to the laundryman, and will in the long run save him many dollars. It is not necessary that the laundryman should be a thorough chemist, but every up-to-date laundryman in these days must have the technical chemical knowledge that pertains to his business. The old days of working by the rule of the thumb have vanished from the laundry, as they have from every other field of human industry.

THE MAN WHO KNOWS IT ALL.

"I don't care to subscribe for your paper; it cannot teach me anything, and I have no use for it."

These are the identical words that the writer received recently from a manager in charge of an enterprise with several thousand invested in its business. While some publications may fall far short of their opportunities, and the writer realizes his own need of constant study to keep up with the procession, it is certainly true that no trade or class journal, however poor, can be read without some profit and valuable suggested ideas, if not demonstrated ones. A concern whose managers are at the head of their profession, assure the writer that they get new ideas from his journal; the fault in this case cannot be wholly with the paper.

It is extremely exasperating to meet with those men who "know it all," and in these days of modern-priced subscriptions the publisher is at the outset exempt from suspicion of merely mercenary desires when he solicits subscriptions to his journal. His ambition is to cover his field, and to cover it to the greatest possible extent.

What to do with such people is a question. What the writer did was, first, to ascertain that the concern in question did not subscribe to any journal devoted to the field in question, and having done that, second, to write the author of the letter and offer him fifty dollars for a 500-word article for publication over his signature, explaining how he was able to conduct his business with the greatest possible success without reading any journal exclusively devoted to his line of business. Attention was called to the fact that the remuneration was unusually high, ten cents a word, and greatly in excess of anything paid by daily papers, or even for average magazine articles. But we were doomed to disappointment. All the shots we loaded in advance to puncture his "How I Do It" were lost, for repeated invitations to explain, even at fifty dollars an explanation, were ignored.

The reason is evident; the man who would dare to put his name to such a confession could not secure another position for years to come with any other concern in the business. In these days of new ideas daily, which make for economy in the conduct of any business, the man, no matter how extensive his experience, who lays claim to have reached the limit of human knowledge even in one specialty, holds himself up to public ridicule as either an Ananias or an ass—or, more strictly speaking, both.

This man has nothing to learn, and finds no use for his own trade journal. But, what shall we do with him?—Trade Press.

THE ENORMOUS AMOUNT

OF STAPLE SUPPLIES USED IN THE AVERAGE LAUNDRY PER WEEK WOULD OPEN THE EYES OF THE PUBLIC. A FEW INTERESTING FIGURES.

There are a number of causes that lead laundries to use different supplies and use them in different manners. Many laundries make their own soap from chips, others make their own bleach, and again, others use different sours. Still, it is quite possible to get an approximate idea of the amount used in the average laundry, and the figures will be found to be interesting. A very moderate estimate would place the number of laundries in the United States at somewhere over 5,000. Averaging all these laundries, big and little, they would do, say, $400 worth of work per week, and to do this work they would require certain supplies, the amount of which would vary, of course, with the amount of trade done. In a first-class laundry doing a business of, say, $800 per week, one barrel of starch weighing 225 pounds, or perhaps a barrel and a quarter, would be required. Starch is a somewhat difficult article to estimate upon because of the variety of kinds in use. For instance, a great number of laundries use corn and wheat starch mixed in different proportions. It is generally thought that the ratio is about two-thirds of wheat starch to one of corn starch. This refers, of course, to the sale of different starches in the market, and not to the different mixtures used by the laundrymen.

Demand always creates supply wherever it is possible for a want to be supplied. The desire to have better bluing has given an impetus to the aniline color factory, while the demand for wheat starch has opened up a rich field in the Dakotas for the farmers, independent of what they might hope to do with their produce in the ordinary channels. In this regard it is a strange fact that the conversion of wheat and corn into starch for laundry uses does not appear to have entered into the calculations of the ordinary dealer in grain. All his calculations are based upon the consumption of bakeries and distilleries and the demand in the foreign market. Nevertheless it is an absolute fact that one laundry supply firm alone in Chicago takes two carloads of wheat starch each day and has to keep its orders ahead for months to keep the laundries supplied with any degree of regularity. It will thus be readily understood that the consumption of soap, starch and the like by a large laundry is no small matter. In the matter of soap there is considerable divergence in the amount used. Some laundrymen buy their soap and others make it; some use less soap in proportion to the goods washed than others, owing to having softer water and other conditions. But whether the soap is made in the laundry or bought, a certain quantity of it must be used. It has been estimated that in a laundry doing $800 worth of bundle work, the amount of soap used will amount to 150 pounds per week.

Where the bleaches which are on the market are used, it is generally considered among laundrymen in Chicago that thirty pounds per week will be fully sufficient.

There are very few laundries in the United States which consume much acids in their sour. The only acid used in these days is the acetic acid—the harmless acid of the pickle bottle, and of this but twenty-five gallons are consumed in the whole month's work of a laundry doing a business of $800 a week.

The quantity of soda used varies with different laundries. The average is, however, fifty pounds on the same basis. With regard to bluing, one-half pound of aniline blue will last a month.

The use of borax has been gradually increasing all the time in the laundry, but until comparatively recently its high price put it more or less out of the reach of laundrymen, although its valuable properties were fully recognized. Now, however, that it is being produced at a low price, it is rapidly coming to the fore. Where it is used the consumption is about fifty pounds per month on the foregoing estimate.

Supplies are not the greatest element of cost in running a steam laundry. One-third of the expense goes to labor, one-half of one-third to wear and tear, one-half of one-third to supplies, and the other third, less incidentals, to profit when it fails to go to loss.

The nearest approach that we could get to exact figures as to the quantity of laundry supplies used by a large laundry doing a general business, was by interviewing the manager of one in the city of Chicago that turns out $3,000 of work per month.

He gave the following figures as fairly representing the amount of laundry supplies consumed each month:

Starch, five barrels of 225 pounds each; soap, five tons; bleach, five pounds; aniline blue, ten pounds.

From the above a fair estimate may be formed of the vast extent of the chemical supplies which the ever growing laundry industry of the United States call for, and to the extent to which its development has added in the growth of a variety of kindred interests.

THE ORIGIN OF SOAP.

The origin of soap would be very interesting. Who invented it? When and where did it first come into common use? How did our remote ancestors wash themselves before soap was invented? These are the historical questions that naturally arise at first contemplation on the subject; but, as far as we are aware, historians have failed to answer them. We read a great deal in ancient histories about anointing with oil and various cosmetics for the skin, but nothing about soap.

We are taught to believe that ancient Romans wrapped themselves round with togas of ample dimensions, and that these togas were white. Now such togas, after incasing such anointed oily skins, must have become very greasy. How did the Roman laundresses or laundrymen—historians do not indicate their sex—remove this grease? Historians are also silent on this subject.

A great many curious things were buried under the cinders of Vesuvius in Pompeii, and sealed up in the lava that flowed over Herculaneum, including several luxuries of the toilet, such as pomade or pomade-pots, and rouge for painting ladies' faces, but no soap for washing them. In the British Museum is a large variety of household requirements found in the pyramids of Egypt, but there is no soap, and we have not heard of any having been discovered there.

All our knowledge, and that still larger quantity, our ignorance, of the habits of antique savages, indicate that solid soap, such as we commonly use, is a comparatively modern luxury; but it does not follow that they had no substitute. To learn what that substitute may have been we may observe the habits of modern savages, or primitive people at home.

This will teach us that clay, especially where it is found having some of the unctuous properties of Fuller's earth, is freely used for lavatory purposes, and was probably used by the Romans, who were by no means remarkable for anything approaching to true refinement. They were essentially a nasty people, the habits of the poor being "cheap and nasty;" of the rich, luxurious and nasty. The Roman nobleman did not sit down to dinner, but sprawled with his face downward, and took his food as modern swine take theirs. At grand banquets, after gorging to repletion, he tickled his throat in order to vomit and make room for more.

A refinement upon washing with clay is to be found in the practice once common in England, and still largely used where wood fires prevail. It is the old-fashioned practice of pouring water on wood ashes and using the "lees" thus obtained. These lees are a solution of alkaline carbonate of potash, the modern name of potash being derived from the fact that it was originally obtained from the ashes under the pot. In like manner soda was obtained from the ashes of seaweeds and of plants that grow near the sea-shore, such as the salsoler soda, etc.

The potashes or pearlashes being so universal as domestic by-product, it was but natural that they should be commonly used, especially for the washing of greasy clothes, as they are to the present day. Upon these facts we may build up a theory of the origin of soap.

It is a compound of oil or fat with soda or potash, and would be formed accidentally if the fat on the surface of the pot should boil over and fall into the ashes under the pot. The solution of such a mixture if boiled down would give us soft soap.

If oil or fat became mixed with the ashes of soda plants, it would produce hard soap. Such a mixture would most easily be formed accidentally in regions where the olive flourishes near the coast, as in Italy or Spain for example, and this mixture would be castile soap, which is still largely made by combining refuse or inferior olive oil with the soda obtained from the ashes of seaweed.

The primitive soap maker, would, however, encounter one difficulty—that arising from the fact that the potash or soda obtained by simple burning of the wood or seaweed is more or less combined with carbonic acid, instead of being all in the caustic state which is required for effective soap making. The modern soap maker removes this carbonic acid by means of caustic lime, which takes it away from the carbonate of soda or carbonate of potash by simple exchange—i. e., caustic lime plus carbonate of soda becoming caustic soda plus carbonate of lime, or carbonate of potash plus caustic lime becoming caustic potash plus carbonate of lime.

How the possibility of making this exchange became known to the primitive soap maker, or whether he knew it at all, remains a mystery, but certain it is that it was practically used long before the chemistry of the action was at all understood. It is very probable that the old alchemists had a hand in this.

As cleanliness is the fundamental basis of all true physical refinement, it has been proposed to estimate the progress of civilization by the consumption of soap, the relative civilization of given communities being numerically measured by the following operation in simple arithmetic: Divide the total quantity of soap consumed in a given time by the total of population consuming it, and the quotient expresses the civilization of that community.

By simply considering how much is expended annually for soap in every decent household, and adding to this the quantity consumed in laundries and by our woolen and cotton manufacturers, a large sum total is displayed. Formerly we imported much of the soap we used at home; now, in spite of our greatly magnified consumption, we supply ourselves with all but a few special kinds, and export very large and continually increasing quantities to all parts of the world; and if the arithmetical rule above given is sound, the demand must steadily increase as civilization advances.—Exchange.

[NOTE—The following brief article will show how some writers differ:]

Soap has been in use for 3,000 years, and is twice mentioned in the Bible. A few years ago a soap boiler's shop was discovered in Pompeii, it having been buried beneath the terrible ruin of ashes that fell upon that city 79 A. D. The soap found in the shop had not lost all its efficacy, although it had been buried 1,800 years.

OUR DOMESTIC SOAPS.

THEIR EARLY HISTORY.

The history of the industry in this section of the United States is full of interest. As late as 1860 the quality of ordinary soap used for laundry purposes was very inferior. Even at that date a great deal of soft soap was used in laundries. At that time the hard soap sold for ordinary uses was made, for the most part, by a so-called "boiled down" process. That is, the soap was boiled with salt and water pickle for several hours to make it hard and merchantable. A large amount of rosin was used in these boiled down soaps and inferior qualities of tallow or grease. Laundry soap was sold in this country in the same manner that sales were made in England—that is, by weight. The manufacturers cut soap into large blocks and delivered it to the grocers in returnable packages, without fixed lids. The grocers sold it just the way grocers nowadays sell cheese. If anybody wanted a pound, or a half a pound, the grocer would cut it off from the large block which he had received from the soap manufacturer. Gradually the demands of the trade insisted on having regular, uniform bars of soap, and from that day to this the bar soap trade has been conducted in that way.

The first time that soap was put in the form which made it possible to become advertised as a "specialty" was when Jesse Oakley commenced the manufacture of his "German Detersive." This was a pound bar of fine "settled" sal soda soap, made largely from palm oil. It was cut in pound bars and was then wrapped by the manufacturer, or the wrappers were left loose in the top of each box.

This soap had a large run in the east, and was imitated by all large manufacturers. But the great innovation came when B. T. Babbitt introduced the cushion shaped cake for laundry soap. His scheme was immediately successful. He not only sold an immense amount himself, but the whole trade was revolutionized. Within a short time all large manufacturers were putting up soap in the same shape. This opened the doors to the advertisement of specialties, and many popular brands which are to-day sold in the United States and Great Britain are the outgrowth of this scheme of Babbitt's. A later novelty was the white floating soap of Procter & Gamble. This is a soap made of tallow and vegetable oils carefully compounded, and which is, practically speaking, aerated in the crutching process. Everyone is familiar with this soap or its advertisements.

The manufacture of soap powders commenced in the United States about 1870, from a very small beginning has grown to enormous proportions. Many of the old line manufacturers of laundry soaps were inclined to sneer at the possibility of soap powders ever getting a foothold in this country, but it certainly looks now as if they had come to stay. In reviewing the soap business one cannot fail to see the force of Darwin's theory of "the survival of the fittest." The poor soaps and the poor soap powders have had an ephemeral existence, while articles possessing intrinsic merit have survived and become veritable household words.

In the selection of materials for the manufacture of soap, there have been few changes since the old days. Palm oil, which was used very extensively previous to the war, has, however, nearly ceased as a component of soap. Cocoanut oil is probably used more largely now than it was at the previous time. Cottonseed oil, which was but little known as an ingredient in the manufacture of soap 30 years ago, has now become one of the most prominent of the soap maker's materials.

During the last two or three years the plentiful crops of corn and the low price of hogs and their products have madé it possible for the soap manufacturer to use lard or other hog fat in the manufacture of soap. The manufacture of oils from the palm kernel that is carried on largely in England, and the increased production of cocoanut oil itself, as made in Africa, have increased the supply of soft soap maker's material.

The manufacture and importation of caustic soda has been the outgrowth of the last 30 years. Before the war a large number of soap manufacturers in this country made their alkali either from "soda ash" or from barilla, which they causticized themselves by the use of alum of lime. The making of lyes in those days was a very important part of the operations of a soap factory. It took a great deal of room and a great deal of trouble, and it was almost impossible to keep a soap factory in presentable or shipshape appearance. But now the soap makers have caustic soda in clean iron drums, and nothing is to be done in the making of lye but simply to open the drum and dissolve the contents in water.

The general process of soap making has changed but little. In the best appointed factories 25 years ago there was a great deal of manual labor that is now done away with. One man alone can now make and boil soap. All he has to do is to start his tallow from the pump and start his lye running at the same time. When soap was made by the use of direct fire heat, it required a great deal of watchfulness and care on the part of the soap maker to avoid the burning of the contents, and also their boiling over. The furnaces were arranged in such a way that at a moment's notice the draft could be closed off or the fire drawn. By the use of steam, and especially "open" steam, the soap boiler has the mass entirely under his control, and can boil it or stop boiling it by a turn of the valve. Less paddling or manipulation of the mass is required by the steam process, as the jets agitate the soap in the most complete manner. In the old days in New York every soap manufacturer depended largely upon the house grease, which was gathered by men who went around from house to house with pails. Today no manufacturer buys any but the regularly rendered tallow and grease, the purchase of the house fat being left to the soft soap manufacturers or those who gather it for the sake of rendering and subsequent sale. Bone grease comes from the slaughter houses. The soft soaps that are made by factories who make a soap for silk or woolen cleaning are a very superior quality of soap, in no way resembling the laundry soft soaps.

Previous to 1875 waste lyes from the soap factories were run into the sewer or the gutter, whichever place was most convenient. Many chemists devoted much time to the study of the recovering of glycerine, which they knew was contained in those waste lyes. As a result of their efforts many different schemes were patented, some of them for the treatment of the fatty materials and the recovery of their contained glycerine before their use in the soap kettle. These schemes were founded upon the use of such chemicals as muriate of zinc, which caused a decomposition of the fatty matters and the separation of the glycerine. Every soap maker who adopted this process found within a short while that soap resulting from the use of deglycerinized fats was not of as good quality as the soap made from regular fats. Probably certain portions of the metallic salt remained in the soap kettle, and colored the product, which caused it to break out in dark spots and blotches. Then the process of getting the glycerine from the waste lyes by ordinary evaporation became to be regarded as the only possible way of effecting the required result. For several years all large soap factories treated their waste lyes in this way and sold their crude glycerine to the refiners. During the last 10 years by the process of Jobbins & Van Rumybeke almost all the factories are not only manufacturing crude glycerine, but they continue the process by distillation and filtration until "Refined", or "C. P." glycerine is produced.—Ex.

AFRICAN SOAP TREES.

Social philosophers have contended that savages dwelling in the luxuriance of the tropics are the most fortunately situated of mortals. The Africans are no exception to this rule, the slave trade notwithstanding.

They have no work to do, and they live in a climate which makes idleness a pleasure. They do not worry about the morrow.

If there were one thing lacking to their happiness, a civilized observer would possibly have said soap. This, doubtless, is not the native view.

It is now announced that a large number of the inhabitants of northern Africa are in this fortunate position without knowing it. They have soap growing all around waiting to be plucked.

This great discovery of natural soap has been made by a learned professor. He sends from Algiers a report concerning a very large growth of trees of the sapindus or soap-bearing order. They are amazingly prolific and their fruit contains about 38 per cent. of saponin. A full grown tree yields from 100 to 200 pounds of berries, capable of producing soapsuds by the gallon.

If a native of the region wants to wash or shave himself he merely has to send his wife out into the woods to pick a few berries and then proceed to improve his appearance. Unfortunately he never wants to do any of these things. For grease, paint and jewelry he has ardent desires, but not for soap. The berries now go to waste, but it is believed that in the near future they will be made use of.

The soap-berry tree is not new to science, but, so far as is known, no one has ever made use of its soap-bearing capabilities. The center of each berry or fruit, contains a hard, black nut. These nuts, mounted in silver, were many years ago used in Europe for waistcoat buttons. They were valued for this purpose on account of their durability and beauty, and were at one time very popular. It is sad to reflect that to the minds of our ancestors, waistcoat buttons were a more manifest need than soap. They have left it for the energy of to-day to utilize the fruit rather than the nut—to make soap in place of waistcoat buttons from the berries of the soap-berry tree.

The purpose of nature in causing soap trees to grow rank, exhaustless and uncared for in Africa is not clear. The picture of a horde of unkempt savages, clad only in their virtues and a few feathers and sitting beneath a spreading soap-berry tree, is a sad and weird one to thoughtful minds. Of what use is it that these berries "produce soapsuds by the gallon," when the adjacent inhabitants have no understanding of what soapsuds are for, and probably could not distinguish them from ice-cream soda? Of what service is it that they "render washing-day a delight, and no soda or washing powders necessary," since the natives of the vicinity have no laundries and no clothes, and fig leaves do not require relaundering?—New York World.

SOAP IN SERVIA.

They evidently highly estimate the value of soap in Servia, as a concession has been granted a man there to construct a soap factory, with exemption for ten years, from payment of customs dues on machinery and materials for construction, as well as on the animal and vegetable matter he may need to import. He is also exempted from paying indirect taxes or export dues on the products of his plant. But he must erect his factory within one year, and employ, wherever possible, native material in preference to foreign.—American Soap Journal.

NATURAL SOAP.

There is, of course, natural as well as artificial or manufactured soap, though nature does little advertising to make the fact known. We have read for the hundredth time how lemons are used in place of soap where they are raised, and we have learned that the Spanish population in the Californian valleys have long used the amole or soap plant, a bulb which possesses the detergent properties of soap. The plant is a tall, slender-stemmed lilaceous plant, showing purple and white flowers.

In the West India islands and in South America is found the "soap tree," whose sap makes a good lather, and is used to wash clothes with, and is also reckoned a cure for the itch. The Latin name for this plant is Saponaria vaccaria. The sap is of a mucilaginous character. There are soap trees in Peru and in the Malay islands, the barks of which yield a fine detergent. The common soapwort, or Fuller's herb, and of which there are thirty known species, is a genus of Silerea, according to Lindley. It is found throughout Europe and temperate Asia. One is the amole plant, previously mentioned, the S. officinalie, and which is naturalized in England, and one, the S. vaccario, is occasionally found in wheat fields. In the roots of the former is found a bitter, neutral, crystallizable substance called Saponarin, and which is soluble in alcohol, water and ether, but is insoluble in oil of turpentine. It is only found before flowering time. Another substance found is Saponin, which was first observed in soapwort, but is now found widely diffused throughout the vegetable world. Quillaja bark, horse chestnuts and seneca root all yield it. The powdered substance is boiled in strong alcohol, and filtered hot; the saponin separates in flocks on cooling, and is purified by animal charcoal. It is a white, friable powder, having a burning and persistently disagreeable taste, is more soluble in dilute than strong alcohol, and forms with water a frothy solution. It is said to be generally used for imparting froth to beer and other beverages.—American Soap Journal and Perfume Gazette.

OLIVE OIL SOAPS.

The British consul at Naples, in his report to the foreign office, speaks of the soap industry as follows:

"At a time when soap has been brought so prominently, by advertisement and other means, before the British public, it will be interesting to say a few words on the speciality known as Naples Soap. The main ingredient of it, and that, indeed, which makes it a specialty, is, that instead of having glycerine or fat for its basis, its main ingredient is olive oil.

Olive oil is made by submitting the berries of the tree to a very high pressure and squeezing the oil out, but when this has been done to the utmost, there remains a large mass composed of pulp, and the stones of the fruit. which still contains a considerable portion of oleaginous matter. This mass of pulp and stones was valueless in itself, until a means had been discovered to extract the residum of the oil from it. The stones, it is true, are ground into a fine powder and used in the adulteration of pepper, but otherwise the mass was commercially of small value. Owing to the extent to which the olive tree is cultivated in southern Italy, and the large quantities of oil manufactured and exported, there are few districts more favorable for collecting the refuse from the presses which form the basis of Naples soap. Many experiments have been made from time to time by Richardson, Irvine and others, who employed volatile hydro-carbons for the purpose of extracting the remaining oil from the refuse; but their process failed, in some cases, from the disagreeable smell of their products, and in others from the want of efficacy of their inventions. The best and most perfect means known was invented by Deiss, a chemist of French or Swiss origin, who, by means of a strong lye of dilutants, of which sulphate of carbon is a prominent ingredient, extracts a greenish colored oil from the refuse at a small cost and of sufficient purity to form the basis of the best soaps.

An important house in the trade, established at Naples, has most courteously given all information in the matter. Of industrial soaps exported, one is very largely exported to England. It has the appearance of green and white marble, and contains 62 per cent. of olive oil, each batch being chemically tested before exportation. It is used for wool washing, the cleansing and preparation of silks, and also in connection with iron work, steel and wire-drawing. The industrial part of the business is by far the most important, and the works are being extended accordingly, as the exports amount to several hundred tons annually, and increase year by year, but the manufacture of toilet soaps is not neglected. A soap, which used to be known as "almond shaving cream," is still largely exported to America; but though no soap produces a finer lather, it has been beaten out of the field in England by the more portable and convenient products of our own soap makers.

In cake soaps the Naples manufacturers still obtain a large amount of the British patronage, and it is amusing to note that the tablets sent to Great Britain are marked "Naples soap," while the same soap for the local market is marked "elegant soap," to give it a British flavor for the Neapolitan public.

Ever since the use of glycerine in the manufacture of explosives, and for other chemical purposes, raised its price as a medium, it has fallen into disuse here, and an inferior toilet soap, with sugar for its basis, has only partially taken its place.

BENZINE SOAP.

AND ITS PARTICULAR USES.

The appearance on the English market of a benzine soap, which seems to satisfy all requirements, gives us an opportunity of discussing the subject generally, says the London Laundry Record. Formerly, before a genuine benzine soap was available, the dry cleaner, in dealing with a delicate garment, daubed the spots and stains with a neutral soap, and then went over these places carefully, but continually, with a soft brush dipped in benzine. The spot usually disappeared before his efforts, or at least became less apparent; but the process was troublesome, and never quite satisfactory in the result. The other alternative, to first use the benzine and then go over the specially spotted places with soap and water, was just as unsatisfactory.

A benzine soap, therefore, was emphatically needed, and yet the making of such an article presented great difficulties. Benzine has a great antipathy to water, and there are no alkalies used in making ordinary soaps, that do not contain water of crystallization. There is no means of completely freeing potash or soda from water, and the little that remains on drying them as thoroughly as possible is quite sufficient to make the resultant soap insoluble in benzine.

It was not long after the general adoption of the dry cleaning process that a fairly satisfactory benzine soap was invented. This was simply a neutral soap, dissolved in certain vehicles, and sent out in a paste, almost like soft soap. It gave good results in use, dissolving easily in cold benzine without a soapy precipitate of insoluble matter, but there is always an objection, easily understood, against soft soaps.

The new article, of which we have spoken, is a hard soap, or rather a very hard paste. A French dyer and cleaner of long experience, lately writing on the subject, affirms that the instructions usually sent out with these soaps are by no means the best directions possible. The process he finds to give the most perfect results is as follows:

For one quart of perfectly pure and thoroughly colorless benzine, take one pound of soap and dissolve it completely in it. According to the temperature of the benzine this will take from fifteen minutes to an hour. Next steep the article to be cleaned, first of all in pure benzine, and then brush the part more particularly stained, with the soap solution. But there is one condition necessary for a perfectly satisfactory operation, and that is, it is absolutely requisite that the benzine soap should lather well under the brush. If this condition is not fulfilled the cleaning is not better done than with benzine alone. This is the reason therefore, that a rather concentrated solution of benzine soap is requisite. None of it should be put into the larger bath of benzine; a little is merely wasted, and a solution strong enough to do any good would cost too much as a general bath. The solution of benzine soap in benzine congeals in ordinary cold weather, and should be warmed up in the water bath before using the brush.

It has generally been held that the addition of a small quantity of benzine soap to benzine prevents the spontaneous ignition of that body. Our French friend evidently believes there is a good deal of humbug about this statement; the manufacturers of the first benzine soaps, he says, hoped to sell large quantities of their products by calling the attention of the authorities to the danger of serious conflagrations arising from the use of benzine alone in large towns. "For many years," says this exponent of the art, "I have handled pure benzine, not distilling below 175° F., daily and with impunity, and nevertheless I have never had an accident to deplore. Doubtless, I avoided carelessness, but even with benzine soap employed as it should be, carelessness should be avoided; otherwise the danger exists only in the imagination of those whose interest it is to believe there is a special danger in the process.

Before benzine soap was heard of, silk dresses were cleaned with benzine in larger quantities even than now, for silk was more fashionable then. Nothing was used but benzine, and there was plenty of energetic rubbing in the process. Yet I never heard of, much less witnessed, the spontaneous combustion of the fluid anywhere."

There may be a certain amount of truth in this; doubtless the first heralds of benzine soap made as much of the danger as possible, and drew what commercial advantage they could from the fact that the benzine is safer to use when soap is added. Still this fact remains, and moreover, hydro-carbons distilling below 175° F. are frequently sold, and the purity of some of them is open to doubt. Therefore the use of soap with benzine comes in as an additional and wise precaution against electric ignition.

The new soap, the trial of a sample of which has suggested this article, is a sufficiently hard soap, of good color and pleasant smell. It dissolves perfectly in benzine, and does not separate from it again, even when the solution is kept standing some time. A trial on white flannel gave thoroughly good results.

GOOD GRADES OF SOAP DEMANDED.

There is no better gauge as to what the public wish than a regular demand for a certain commodity. Take any line of goods that you may think of, and this rule holds good. Locality, of course, must be taken into account. In some places, what is popular elsewhere is unpopular, or at least not so general in use. But let each locality have its separate consideration.

Let us take an average town of a few hundred or thousand inhabitants, and poll its household upon the soap question—"What is your favorite brand for general purposes?" The information we gather at the local stores is something of a criterion, but not so satisfactory as the testimony of the soap buyers and users themselves. The store man's answer is too general and hazy: "Oh, some like So and So soap, while others only like Thus and Thus soap; we sell a little of all kinds."

The women know what soap suits them best, and they are in no wise stingy of their words; but it is surprising what diverse views they hold. One wouldn't touch a brown resin soap, while her neighbor thinks nothing else will do the work. One thinks a certain strong soap is needful, another that just as quick and good work can be done with a weaker sort. Then there are different ways among housewives of using soap. Say in scrubbing or washing dishes; one will leave the soap flounder helplessly in the water, while the other puts a little only on a rag or scrub, and carefully places it in a dry place.

Another thing, and curious too; it might be supposed that the demand for common, cheap brown soap came from the poorer classes. But it isn't so. Tons of the rankest brown soap go into the homes of the middle and upper classes. Not because it is lower in price, of course, but because they believe it is stronger and more efficient. It may be set down as a pretty true rule that the poor know the correct value of a soap much better than the well-to-do classes. It is easily seen why it is so. Not that the former class are more partial to the use of soap themselves, but because no other class, except laundrymen, have so much of a practical nature to do with soap.

The poor class furnishes all our washerwomen, whose business naturally leads them to discover what is good, bad or indifferent in a soap. They want a good soap, irrespective of cost. They don't know anything about filler and adulterants of soap; they simply know whether it does its work or not. What more need anybody but a soap maker know.

The most popular soap in a community. That is a question worth the while of our soap makers to ascertain. Every once in a while some new soap appears upon our commercial and domestic horizon. There is no attempt made beforehand to find out what sort of soap would most likely—nay, that would surely sell—but the soap is compounded, wrapped, boxed and shipped hither and yon. There would be far less failures of success if the soap maker would use the precaution to do what is here indicated.

A wise general ascertains the enemy's weak and strong points, the first to attack, the last to avoid or to overcome if possible. A wise manufacturer does the same. Competing for trade is fierce as a battle along all lines. Never was good generalship so much needed as now, and the wisest thing to do is to keep in touch with the dear people. Find out their wants. Don't try to supply imagined wants. Get out something equally as good as your competitors, and a trifle better. High-grade goods, sold well, are more desirable to make than low-grade goods. Isn't that true? Anybody can make cheap goods. No reputation one would feel proud of possessing was ever built up on poor goods. The most reputable firms in the soap business to-day make the best kinds of soap and the most universally popular. There's a lesson in that worth the learning.—American Soap Journal.

CLEANSING AGENTS OTHER THAN SOAP.

The ordinary process of the washtub is only one way out of many, of removing stains from linen. Saponification is perhaps the best means of all of gently drawing away dirt of an ordinary kind—that is to say, of matter that is merely mechanically attached to the fabric. In the case of stains, properly so-called, however, which are become more or less incorporated with the fabric, saponification is often not available. The stains must be dissolved, absorbed, or decomposed.

We recently mentioned the use of benzine in this connection. It was first invented by Colas, a Frenchman; hence the name under which a preparation for the household was for a long time sold. This is typical in its action of a class of agents, of which perhaps it is the best for the cleaner's purpose. It is not too dear; it can be used over and over again, with a little loss at each operation; it dissolves perfectly all greasy matters, and is easily driven completely off the garment, leaving no smell behind.

A cheaper product known as benzoline is often substituted for it, and both are used as a rule with a special soap. The great disadvantage of benzine and benzoline is that they are highly inflammable, so much so that it is not safe to work with them in the same room with a naked light.

Alcohol, or what the non-chemist calls spirits of wine, has splendid cleansing properties, but in a pure state it is only used in the laboratory in this way.

Methylated spirits has the disadvantage of varying in strength, but it does not freeze even at 68° below zero, and can be mixed with water and various other liquids. It dissolves most of the fats, vegetable stains, all oily and resinous bodies, and many dyestuffs, so that it is extremely useful to the laundryman for certain purposes. It is usually mixed with ox-bile, of which we shall speak later.

Many of the volatile oils have good detergent properties, and the best in this way is also the cheapest. This is the familiar "turps," which readily dissolves, and removes oil stains. It has two faults. It cannot be put into the washtub with water, as is done very profitably with paraffine, which in this way, if used intelligently, will save the laundryman a lot of work; and in the second place, it has a strong and to most people unpleasant smell, which sticks to the clothes. However, the odor can be driven off by wiping the stuff with a sponge dipped in alcohol, but of course this method would be out of the question in most cases, and a fairly long exposure to dry air and steam will give the same results. When mixed with water, turpentine loses all its energy as a cleansing agent, and the same happens when it is mixed with spirits.

One of the most important cleaning materials is ox-bile or ox-gall. It is not used as furnished from the slaughter house, but must first be cleansed by mixing it with an equal part, by weight, of pure spirits of wine; this mixture is stirred thoroughly, left to rest for a little time, then filtered and evaporated almost to dryness; it will then form a clear solution in water. Purified in this way it is one of the best solvents that the laundryman has at hand for treating colored goods. It will have no effect on the colors, but will dissolve greasy matters and other impurities. It is much preferable to soap in cleaning woolens, especially colored ones.

In the journal, recently, some substances which may be called natural soaps, were briefly described. The most familiar of those in England, and which is quoted currently in the drysalters' list, is Quillai bark, the present price of which is about 16s. per cwt. This substance, which the French call panama wood or bark, is obtained from a tree grown in Chili. When powdered and put into soft water, it gives more lather than the best quality soap, and this carries away stains very quickly. It is especially useful for dirty woolen articles, but can also be used very successfully for linen and calico. The dyer very often employs it where he could not use soap. In India rice flour has been used for time immemorial for cleaning fabrics of every description, and is said by residents of the country, to give excellent results.

In eastern countries also, a plant which the chemist Bussy spoke of as Egyptian saponarium, calling its active principles saponine, is used for washing cashmeres and other woolens. Serges and blankets cleaned with it are said to turn very white, and have a beautiful softness The application of this plant is very simple, but, unfortunately, as it does not grow in the garden of the English laundry, it is not within reach of the trade. The leaves and flowers are gathered and a decoction is made of them; which gives a splendid lather and has a sweet smell, and washes articles every bit as well as soap.

Many other plants are used in the same way, but a description of them here would be more of an academic interest.

Still another variety of cleansing material remains to be described: Fuller's earth is a type of them. This acts in a dry state by absorbing greasy stains. It is usually used in conjunction with turpentine or some other volatile oil. This is applied to the stain first, and next to Fuller's earth. It has to be used with care in the case of colored goods, otherwise the color will be removed with the stains. When Fuller's earth was found in California it was christened rock soap, its detergent qualities being quickly recognized. A factory in the States makes an excellent soap by grinding it to a fine powder and mixing it with cocoanut oil and potash. This soap very readily removes tar and grease stains.

Chalk is also useful in cleaning light woolens, white satins, lace, etc., which are grimmed with dust. It acts in a purely chemical way, taking the particles of carbon away with it, and leaving the article perfectly clean.—London (Eng.) Laundry Record.

SOAP ADULTERATIONS.

It is not necessary to say that, given a pure soap and a soap with a quantity of loading material in it simply added for the sake of weight, all the economy is on the side of the unadulterated article, and that the difference between one and the other soon tells in the balance sheet of a laundry.

Resin is about the most common adulterant of soap. It is quite true that it gives a whiteness to linen, and that bleachers use it very largely, but then they prefer to add it themselves and not to be charged for it at soap prices. It combines, as a matter of fact, with potash of soda to make a kind of soap, but this is not a true soap according to the chemical definition. It is impossible to make soap with resin alone, and even resin oil will not saponify. When the manufacturer puts it in, therefore, it is merely on account of its cheapness, as it costs only a fractional part of the price of tallow.

Silicate of soda is also used in bleaching, and will also help to cleanse and whiten tissues, but the same reasoning applies here. When it is used as a filler it means not only so much loss of soap in the wash tub, but it is positively harmful to fine fabrics. As it is made of sand, common soda and water, its prices may be gauged, and when it is sold as soap it leaves a handsome margin of profit. Some soaps contain as much as a third of their weight of silicate of soda, which is held in the soap in mechanical suspension, and not in chemical combination.

Silica and china clay are nothing more nor less than insoluble adulterants of soap. Both of these substances are used in an exceedingly fine powder, so that they are not easily detected, even after dissolving the soap, as they remain in suspension for some time, and are always held up by the dissolved soap unless the solution is very dilute.

Potato flour, or starch, is a useful adulteration from the dishonest manufacturer's point of view. It has the property of solidifying with an enormous percentage of water, and it is such a nice thing to sell water at soap prices. In fact, for this reason, potato flour is the cheapest of all fillers, and it is difficult to know what excuse a maker could find for adding it; he would find one, that is certain. The curious thing about soap fillers is, that when the user detects their presence, the soap man always tries to persuade him that the adulteration is the very thing that he wants, and merely added to insure the manufacture of a first-class soap.

Among other substances used to cheapen soap, are Glauber's salt, a very cheap drug used largely in the dyehouses to insure level dyeing by retarding the action of the dyebath; soda crystals and alum, all of which enable the soap to hold more than its due share of water. The last two may possibly help the laundryman, but not at soap prices.

In soap powders, chalk is sometimes used. This can be detected by adding a little strong acid to the powder. If there is an effervescence, then chalk is present.—Laundry Journal (England).

SOAP MACHINERY.

The following remarks are taken from the Oil and Colorman's Journal of London, England:

"There can be no doubt about the rapid strides which the makers of American and French soap machinery have made during the last few years. Scientific soap manufacturing is the order of the day, and certainly the French machinists in particular, have accomplished results which are creditable to them, and should be stimulating to our English soap machinists. It appears to us that a larger number of labor-saving machines are in use in the soap trade in the United States, than is the case in this country. We wish that some of our English soap manufacturers could see for themselves the works of some of the French and American soap makers. In some departments we have not much to learn, but there are other sections where very useful lessons might be taken to heart."

The importance of using only good, reliable soaps, which though higher in price, carry their value with them, is thoroughly understood by about all laundrymen, and the grade of soaps made is improving each year.

"DELETERIOUS CHEMICALS."

THEIR USE IN LAUNDRIES.

We may perhaps with advantage examine the action of the numerous chemicals used in the laundry on the household linen, and show under what circumstances some of them may become actually deleterious. The laundryman is an excellent customer of the drysalter. For the wash pure and simple he requires soap and alkalies; so also does the most primitive of washerwomen, the only difference being that she insists that these are not "chemicals." He also needs bleaching agents, blues and other tinting articles, finishing materials, and preparations for the removal of stains. It may be here remarked that to obtain the same effects the old school must use the same drugs as the new, and that therefore, if there is honesty in the advertisers' assertion that no "chemicals are used," it simply implies that the advertisers are not prepared to deal with stains; with goods which require bleaching; or with the obstinate cases of the laundry generally. The assertion that "no chemicals are used" is an ignorant confession of incompetency.

The chemicals used in the laundry will fall under six heads—1, soaps; 2, salts of soda and potash; 3, bleaching agents; 4, preparations for the removal of stains; 5, blues and other tints; 6, finishing materials, such as starch, borax, wax, etc.

In considering the action of these on the fibre, it must be remembered, we are confining our attention solely to vegetable fibre, the linen and cotton goods which constitute the ordinary household articles sent to the laundry; woolen is affected in an entirely different manner by some of the above chemicals, as every up-to-date laundryman knows full well.

To begin with, in the search for chemicals possibly deleterious to vegetable fibre, the above list can be narrowed down very considerably at once. Classes 5 and 6 may be struck out entirely; tinting preparations and finishing preparations are used in a merely superficial manner on the fibre, and have no effect on it whatever.

In the removal of stains from linen and cotton, nothing which the fibre will not stand is used, the question of harmful effect depends entirely upon whether there is any delicate color in the goods which may possibly be injured. In taking stains out of white articles, there is not the slightest necessity to employ a violent preparation, and none such is used. Simple washing with warm water and soapsuds, with possibly the addition of ammonia, will take out the majority of stains which turn up in laundry articles.

Turpentine, spirits of wine, very dilute acids, and chlorine water are used for other stains, and there is nothing harmful to the fibre in any of these. In fact the stain itself, as in the case of very strong acid stains, may have had a harmful effect, but the strongest preparations used in the laundry as removers, leave the fibre uninjured. Of all drugs to remove stains, the acids would have the greatest action on the fibre if used in concentrated solution, but the mildest acids, such as tartaric and citric, or very dilute acids, only are required.

Any possible action which soap may have on the vegetable fibre, depends upon the amount of free alkali in it, and therefore we can narrow down the subject once more by considering classes 1 and 2 together, the greater including the less.

Now, the action of alkalies on vegetable fibre differs totally from that of acids. Alkaline carbonates, such as washing soda; soap, which cannot possibly contain so much free alkali as to constitute it a strong alkali when used in the washtub; ammonia, except when concentrated and under high pressure; borax, which, to give its chemical name, is biborate of soda; and the milder alkalies generally, are all without any effect on the cotton or linen fibre. Even dilute caustic soda, or potash of lime, do not affect the fibre if air be excluded. In boiling by steam in a closed vessel, these things are not "deleterious chemicals," and, if used at all, that is their method of use in the modern laundry. If they were used in an open vessel and at high temperatures, the formation of oxycellulose would tender the linen, and this is the point which requires attention.

In the laundry, dilute alkalines only are used. To prove beyond opportunity of cavil that these are not harmful to the household linen, it is merely sufficient to point to an every-day process in the modern dye house. The dyer treats his cotton with concentrated caustic alkalies to obtain certain effects and to increase its affinity for coloring matters. This Mercerized cotton, as it is called, from the name of the inventor of the process, is changed physically and chemically; but, far from being deteriorated, it has gained in weight and strength. From this it is very evident that the soda and potash salts used in the laundry, with the exception of the improper use we have pointed out, cannot be considered "deleterious chemicals."

Class 3 alone remains to be considered. The bleaching agents used in the laundry are all in the same order of things, and all depend for their bleaching action upon the production of chlorine gas. Here we come to a class of chemicals which may, improperly used or abused, have a harmful action on the vegetable fibre. To take chloride of lime as a typical example, it is used for bleaching purposes in solution with water. The first danger is that the solution is not complete, and in that case solid particles of bleaching powder will settle on the clothes and tender them, producing spots of oxycellulose. When properly made in a dilute and perfect solution, there is still danger, however, from the nature of the chemical action which takes place. The chloride of lime is decomposed by taking carbonic acid from the atmosphere, and from the water. This expels the hypochlorous acid. This decomposes in its turn, forming oxygen in the nascent state, which is the actual bleaching agent. The carbonic acid, meanwhile, has combined with the lime to form chalk, and this settles in the pores of the cloth. As it is quite insoluble, it cannot be rinsed out, and a weak acid bath has to be used, which, however, still leaves a certain amount of insoluble sulphate of lime on the fibre. Care must, therefore, be taken to have the best chloride of lime obtainable—that is to say, that as rich in chlorine and as poor in lime as possible, and also it points out that bleaching is an operation which must not be abused.

The accusation of "deleterious chemicals" has evidently no foundation. One class only of the chemicals used in the laundry can possibly be harmful to the household linen, and that is outside the ordinary washing operations. The bleaching process alone can be pointed to as having a possibly harmful action on cotton or linen, and it is only practiced in its mildest form in the laundry, and then only in desperate cases. The "deleterious chemicals" exist only in the imaginations of the Mrs. Partingtons, who believe they can keep back the advancing wave of modern progress with a broom.

BLEACHES AND THEIR COMPOSITION.

FROM THE CHEMICAL STANDPOINT.

What is chloride of lime? Chlorinated lime is a compound resulting from the action of chlorine hydrate, and containing not less than thirty-five per cent. of available chlorine. It should be kept in well closed vessels in a cool, dark and dry place. Slake lime exposed to the action of chlorine gas, as long as the latter is absorbed, becomes chlorinated lime; laundrymen call it chloride of lime. It was originally prepared as a bleaching agent in 1798, by Tennant of Glasgow.

The following is an outline of the process of making it: A rectangular chamber is constructed, generally of silicious sandstone, the joints being sealed by a cement of pitch, resin and dry gypsum. At one end it is furnished with an air-tight door, and on each side with a glass window, to enable the operator to inspect the process during its progress. The slaked or hydrated lime is sifted and placed in wooden trays, eight or ten feet long, two feet broad, and one inch deep. These are placed within the chambers to a height of five or six feet on cross bars, by which they are kept about an inch apart, in order to favor the circulation of gas over the lime.

The chlorine is generated in a vessel, the lower portion of which is surrounded with an iron case, leaving an interstice two inches wide, intended to receive steam for the purpose of producing the requisite heat. In the vessel are five apertures. The first is in the center of the top, and receives a tube which descends nearly to the bottom, and through which a vertical stirrer passes, intended to mix the materials, and furnished at the lower end with horizontal bars of iron; or of wood sheathed with lead. The second is for the introduction of common salt and manganese. The third admits a siphon-shaped funnel, through which the sulphuric acid is introduced. The fourth is connected with a pipe to lead off the chlorine. The fifth, which is near the bottom, receives a discharge pipe passing through the iron case, and intended for drawing off the residuum of the operation.

The pipe leading off the chlorine terminates under water, in a leaden chest or cylinder, where the gas is washed from hydrochloric acid.

From this intermediate vessel the chlorine finally passes, by means of a pretty large leaden or iron pipe, through the ceiling of the chamber containing the lime. The process of impregnation generally lasts three or four days, this time being necessary to form good bleaching powder. If it be hastened, heat will be generated which will favor the production of calcium chloride, with a proportionate diminution of chlorinated lime.

The proportion of the materials generally adopted are ten pounds of common salt mixed with about twelve pounds of manganese dioxide, to which are added in successive portions, from twelve to fourteen pounds of strong sulphuric acid, diluted with water before being used, until its specific gravity is about 1.65.

Chlorinated lime, is a white, or grayish white, granular powder, exhaling the odor of hypochlorous acid, having a repulsive saline taste, and becoming most gradually decomposed on exposure to the air. In water it is only partially soluble. The aqueous solution first colors red litmus paper blue, and then bleaches it. If the salt be dissolved in diluted acetic acid, an abundance of chlorine gas is evolved, and only a trifle residue is left undissolved. From this solution of ammonia oxalate, the solution throws down a white precipitate, insoluble in acetic acid, but soluble in hydrochloric acid; when exposed to heat, it gives off oxygen and chlorine, and is converted into calcium chloride. It is incompatible with the mineral acids, carbonic acids, and the alkaline carbonates. The acids evolve chlorine copiously, and the alkaline carbonates cause a precipitate of calcium carbonate.

Chlorinated lime is an oxidizing agent, the oxygen being derived from water, the hydrogen of which unites with the chlorides to form hydrochloric acid. It has a powerful action on organic matter, converting linen, cotton, starch, and similar substances into formic acid, which unites with the lime. It constantly becomes weaker on exposure, giving off chlorine or hydrochlorous acid, probably through the influence of the atmospheric carbonic acid, which sets them free by combining with the lime.

Several electrolytic processes for the decomposition of sodium and potassium chloride have been brought to the attention of the public within the last few years, whereby caustic alkali on the one hand, and chloride on the other hand are produced.

ACETIC ACID.

ITS ADVANTAGES OVER SULPHURIC AND OXALIC ACID FOR LAUNDRY USE.

A question frequently asked by laundrymen is, Which is the best acid to use after the washed clothes have been treated with bleach? And the writer's answer is invariably, acetic acid. The reasons for this reply may be of sufficient importance to warrant a short article upon them.

In the first place, acetic acid is a much milder acid than either sulphuric or oxalic, and much less corrosive and destructive, to either animal or vegetable tissue. This fact alone would warrant its being used instead of the stronger corrosive acid, but another and more forcible reason exists in favor of its use.

Of course all acids should be diluted before being used, and all traces of them should be rinsed out of the clothes before they are dried. Such rinsing is not always complete, however, and in this fact lies the danger of the use of sulphuric acid particularly. If a little of this acid remains in the clothes when they are placed in the drying room, it soon becomes concentrated by the evaporation of the water with which it was previously diluted.

Sulphuric acid is not at all volatile; that is, it cannot be changed into a gas, hence a solution of it, no matter how dilute, will become stronger as the water dries out of it. To show this, make a dilute solution of sulphuric acid, and soak a piece of unglazed paper in it. If the acid be sufficiently diluted it will have no apparent effect upon the paper. Place the soaked paper in a warm place and let the water dry out of it. When completely dried the paper will be found to be charred, not because the heat was sufficient to do it, but from the action of the acid which has been concentrated. Now any trace of strong sulphuric acid, while it will not char the clothes, will gradually weaken the fibre. This acid when concentrated has a very strong attraction for water. This attraction is so strong that it will move the elements of water, hydrogen and oxygen, from their organic compounds, such as cotton, sugar, wood, etc. This is why sulphuric acid eats cloth; it takes away hydrogen and oxygen and leaves the carbon, giving it the appearance of having been burned or charred.

Oxalic acid is also a non-volatile acid, and while its action is not so harmful on cloth as that of sulphuric acid, yet the concentrated acid weakens the fibres. Being a non-volatile acid, a solution of it becomes gradually stronger as the water evaporates, and consequently if the rinsing is not complete, it may gradually weaken or eat the cloth through concentration in the drying room.

Acetic acid, on the other hand, is quite a volatile acid, its boïling point being only 19° C. above the boiling point of water. That it is volatile is shown by its odor, while neither sulphuric nor oxalic have any odor whatever. If a solution of this acid is warmed, it gradually becomes concentrated like the others, but, as much of the acid itself escapes, the danger point is not as quickly reached as in the other two, and as its action is less violent, the danger of weakening the goods is brought to a minimum. Acetic acid will do all the work that the other ones will, and about as quickly. The only objection is its odor, which is, however, nearly a safeguard, and if the clothes are well rinsed after the acid is used the odor should give no trouble.

BORAX IN THE INDUSTRIES.

ITS PRACTICAL USE.

Some day, when the history of commerce and manufacture comes to be written; when the man with the courage and capacity for attempting a task so vast has arisen, he can in his introductory remarks give to the reader a general outline of his subject by selecting some article in common use, and following that through all its complicated ramifications in the various industries in which it is employed. Should such a task have been attempted twenty-five, or even ten years ago, the article selected would no doubt have been iron, but to-day, so rapid have been the discoveries of the remarkable qualities of borax, and its utility in so many directions, that it is now without doubt employed in more different industries than any other product which could be named. So numerous, in fact, are its uses, that merely to name them would occupy a very considerable space. Only the more notable uses can therefore be alluded to.

The potters enamel their wares by converting the borax into a glass, together with other materials, and then fusing it upon the ware, which has previously been baked.

The largest amount of borax used in this country is consumed by packing houses. Meats which are to be exported, are thoroughly sprinkled with borax, and so are preserved until they reach the hand of the foreign buyer. As might naturally be supposed, there was at first considerable prejudice against the use of borax for this purpose; a prejudice which all innovations are obliged to meet, particularly in the more conservative countries of the old world. A little experience, however, of the superior quality of meats treated in this way, soon overcame this prejudice, and now what are known as borax meats command a higher price, all things being equal, than any other in the London market.

A use of borax in which druggists will be specially interested, is its employment in the manufacture of what are known as borax soaps. Owing to the softening and healing effect upon the skin when applied in propor proportions, it is used in many toilet soaps which, on account of the qualities referred to, have obtained a wide popularity.

Its value in the laundry has already been alluded to, and it should be added that soaps used for laundry purposes in the household, containing borax, as does the soap powder used by the washerwomen of Holland and Belgium, give the beautiful whiteness of the linen which has made the linen of those countries famous all over the world.

One of the recent applications of borax is in the manufacture of optical glass. Experiments in this direction were first made at Jena, which has so long been celebrated for the glass made there, for use in microscopes, photograph cameras and other delicate instruments.

When a piece of calico is put into the wash it renews its acquaintance with the article with which it first came in contact in the hands of the dyer. Borax is used not only as a mordant or color fixer by calico printers, but also by leather manufacturers in dyeing leather with aniline colors. There are indeed three stages in the tanner's art in which it is employed; first, in the curing and preparing of the leather; second, in dyeing it, and third, in the polishing process, the borax not only enabling the iron to pass over the leather more freely but giving it the required gloss.

Its utility in the color world is by no means exhausted in the uses alluded to. Color manufacturers employ it in making the pale green powder known as borate of chromium, and the dark green powder called borate of copper, both of which are frequently used for arsenical green in painting and dyeing processes. The varnish manufacturers also use borax in the shape of borate of lead for pale varnish, and borate of manganese for other varnishes.

Since a process for photographing colors has been discovered, the photographer may find an additional use for borax, which he now employs in the toning bath, and in governing the action of chloride of gold, which is dissolved in conjunction with it.

Another consumer who ought not to be omitted is the safe manufacturer, who makes a mixture of infusorial earth and borax, and lines his safes with it. This makes them fireproof, since the borax, containing 48 per cent. of its weight of water of crystillization, gives off this moisture when, as in the case of fire in the building in which it is contained, it becomes heated to a high temperature. The steam so produced fills the safe, and so protects the valuable account books, money and papers which would otherwise be destroyed.

The constant and remarkable development of the bicycle industry has not been without an important bearing on the borax market, as borax is everywhere used in the brazing of the tubing of which bicycle frames are made. Boracic acid is by many manufacturers being substituted for borax, since the desired qualities are obtained in more concentrated form.

Manufacturers of copper pipe are also good customers of the borax merchant, as in bronzing copper, borax is used to dissolve the film of oxide which forms upon the metal.

The process known to machinists as case hardening is effected by the use of borax, which is employed in chilling the iron to the proper temperature.

Following the course of this wonderful product, we have passed from the establishment of the manufacturing plumber to that of the laundryman, past the revolving wheel of the potter, through the great packing houses, with a glimpse at the manufacturer of optical glass, a call at the soap factory, and an incidental peep at busy men so widely different in their occupations as the color maker, the tanner and photographer.

The gentleman who, after his morning ablution, dons a shirt with a polish like a plate glass mirror, would hardly think that the material which put the smooth finish on the interior of his bathtub, was the self-same agency which enabled his laundryman to do himself such honor on his shirt front; yet this is the fact, and the article referred to is borax.

Starches containing borax have been growing in popularity among laundrymen for some time, and it has been found no less efficient for its cleansing properties, since it produces the proper whiteness in linen without destroying the fabric.

The polish given to the castiron of which bathtubs are made, is secured by fusing upon the metal, a mixture of quartz, feldspar, clay and borax, and then covering this with a glaze containing borax.

European potters use borax to such an extent in enameling famous wares, that this is the largest source of consumption abroad.

It also enters into the manufacture of iron pieces for use about mantels, and so skillful have the European workmen become, that they are able to counterfeit to a very remarkable extent the appearance of rare marbles.

The familiar blue and white enameled signs which have long been in use by telegraph companies, telephone companies and railroads, and which are coming into more extended use by business houses, owe their glossy surface to the use of borax. The growing popularity of these signs is largely due to the fact that the making of them is now an American industry.

While in Europe among the potters, we might have dropped up—mental excursions defy all the laws of gravitation—to Norway, where we should have seen the fishermen with their nets drying in the sun, applying to their last catch of herring, which they are preparing to ship to the European market, a mixture of boracic acid, alum and salt. The fishermen of Norway have been doing this for a long time, and the fishermen of our own great lakes are making some experiments in this direction, which will no doubt result in the use of this article for a similar purpose.

As has happened in the case of so many other important products, while the extensive utilization of borax above indicated has been a matter of modern development, it has been known and used to some extent for centuries. There is high authority for the statement that borax was used extensively in the days of Nero, but for just what purpose is not clear. It was not until toward the end of the eighteenth century that it began to be brought into Europe in any considerable quantities. It was found in a series of lakes in Thibet, somewhat resembling certain lakes in California and Nevada, in which borax has been discovered. The natives, digging in the mud of these lakes, found borax crystals, which, under the name of tincal, were carried to Europe, and found a ready market. Among the natives these crystals were known as baurach, and the similarity in the word seems to justify the conjecture that this is the origin of the word borax, although the evidence is not conclusive. It was this borax that the European potters first used. It was carried on the backs of camels from the source of its production to Calcutta, and from there was sent in its crude state to Liverpool, where it was refined.

After this tincal had been in use for some time, another source of borax was found in certain muddy pools of blue water in a section of Tuscany, Italy. A chemist in the employ of the Duke of Tuscany discovered that this muddy blue water contained boracic acid (which, combined with soda, makes borax), but it was not until a quarter of a century afterward that the Tuscan borax began to find its way into commerce.

The lakes in Nevada and California alluded to above are the principal source of the American borax with which our market is supplied. Borax is found in the Calico Mountains, in San Bernardino County, and the Rhodes, Teels, and Columbus marshes, in Esmeralda County, Nevada, in the shape of a crude material, which is a combination of boracic acid and lime, and is on that account called borate of lime.

The San Bernardino County borate is found in a crystal form which, from its original discoverer, is called Colemanite. The Esmeralda County product is known under the popular name of "cotton balls," and is a silky substance much resembling asphalt. The crude material from these deposits is shipped to Alameda, Cal., where it is subjected to a milling process very similar to that through which wheat is put in order to make flour. After being reduced to the powdered state, it is mixed with carbonate of soda. This soda is found in Owens Lake, Cal., and, after being reduced to a powdered state, is put into an iron boiler nearly filled with water, together with the powdered borate of lime. The water is boiled and kept in constant motion by a paddle wheel. The heat and the stirring of the paddle separates the carbonic acid in the carbonate of soda from the soda. By the same agency the lime and the boracic acid in the borate of lime are separated, and the boracic acid uniting with the soda produces borax, while the carbonic acid uniting with the lime produces carbonate of lime, which settles to the bottom of the boiler, while the borax remains in solution. This solution is run into tanks, where it is allowed to crystallize, and is subsequently ground into the fine white powder known to commerce.

THE VALLEY OF DEATH

AND THE HOME OF BORAX.

It is an interesting story, and few dream that the beautiful, snowy, powdered borax, used in all departments of home and the business world to-day, comes from a place called Death Valley. This gruesomely romantic name has not been applied from shallow motives, but because it is a dangerous place—an impossible place for man and beast. "Where is it?" the interested will ask. On the Pacific coast. Indeed, borax is found nowhere else in North America, being distinctively a Pacific coast product.

The Death Valley is in the Mojave desert, a spot so strange, so grotesque, so essentially a freak of nature, that she will not let man abide there. Those who have visited this strange place call it a land of paradoxes. Here the heat is so great that life is almost impossible, and yet ice forms there at times; the air is some of the time so arid that men have died from want of moisture, where water existed in abundance. Rain storms are almost unknown in Death Valley, and still the effects of the cloud bursts are well nigh unparalleled.

This hopeless valley was given its name because in 1850 emigrant train upon train, there came to their pitiful end from exhaustion, want of fuel, lack of water, insufferable and prostrating heat.

Surveyor McGillivray said at the conclusion of his work for the borax companies: "The heat here is intense. A man cannot go an hour without water without becoming insane. While we were surveying we had the same wooden-case thermometer which is used by the signal service. It was hung in the shade of our shed, with the only stream in the country flowing directly under it, and it repeatedly registered 130°, and for forty-eight hours, in 1883, when I was surveying there, the thermometer never once went below 104°. Several of our men went insane."

Such is Death Valley in the heat of summer. And the paradox is here; October becomes a dreamy, sunny climate, the home of the Indian summer.

Most interesting, too, is a glimpse of the desert transportation of the white crystal, which yields the owners of the land, large sums, but not easily. Great, capacious wagons, weighing 8,000 pounds, with a carrying capacity of 20,000 pounds at a load, draw the borax from the mines, 164 miles to the railroad. The entire route of this desert has no sign of human habitation, and but four springs of water, and these latter are in two instances fifty miles apart—fifty miles of sand stretches, heavy grades, deep gullies, and boulders hub high. The wonder of it all is that man has braved so much and surmounted so many difficulties for borax.

Mr. F. M. Smith, president of the Pacific Coast Borax Company, is one of the most courageous and energetic of the discoverers in the Death Valley. Interesting anecdotes of his privations and daring are told by some of his friends, who now know him as the Borax King, or Pacific slope millionaire.

But to continue the brief story of transportation. Two wagons of the kind described, with tires eight inches wide and one inch thick, wagon bed sixteen feet long and six feet deep, make up part of the train, which is hauled by twenty animals—eighteen mules and two horses. A water tank on a third wagon is of vital importance. The horses and mules are harnessed in pairs; the horses, a superb 2,800-pound team, are at the tongue, and ahead of them goes the long train of mules, their double-trees geared to a chain that leads the forward axle. The jerk line, or rope, is nearly 120 feet long, and when the driver holds this, he has no trivial task, and himself sits eight feet above the ground. His team stretches out one hundred feet before him, and the wonder is how anyone can be found to perform the labor.

The journey is not without danger by any means, this and hardship being the daily lot of a desert teamster. There are not only the upgrades over which the great load must be dragged, but the plunges on down grades, down mountain side, over roads as hard as a turnpike. When the break holds, well and good; but should the break lock give way! Then, indeed, there are deaths on the desert mountain side. So great is the necessity for a clear head and a steady hand for these drivers that they are rarely known to carry liquor, neither they nor the "swampers" who accompany them. The swamper has no end of things to do. He is general assistant to the driver. On a down grade he has to climb to a perch on the rear wagon, and put on the brakes; but on the up grade his work is not so dignified. Here he reasons with or in extreme cases throws rocks at unwilling or balky mules. While the driver feeds the animals, the swamper cooks the food, using sage-brush roots for fuel; he also washes the dinner dishes and packs away the food. The feed of the mules is grain, fed from boxes secured to the wagon tongue, and between the wheels; they also get hay, which they eat from the ground. The animals get no other care beyond food and water, and curry themselves by rolling wildly in the sand.

It is, as will be seen, no cheap matter to get borax ready for the market, and some companies have been tempted by cheap labor. The Pacific Coast Borax Company, the heaviest present producer, employs no Chinese labor; it is also just to this company to say of them that they have steadily labored to make a decline in price, until today borax is within the reach of the smallest purse, and is one of the cheapest and most valuable articles of household economy.

Borax has become a staple; and tons of it are used by meat packers in Chicago alone, not to mention the hundreds of places in the nursery, toilet, kitchen, and laundry, where it is invaluable. Almost the entire product of the Pacific coast is consumed in America. Up to 1857 borax came to America from Persia, Italy, and the East Indies, and was imported at a cost of a dollar a pound, naturally much adulterated, because of its high price, and was sold by druggists at 25 cents an ounce. Only within recent years has its very low price made it possible for use in the humblest home, where, as in the most luxurious, it is invaluable and a delight.

ITALIAN BORAX.

The export of the native boracic acid of the volcanic springs of Tuscany, to England, has from time immemorial been carried on at Leghorn, but it is only within recent years, owing to the low level of prices, that it has become profitable to bring the acid in large quantities to Liverpool, for the manufacture of pure sodium biborate—artificial borax, as it is inaptly termed. The changes which have come over this trade are of the most striking in the history of modern commerce and applied knowledge.

Many years ago the chief supply of borax was brought to this country in sailing ships, partly as freight, partly as ballast, in the form of tincal—a salt which contained no less than ten molecules of water of crystallization, and which also had to be purified before the process of expelling that enormous weight of water, from a thick incrustation of filth and grease, which accumulated round the crystals in the course of their transportation in undressed hides from Thibet and Central Persia. The transport of such useless water from Asia to England was of course discontinued when the chemist pointed out the possibility of dehydrating the salt in India, and about the same time the discovery of extensive deposits of borax in California led to the importation of concentrated borax from America. The concentrated salt had, however, to be refined to be rendered available for the requirements of the laundry trade, glass and porcelain manufacturer; while now the extensive use of sodium biborate for antiseptic purposes and the preservation of food, has produced an extensive demand for the salt in a state of chemical purity.

Hence the manufacture of borax from boracic acid is now a growing industry, and the recovery of the acid from the Tuscan lagoons has become a brisk and profitable industry. The export from Leghorn to Britain in 1896 reached 2,250 tons, while the export of borax fell from 435 tons in 1895 to 149 tons in 1896. A few years ago the Tuscan producers of the acid found it impossible to dispose of their product without previously converting it into sodium salt, for which alone a market existed.—Exchange.

LAUNDRY BLUES.

BY AN ANALYTICAL CHEMIST.

There is one small but very important operation in the laundry which adds much to the beauty of the finished clothes if properly done, and this is, the operation of bluing. The object of the operation is to make white clothes appear whiter than they would otherwise, and it depends for success on a peculiar phenomenon of light. Generally speaking, washed clothes have a faint yellowish tint which is not very agreeable; by passing them through a little bluing material, this faint yellow tint is destroyed, and the goods appear to be pure white. This is due to the fact that blue and yellow are complementary colors; and when the eye sees both yellow light and blue light at the same time, it fails to separately distinguish the two, and is conscious only of the sensation of seeing white light. So laundresses and bleachers always pass their white goods through a blue bath to make them appear whiter, but of course if the blue be too strong, then it will become prominent, and the goods will have more or less of a blue tint.

At what period bluing was first introduced into laundry work, or who first introduced it, is now rather uncertain. The introduction of Prussian blue placed in the hands of laundresses a blue superior to anything which had previously been offered them, and this product very speedily superseded woad and indigo. Then artificial ultramarine came into use and has remained in use to this day, while of late years many of the modern coal-tar colors and dyes are offered for this particular purpose.

The requirements of a good bluing material are many. In the first place it should be soluble, or at all events, be in an extremely fine state of division, so that it may form a uniform bluey liquor when mixed with water—not liable to be gritty or to rapidly settle out; so that the clothes dipped in this liquor may acquire a very uniform tint, free from specks of color. Indigo solutions will fulfill this requirement very well, and so do also well prepared solutions of the coal-tar blues.

Prussian blue is very fine and works well; ultramarine is rather variable; if well made it is so fine in quality that while being really insoluble in water it will remain for a considerable time suspended therein, so that on the whole it works fairly well as a laundry blue. Another requirement is, that the blue should resist the action of the soap, traces of which may be left in the white goods. Soap will turn Prussian blue brown, but on ultramarine it has no effect nor has it on indigo solutions. On some of the coal-tar blues it has no action, others it turns somewhat reddish in hue and thus spoils their value as tinting blues.

Acids cannot, as a rule, be present in washed clothes, but it may be mentioned that while these bodies will decolorize ultramarine they have no action on the other blues. If the laundress has used some bleaching powder or chloride of lime in the hope of making her clothes whiter, she may have some of this in them, owing to insufficient rinsing. If any such be left in it, it will have no action on a Prussian blue, but will decolorize all other blues.

There is another important and yet sometimes overlooked point in connection with the question of blues, and that is, the effect of the process of ironing. On ultramarine a hot iron has no ill effect; on Prussian blue there is a slight reddening action; in some of the coal-tar blues the hot iron has a strong reddening effect, which goes a long way towards spoiling the appearance of the finished articles, and in laundry work appearance is everything.

The action of light is practically of no moment in this matter, as sufficient time is not allowed in the use of clothes for it to exert its destructive work, but it may be mentioned that while ultramarine and Prussian blue are fast and light, the other blues are more or less fugitive, and fade on exposure to light and air.

We may now proceed to speak a little more in detail about various blues and bluing materials now in use.

Indigo is now used only to a limited extent in the form of a solution, prepared by treating the dyestuff with strong sulphuric acid, afterwards neutralizing the product with soda. This material, known in this country as indigo extract, is readily soluble in water, in which it forms a greenish-blue solution; it imparts to white clothes a faint greenish-blue tint, which resists acids, alkalies, and soap, and stands the hot iron fairly well. For the reason that the commercial article is usually in the form of a paste, which is not a good form in which to sell articles to the washerwoman, indigo extract has almost gone out of use as a laundry blue.

Prussian blue is used in the preparation of the so-called thumb laundry blues. When well made, it has a bronzy, glistening appearance. It mixes readily with water, giving a pure blue tinted liquor of a slight violet tone, which is the best tone that a blue can possess. Some makes of this blue are quite soluble in water, others are insoluble, but they are very fine. Prussian blue is on the whole a very satisfactory bluing material; its only fault is that soap and alkalies have the properties of turning it brown, so that if the clothes have not been rinsed free from soap and soda after being washed, any portions of those articles left in them may affect the blue. Of all the blue materials in use, Prussian blue is the only one which will resist both acids and chlorine.

Ultramarine is made in a great variety of qualities, but in this, as in all others, the best is the cheapest and gives the most satisfactory results in the long run. Some of the laundry blues which are sold consist of ultramarine alone, others are mixtures of ultramarine with more or less soda crystals or Glauber's salt; these latter substances being added to them reduce the cost and produce an apparently cheap laundry blue. If the ultramarine is of fine quality it will mix well with water, although it is not soluble in that fluid, and will remain suspended in it for a considerable length of time; in fact, a good test of the comparative value of samples of ultramarine is to take equal weights of the blues, stir them into equal volumes of water in tall glass cylinders, and note the time taken by the various samples to settle out—that which takes the longest time is the best, and will work the best in bluing. Ultramarine will resist the action of the hot iron better than any other blue, and is quite fast to light, air and alkalies, but it will not resist acids or chlorine, which rapidly discolorize it.

The coal-tar blues are not offered to the general public as laundry blues, but laundry proprietors have them frequently brought under their notice chiefly in the form of solutions, usually of 1 to 1½ per cent strong. These dyes are strong bluing materials, and, being in the form of solution, are not liable to speck the clothes. Naturally their properties depend upon the particular dye used; some are fast to acids and alkalies, others are fast to one, but not the other; some will not stand ironing, while others, again, are not affected by the operation; generally they are not fast to light, but, as explained above, this is only of minor importance.

The soluble, or cotton, blues are made in a great variety of tints, varying from a reddish blue to a pure blue in hue, distinguished by such brands as 3R, 6B, etc. Occasionally the methyl violets are used, especially the bluer tints. Blackley blue is very largely used for this purpose, being rather faster than the soluble blues. It may be mentioned that a 1-8 per cent. solution of this dye is usually strong enough. Unless care is taken in dissolving these dyes they are apt to produce specks, which is not desirable.—Laundry Record.

IS NATURAL INDIGO DOOMED?

Only a very short time ago the Badische Aniline Company succeeded, after years of experiment, in obtaining indigo from coal-tar in sufficient quantities and at a low enough price to enable them to put it upon the market in competition with the natural product. The importance of this is easily seen when the magnitude of the importation of indigo, and the amount of money sent out of the country in payment for the same, is considered.

It is well known that in the juice of certain plants a so-called "glucoside" exists, which, when subjected to certain influences, e. g., dilute acids or fermentation, splits up into a sugar and indigo-white, which oxidizes to indigo-blue by exposure to the air. The latter is insoluble in alkaline liquids and in most other menstrua, while alkalies dissolve indigo-white fairly easily. Both the production and the use of indigo depend upon these facts. The only European plant which contains indigo is woad, the dried leaves of which used formerly to be in great demand by dyers. But when the importation of indigo began in the sixteenth century, neither the efforts of the woad cultivators nor royal proclamations could prevent the supplanting of the native product.

The East Indian plant Indigofera tinctoria has thus held the field as a supplier of indigo for at least two centuries, and the first step towards supplanting it in its turn by an entirely artificial product, was made by Prof. Bayer, of Munich, who, as a result of investigations of the chemical constitution of the natural dye, was the first to prepare artificial indigo. This he did in 1881, and Haumann, somewhat later arrived at the goal by another road. Both, however, were far from knowing how to produce artificial indigo on a commercial scale.

In 1881 the Badische put on the market their propiolic acid which formed indigo on the fibre in cotton printing, and the indigo-salt of Kalle & Co. is very similar to this product. The prints, however, acquired a very disagreeable smell, which could not be got rid of, and this inconvenience proved an insurmountable barrier to commercial success, independent of the costliness of the dye. This difficulty was not overcome until 1895, when the Farbwerke-Hochst and the Badische with their indophor came forward again. Even these new products, however, were only suitable for cotton printing, and the formation of an artificial indigo capable of taking the place of the natural dye in all its uses, seemed as far off as ever.

Naturally, the ways and means of the success just lately achieved have been kept strictly secret by the fortunate discoverers, but it must have an immense influence on the indigo market. So far, London has had practically sole control thereof, and if Germany becomes able, it hopes to supply the world with artificial indigo at a price which would ruin the indigo planters, yet another significance will be added to the phrase "Made in Germany." And yet the playful little strikes continue. Those we can still manufacture better than anybody.—Invention.

TESTS FOR PURE STARCH.

Probably few members of the trade know to what an extent starch is used outside their business. It is, of course, a most highly important material in the laundry, but it also plays a great part in the textile finishing and coloring trades.

The finisher uses it in the same manner and for the same purpose as the laundryman, and the textile printer employs it, either raw or converted into dextrine by heat, as a thickener for his colors. The paper maker also gives his material body, soundness, stiffness, fullness, beautiful lustre, and complete whiteness with rice starch.

Rice starch is said to contain about 85 per cent. of pure starchy matter, wheat and maize starches from 60 to 70 per cent. and potato starch only about 20 to 25 per cent.

It must naturally be an important thing in the economical working of a laundry to get as pure a starch as possible, and a very simple test is available. A little of the sample to be tested is dissolved in water, and a few drops of iodine are added. The nearer a rose color that any sample comes to, the purer is the starch; or, in other words, this test determines just the important point to the laundryman, for the more actual starchy matter present the nearer the rose color is attained.

If a little of each of three starches—wheat, potato and rice—be dissolved in separate glasses, and a few drops of iodine are poured into each, it will be noted that the potato starch turns a deep indigo blue, the wheat starch a light rose shade, and the rice starch a deep rose color.

Another test can be made by tasting. A starch, on application to the lips, should be neither alkaline nor acid. A starch which has no taste is the most nearly pure. A third test is by comparison of appearance. The best sample most nearly approaches whiteness. However, the iodine test is the most practical, and, as between two samples at different prices, simple calculations of the amount of starch matter present, as shown by the color of the solution, should enable the laundryman to calculate which is the most economical for his purpose. The question of purity of starch being thus, as we have shown, a most highly important one to several industries, a great deal of attention has been paid to it.

Recently, two German chemists, M. Von Siemens and O. N. Witt, have invented and patented in this country, a process for obtaining pure starch from raw or crude starch. The starchy product, containing, as we have seen, varying proportions of absolute starch, is obtained from a large variety of vegetable matters, and always retains coloring principles from the cell juices. These are of no value to the laundryman; in fact, their color is detrimental to his work, and, moreover, they are sometimes subject to malodorous decomposition. The removal of these impurities, as also the application of the starch in various ways, is also militated against by the fact that in the starch cells the starch proper is inclosed in pellicles of cellulose, which impede the direct contact of the re-agents with the starch itself. As an example of the action of these cellulose pellicles may be cited the process of paste making, in which the starch material, which is perfectly soluble in hot water, does not become actually dissolved, but is retained in the distended cell pellicles, instead of forming perfect paste by its solution.

Siemens and Witt find it is possible to obtain from the raw or crude starch, a substance which they term pure starch, and in this, not only are the coloring matters and extractive matters removed, so that the starch granules have the pure white color which they naturally possess, but the cellulose membranes are acted upon in such a manner that they only just suffice to maintain the starch in its organized form, but at once yield to any chemical treatment, are dissolved, and free the pure starch substance, which is thus easily accessible to any further chemical treatment. Such a starch is, for instance, very readily and smoothly converted into sugar by means of mineral acids, without a vestige of bad odor; it is easily converted into various kinds of dextrine without receiving any perceptible brown coloration; in short, it is much more valuable than the crude starch from which it is prepared. This result is attained by converting the cellulose membranes of the starch granules into oxycellulose, which, as is well known, offers much less resistance to chemical influences than cellulose itself.

The pure starch can be readily and rapidly characterized chemically by the fact, that in dilute potash solution it is at once convertible into a clear, filterable solution, while all known raw or crude starches when treated with this re-agent only swell up to a stiff gelatinous mass. The oxycellulose contained in the pure starch is mainly soluble in alkalies, while the cellulose of the crude starches is only mercerized, and consequently encloses and retains the starch substance dissolved in the lye. The inventors obtain their product by subjecting raw starch to the action both of oxidizing agents and of nascent chlorine, under the observance of such conditions that the starch substance, which has tolerable powers of resistance, is not itself attacked. By the oxidizing agents the coloring and extractive matters are destroyed, while by the nascent chlorine the highly important result of the conversion of the cellulose into oxycellulose is effected. This effect cannot be obtained by means of chlorine gas or chlorinated water in such dilution that the starch substance remains unaffected, but it is readily and smoothly attained by means of the chlorine in the nascent condition.

The crude starch is stirred with water into a milk, and to this there is added, slowly and by degrees, a saturated aqueous solution of potassic permangenate, until the pink color of the latter persists in the liquid. The qauntity of permangenate thus required, depends solely upon the quantity of the impurities present, as only these are acted upon by the re-agent; whereas the substance of the starch itself is not attacked by it. The manganese peroxide formed by the decomposition of the permangate is deposited in a state of extreme subdivision in the starch itself, which thereby assumes a brown color of greater or less intensity.

After the treatment with permangenate, the starch is thoroughly washed with clean water in order to remove the soluble oxidation products of the impurities. After the washing, the insoluble manganese deposited in the starch has to be removed by chemical means. If it be only required to bleach the starch, it is sufficient to treat it with a saturated aqueous solution of sulphuric acid, which rapidly removes the peroxide, and leaves the starch in a snow white condition. But in order to attack the cellulose membranes enclosing the starch, use is made of the peroxide for the development of nascent chlorine. To effect this the starch is introduced into very dilute hydrochloric acid, the concentration of which may vary, according to the nature of the starch, and the chocolate colored milk thus obtained is maintained continuously in motion. The conversion of the cellulose is thus slowly effected by the nascent chlorine, and the process is often completed before all the manganese peroxide has been used up.

The progress of this process has been ascertained by taking samples, washing them with sulphurous acid, and testing their solubility in alkali. As soon as perfect solubility has been obtained, the starch is filtered off, and is freed from the excess of manganese peroxide and absorbed molecular chlorine, by treatment with aqueous sulphurous acid or dilute bisulphate solution.

RICE IS THE BASIS

OF ALL STARCH USED IN EUROPE.

A curious fact worthy of note is that starch made from rice, which is said to possess great qualifications to recommend its use, is about the only kind used in Europe, and most of the laundry work in Great Britain, France, Belgium and Italy is done with rice starch. The cause of this peculiar condition seems difficult to arrive at. In this country starch producing cereals are as cheap, if not cheaper, than elsewhere in the world. Hence the use of corn or even wheat starch is economical on account of the price.

On the other hand, we must consider that the cost of corn starch exported from this country and laid down in London or any other continental port, would be slightly in advance of the price here, and if economy of price was the only requisite sought by laundrymen there would seem to be no reason why British and continental users of starch should not buy the American product.

Further reason must therefore be sought for the universal use of rice starch in Europe, for it is hardly complimentary to the business sagacity and ability of those engaged in the laundry business in other countries, to conclude that their conservatism would induce them to continue purchasing and using rice starch at £18 to £20 per ton when they can buy corn starch at, say, £8 per ton, unless they have some good reasons. More particularly is this view of the case emphasized, when it is considered that the prices of laundry work in these old countries are much less than received here.

The world-wide reputation of the laundry work of France and Belgium, the beautiful finish of the linen work of Ireland, the lace work of Switzerland and England (all of which use rice starch) would indicate that the purity, color and strength of the rice product, coupled with the handiness of markets, compensates the users for the difference in price. It is, moreover, a fact that rice starch contains 85 per cent. of actual starch matter, while corn does not carry more than from 50 to 60 per cent., and wheat slightly more than corn.

Regarding color, which is of the greatest importance in fine laundry work; rice starch is essentially, unalterably and naturally of a pure white, and this property of itself should be a high recommendation for new work.

Regarding the practicability of the rice product, it must be treated somewhat differently on account of its physical difference from other starches.

The granules of rice starch are small, absorbed readily into the finest woven fabric, and when properly prepared, distribute about and do not accumulate in lumps, which, when the iron is passed over the surface of the linen, would form uneven places, and cause the linen to stick to the iron and leave the work streaked and blistered.

Rice starch also dissolves as readily in cold water as in hot, and at the same time can be thoroughly cooked in five minutes. It is said to operate perfectly well in modern laundry machinery, and so has excellent qualities in many ways, but it is scarcely used at all in America, wheat and corn starches are used almost entirely, they being made from products right at hand and in abundance.

DOUBT.

When a feller's put his money in a speckerlatin' scheme,
And win or lose is ounce and ounce a-balanced on a beam,
He kinder gets oneasy, and he don't sleep well at night,
For fear his speckerlations ain't a-coming out jest right.
There ain't no way o' tellin' 'cept by waitin', and although
He thinks he'll be successful, why, he'd kind-er like ter know.

—Chicago Record.

DO NOTHING RASHLY.

Hastiness is the chief cause of disaster. Fortune, wise lover of the wise, selects him, for her lord, who reflects before he acts.—Kiratarjunuya.

Man may mistake the objects of his pursuit; he may misapply his industry and misplace his improvements. If under a sense of such possible errors he would find a standard by which to judge and arrive at the best state of his nature, he must look for it in the best conception of his understanding, and follow the instincts given by nature, to discern his adaptability—thus he will find a safe road to success in his undertakings.

To overcome the circumstances which seem to surround the business life of a man it becomes a necessity for him to adapt himself to the use of those talents which are indicated by his mind, and through the appliance of which he finds satisfactory enjoyment and comfort.—Ex.

NATURAL ENDOWMENTS IN BUSINESS.

It is too often assumed that a few months at a business college will develop any sort of human raw material into a successful merchant. How very few there are who recognize the patent fact that the keen insight, the good judgment, the rare invention, the adaptability, without which business life must be a failure, are as much special endowments of nature as are poetry or music or art!

Jay Gould was no less a genius than Alexander of Macedon. Leland Stanford was as great a man as Pope, and Stephen Girard as brilliant as Addison. And all of these were born great. Because men overlook this truth as applied to business, every line of legitimate commercial pursuit is crowded by people who are sure to fail.

People who can raise a little money, people who are too indolent or too proud to learn a trade, people who have failed at something else, people who have no conception of what they are fitted for, and I don't know how many other people, all fancying that anybody can sell goods, start into business. It would be fully as reasonable in the most of them to start into writing poetry or composing music, and they would be just as successful.—Trade Magazine.

The business in which you know you could make money is always monopolized by others.

TECHNICAL EDUCATION A NECESSITY.

In these days, when the laundry business has become an art, the necessity for technical knowledge on the part of both employer and employee becomes more and more evident.

Of course it is not necessary that the proprietor of a laundry should be an expert in all the mechanical and chemical processes of the business; but he should certainly be able to superintend every department, detect faults, point them out, and suggest remedies.

It is not given to the man at the head of a large and complete business to be able to take the position of every man who works under him. Some men can do this, but they are so few in number in these days of specialists, that they are like the plums in a midshipman's plumduff—not within hailing distance of one another. Then again they may soon find out that there is just so much work that a man can do and do it well, and abandon an impossible task.

Nevertheless, the ability to judge results is a matter altogether apart from the practical knowledge required to produce them. A laundryman should know when his machinery is properly run without being an engineer, the quality of his laundry supplies, without being an analytical chemist, and how to run his delivery department without it being necessary for him ever to have been a driver.

Reading the papers published from time to time will help to keep him in touch with the trade and its best methods; association with the members of the L. N. A., and state and local associations will broaden his views and enlarge his ideas, on practical lines.

To the young man who goes into the steam laundry business, a wide field is opened. There is no longer, serious prejudice in the public mind, either against the trade itself or the men in it. The laundry employes, male and female, are counted in the ranks of skilled labor.

POINTS ON STARTING LAUNDRIES.

The greatest fault I find with some people who start laundries is bad judgment. It is easy for anyone not experienced in the business to lose several thousand dollars before they know where it went.

They think—Well, I will start the laundry business; they find a good place and write to some laundry machinery man for his estimate on fitting out a plant, and the buyer gives his order for a complete outfit and pays cash for it. His machinery arrives; the buyer thinks it is fine machinery. It is hauled to the laundry to be placed in position.

Then what? It just rushes to his mind: I will have to get a man to put up my plant and run it. He will probably get many letters from his ad and he will pick out the cheapest man he can get, thinking he will save a few dollars and consequently loses hundreds.

I had occasion to take charge of a plant in the south, that had been running eight months, and they had all kinds of machinery in the place, of different make. I had a time of it replacing and exchanging some, and altering pipes and regulating things so that after I pointed out to the proprietor where he made a mistake he said to me: "I wish I had engaged you when I first started; I would have saved several thousand dollars;" but then it was too late.

The best and only way for a person to start in the laundry business right, is to get some good man that has had practical experience, even if he has to pay him good wages. He will save in the long run, get his plant fitted out and started right, and will realize profits. Get your man first and consult him, and he being a practical man, will set you right. A good, practical man is valued in the laundry business. It seems to me that laundrymen use poor judgment in procuring help, especially in employing foremen. When you have a good foreman he is the foundation of your business.

A practical laundryman is a man that can turn out first-class work; can wash with the best results and regulate his work so it will come out on time, and know what kind of supplies to use to turn out good work; one who can regulate and adjust the machinery under his charge; knows how to save the gas and coal bills; is a practical engineer; can manage help to the best advantage; knows the best methods in starching, and knows how to make starch; is sober and reliable; knows when a hand has done a day's work; in fact, everything pertaining to the business.

You cannot run your business with success without a system, and a man of this kind will save you money. What is the value of such a man? I will leave it to any laundryman of good judgment. How many laundries to-day are on the verge of failure? Why? Because they have no system; they never conducted their business on a business principle. A house will not stand long on a poor foundation. Am I right or am I wrong? I. D. L.

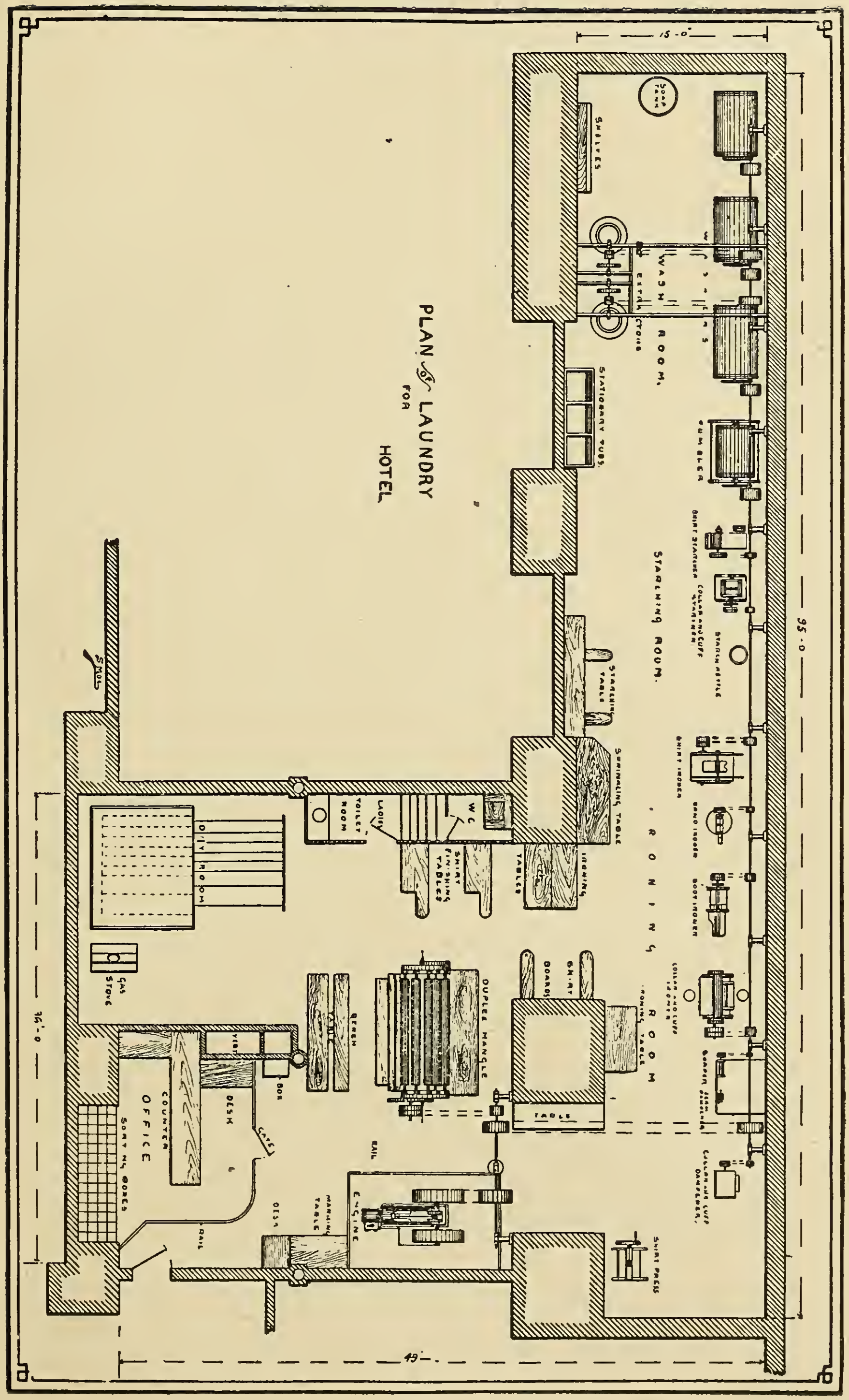
Units make totals, and it is the man who attends to the small things in the laundry business, who attains the height of prosperity.

Necessity for Study if Running a Laundry.

There exists a very real need for careful study on the part of all those responsible for the management of laundries. Many people are crowding into the trade under the impression that the work required is of the most simple and elementary description. As a matter of fact, the business is not such a very easy one. Of course, it is possible to wash clothes, starch and iron them by mere rule of thumb; but if good work is to be turned out, and a reputation for excellence and care built up, real study of every phase of the various operations must be made, for we have not merely to remove dirt from clothes, and give them a certain stiffness and shininess by the help of starch and a hot iron, but we have to carry on operations in such a way as will leave a profit on the moderate charges made.

Now, it is impossible to do all this unless the nature of the water, chemicals, textiles and dirt are understood. Economical working can only arise from systematic differential treatment. Even the merest beginner understands that it is not wise to treat woolen blankets and linen sheets precisely in the same manner, but the practical tradesman knows full well that far more minute subdivision even than this, is essential to profitable running. How far such special treatment is necessary can only be settled by experience, as, besides the inherent qualities of the articles themselves, and the detergents used, the character of the water and the nature and size of the business are disturbing factors which must be taken into account. To arrive at satisfactory results, experiment must be taken as a guide, but much may also be gained by availing oneself of the experience of other workers, and therefore a careful perusal of all trade journals, and all technical literature available, should be systematically perused.

A considerable acquaintance with the trade in different parts of the country has convinced us that this duty of studying the business on several technical lines is not as widely recognized as it should be, partly owing to the conservative habits of old traders, and partly due to the invasion of the laundry world by new people, who embark on the troubled sea of trade without realizing that science underlies the proper washing and "getting up" of clothes. We can only recommend our friends to read any technical matter which comes within their reach.


PLAN of LAUNDRY
FOR
HOTEL
WASH ROOM
STARCHING ROOM
IRONING ROOM
OFFICE
DRY ROOM
SHELVES
STATIONARY TUBS
STARCHING TABLE
SPRINKLING TABLE
IRONING TABLES
SHIRT FINISHING TABLES
TOILET ROOM
DUPLEX MANGLE
BENCH
GAS STOVE
COUNTER
DESK
ENGINE
MARKING TABLE
SHIRT PRESS
TABLE
SHIRT BOARDS
15-0
95-0
36-0
49

A PECULIAR INSTANCE.

Miss Mary Shaffer, who recently moved her laundry from Grant avenue, Millvale, Pa., to the hill above Etna, has been compelled to abandon the new site and go back to the former location. Miss Shaffer erected a large building at a cost of $4,000. When the employes began work they found that something was wrong. It was traced to the water, which was secured from the Etna water plant. This was substantiated by chemical analysis, and the machinery is being taken back to Millvale.

Had Miss Shaffer had the water analyzed in the first place she would have saved both money and trouble. It is to be regretted that the paper publishing the above does not give the analysis of the water.

SOFT WATER ETHICS.

ITS RELATION TO GOOD LAUNDRY WORK.

Perhaps no greater advance has been made within recent years in the laundry industry, than by the very greatly extended use of soft water, and the increased, though tardy recognition of the advantages to be secured by its aid. These advantages are of so far-reaching a character that even yet they are not appreciated to the fullest extent, although those laundrymen who have made it their business to investigate the matter, and have adopted the artificially softened water in the whole of their operations, have, of course, experienced some of the benefits to be derived.

The use of soft water, unlike the adoption of many improvements, that have been introduced in the industry, results in benefiting the customer as well as the laundryman; while effecting savings in the economic conditions of the industry, it at the same time save the products of the customers, by rendering their linen more lasting, and, moreover, causes the laundryman to retain trade, by forcing upon the customer the fact that the linen does not so speedily deteriorate by reason of the laundry's processes, as would be the case were hard water, containing a heavy percentage of lime salts, employed.

A MONEY SAVER.

That soft water is a money saver to the laundryman, is a fact entirely beyond dispute, and the larger his business the greater the proportionate saving. The writer is aware that this latter point is not as yet generally recognized; but, upon investigation, the evidence is so strong, that the correctness of the deduction is equally as unassailable as the fact that its use does save money. It is beyond the scope of the present article to thoroughly thresh out the reasons governing the saving to be effected under the several heads; it is sufficient for the present to briefly enumerate some of the more noticeable economies.

Before proceeding to the consideration of the saving in the actual materials used in carrying out the cleansing and renovating process, it will be well to take into consideration the causes which produce what is generally known as "hard" water. Technically, water is "hard" when it is impregnated with certain salts carried in suspension by chemical action; these salts form, in conjunction with soap, a compound which is insoluble, and this, therefore, causes the water containing such salts to be unfitted for use in washing and cleansing operations. There are various salts which are thus carried in suspension, but from the laundryman's point of view only the two most important need be taken into consideration; these are calcium carbonate, which causes "temporary" hardness, and calcium sulphate, which causes "permanent" hardness. The former is removable by chemical treatment, but the latter cannot be altogether removed, although the condition of the water may be improved by the addition of sodium carbonate. The most economical method of removing the excess of calcium carbonate, is to employ one of nature's own laws. By adding an excess of lime to the water already containing lime salts in suspension, the whole quantity of lime, including that added, is precipitated, time or filtration only being needed to complete the entire elimination of the carbonate of lime.

In calculating the saving effected in materials by the use of soft water, it is necessary to remember that with hard water no lather can be produced until the soap used has entirely overcome the lime and magnesia salts carried in suspension in the water Therefore, if these salts are removed before the soap is used, the quantity used to overcome them will be saved, and in the same way the soda generally added in the case of ordinary water, to assist in the formation of "suds," is rendered unnecessary. Hard water, containing lime salts, too, has a peculiar effect upon the starch, and many of the troubles experienced by the laundryman in using raw starch are entirely overcome if soft water is used.

A FUEL SAVER.

The saving in fuel consequent upon the use of soft water in the boiler is enormous, owing to the entire absence of any formation of scale upon the boiler plates; if laundrymen once appreciated the waste in fuel occurring from scale in the boiler, they would, we are sure, use soft water ever after. The saving in fuel is not the only advantage gained, for the life of the boiler is lengthened by the absence of the pitting of the plates.

It may be thought that these and other savings to which we have alluded cannot be effected without heavy expenses. This is not so; ordinary towns' water can be softened at merely nominal cost, in some cases as low as three farthings per thousand gallons water treated. Owing to exigencies of space, and also for convenience, it is better to employ some form of apparatus to effect the purpose, but even this is not absolutely necessary provided sufficient room can be afforded and time spent in carrying out the necessary operations. A good and reliable form of apparatus, however, is in the end a money saver, and moreover, by reason of its constant and automatic performance of its duties, such a machine is likely to produce more regular and reliable results than is possible in the case of a system dependent upon constant and unremitting attention.

WATER TESTS.

As good results in cleaning, bleaching, and dyeing depend so much upon the quality of the water employed, care should be taken before locating to fully test it.

The following tests may, therefore, be helpful:

Test for Hard or Soft.—Dissolve a small quantity of good soap in alcohol. Let a few drops fall into a glass of the water. If it turns milky, it is hard; if not, it is soft.

Test for Earthy Matters or Alkali.—Take litmus paper, dipped in vinegar, and if on immersion, the paper returns to its blue shade, the water contains earthy matter or alkali. If a few drops of syrup of violets be added to a water containing an earthy matter, it will turn green.

Test for Carbolic Acid.—Take equal parts of water and clear lime-water. If combined, or free carbonic acid is present, a precipitate is seen, to which, if a few drops of muriatic acid be added, an effervescence commences.

Test for Iron.—Boil a little nutgall and add to it the water; if it turns gray or slate-black, iron is present.

Second.—Dissolve a little prussiate of potash, and, if iron is present, it will turn blue.

Test for Copper.—If present, it will turn a piece of bright polished steel a copper color.

Second.—A few drops of ammonia will turn it blue, if copper be present.

Test for Lead.—Take sulphurated gas water and equal quantity of water to be tested; if it contains lead, it will turn a blackish brown.

Second.—The same result will take place if sulphurate of ammonia be used.

Test for Sulphur.—In a bottle of water, add a little quicksilver; cork it for six hours, and if it looks dark on the top, and on shaking looks blackish, it proves the presence of sulphur.

Test for Magnesia.—Boil the water to a twentieth part of its weight, and then drop a few grains of neutral carbonate of ammonia into it, and a few drops of phosphate of soda. If magnesia be present, it will fall to the bottom.

Test for Lime.—Into a glass of water put two drops of oxalic acid, and blow upon it; if it gets milky, lime is present.

Test for Acid.—Take a piece of litmus paper; if it turns red, there must be acid. If it precipitates on adding lime-water, it is carbonic acid. If a blue sugar-paper is turned red, it is a mineral acid.—Bird's Dyer and Cleaner.

WELLS FOR STEAM LAUNDRIES.

QUESTION OF WATER RATES. AN ENORMOUS AMOUNT OF WATER CONSUMED BY MANY LARGE LAUNDRIES HAS LED SOME TO PUT DOWN WELLS.

The question of substituting well water for the water supplied by the city is one that is just at present employing the attention of a large number of laundrymen in cities throughout the United States.

Its consideration has been mainly brought about by the large consumption of water by laundries, and the high water rates which prevail in many cities.

All first-class laundries use water without stint, and hence its cost has become a serious item in the running expenses of the plant.

Many city laundries are so situated that, to obtain a pure and abundant supply of well water is an impossibility, but with many others it is different, and it may be stated as an axiom that the larger the city, all other things being equal, the more is the laundry dependent upon the public water works. Nevertheless a number of laundries—take Chicago for instance, and there may be mentioned Messrs. Goodhart Brothers and the Eureka Laundry Company, have rendered themselves independent of the city by sinking wells.

The Eureka Laundry Company's well is down about 135 feet, and supplies about 80 gallons of excellent water per minute. The well at Messrs. Goodhart Brothers' plant is an artesian one. It is down 257 feet, and the water is pumped at from 80 to 90 gallons per minute.

At St. Paul and Minneapolis, Minn., good water has been found at distances from 100 to 250 feet, well suited for laundry purposes, and at Cedar Rapids, Iowa, wells have been sunk by several laundries there, giving a supply of 20 gallons to the minute, at a depth of little over 80 feet.

In the sinking of wells for laundry purposes it has been found that wells in sands lying over impervious strata—over clays, especially, if they be not deep—do not as a rule afford much water, and though the supply be fair in quality it is deficient in quantity. This is especially true of wells sunk in the neighborhood of towns.

On the other hand, wells sunk through impervious strata to previous strata below, generally supply excellent and abundant water, because they are fed by the waters from high grounds at a considerable distance from them.

This condition is observed generally with artesian wells. The water rises to a considerable depth in them, and at times may even overflow, but this is not frequently the case, and pumping has to be resorted to to make the supply available.

ARTESIAN WELLS.

An artesian well, so-called from the province of Artois, France, is a shaft sunk or bored through impermeable strata, until a water bearing stratum is tapped, when the water is forced upward by the hydrostatic pressure due to the superior level at which the rain water is received. The term artesian was originally only applied to wells which overflowed, but nearly all deep wells are so-called at present without reference to their water level if they have boreholes.

The quality of the water obtained from a well is of vital importance. If a very hard water is the result of well sinking the gain may not balance the cost involved. It should be remembered in this connection that a single grain of sulphate of lime will convert 2,000 gallons of soft, into hard water, and in a general way it may be asserted that the deeper the well the more earthy salts the water is likely to contain. Such well waters cause the consumption of an abnormal amount of soap or softening chemicals and there may be no profit in their use.

In this connection we had an interesting chat with a member of a firm engaged in the sinking of artesian wells all over the country, and he pronounced very decided opinions as to the use of well water for laundry purposes.

"To commence with," he said, "deeps wells of the kind we call artesian, and which are sunk or bored to a great depth at a cost of $3,000 or more, are not the kind to be desired in the laundry business. I do not refer to the matter of cost. It is the quality of water obtained at great depths which I refer to. As a matter of fact it is always hard, though plentiful in quantity, and then again it is not an unfrequent experience to find it contaminated to a greater or less extent with sulphur gases. Now, as you are well aware, such a water will give both expense and trouble to the laundryman."

BEST WELLS FOR LAUNDRIES.

"Then what kind of wells do you think are best suited to the laundry business?"

"Shallow wells in which water is struck at a depth of 80 to 100 feet, with a flow of say 20 gallons per minute, I think, would be most suitable. At this depth the water would be softer, and but little trouble would be encountered from sulphurous gases."

"What do you think as to the economy of using well water instead of city water?"

"Well, that's a hard question to answer. In these days we are all out for the mighty dollar and, of course, everyone has to decide for himself according to the location he is in. In some places it would not pay to sink wells and in others it would. Still, it is not hard for a man to find out at about what depth he can strike water in his locality and figure accordingly.

"Sometimes all hands are disappointed and have to go deeper for water than they ever intended."

Another manager of a well works company spoke of the character of well water all over the country and its adaptation to laundry uses as follows:

"Wells," he said, "frequently furnish much better water for technical purposes than is furnished by the cities, and, the first cost defrayed, there is no further expense. In a vast number of localities water can be reached at a depth of 80 to 100 feet. Sometimes this water, however, is not of the best quality, being contaminated with sulphur, and it is found necessary to go down to the rock, where the water will as a rule be found free from sulphur.

"For laundry purposes, where a soft water is required, the softest water will be obtained from sand or sand rock formation. Water got in this formation will be free from lime, which hardens the water and causes trouble in the boiler room, as well as in the laundry. As a rule water found in a lime formation will give trouble, as it is certain to be hard, and therefore for laundry purposes it is not desirable to sink a well in a lime formation."

"How much water could be pumped from an ordinary well?"

"The amount will vary largely with the character of the ground in which the well is sunk, and the force with which the pump is worked. It is frequently necessary to slow down on account of the slow infiltrage of the water. Generally speaking, I would say that from 20 to 50 gallons per minute can be pumped from any good well."

COST OF WELLS.

As the matter of cost is the most important one for the laundryman who is thinking of sinking a well, to take into consideration, we interviewed a number of prominent well sinkers on this vital point. As a result we found, that the average cost for sinking per foot was, for a six-inch well about $2 a foot, and for a four-inch well about $1.50.

The question as to whether it would be profitable or otherwise to replace city water with well water is one which can only be decided properly after careful thought by the laundryman himself.

BUILDING.

One cannot definitely or in detail, give an opinion, or information, as to what is best in constructing a building for laundry purposes, or the desirable requirements of a building to be rented; each individual case calling for special requirements to suit the size and particular nature of the business expected to be done; but in a general way, we would say, that the building should be reasonably substantial in construction, with due regard to light, ventilation and safety from fire; and in cold climates from frost. As far as practical, the entire plant should occupy but one floor, which should be more nearly square than long and narrow.

Substantial construction is essential where considerable shafting and machinery is used, to keep the same in true line and the best running order; first-class laundry work cannot be done without good light; attention to ventilation and fire protection not only involves the interest of the business, but what is of as great if not greater importance, the health and perhaps the lives of the employes.

WHAT MAY BE EXPECTED IN THE CONSTRUCTION OF PLANTS.

While there are here and there in different cities, laundry establishments which may be looked upon as models, the fact remains that very little attention has been paid to what might be called proper laundry construction. I am sure those who have already put up their laundry buildings, have felt this lack of knowledge on the part of architects and builders, and have suffered in consequence.

It may be of interest to predict along what lines laundry construction will progress. The motive power will be electricity, generated direct from coal, without the intervention of boiler and engine. This agent—if it may be so called—will supply everything needed in the way of power, heat and light. It is not at all unreasonable to suppose that all shafting will be done away with; a simple wire will run to each machine; a pressure of a button, and the wheels are in motion. Think of the vast saving in space and dirt-collecting impedimenta effected by the new method. We will have nothing left but the water pipes to contend with, and no doubt these will always be with us. It is a strange fact that in the running of water pipes the walls of a building are always selected as the proper location; everyone knows how difficult it is to keep things clean in and about pipes; how these places, difficult of approach with broom and scrubbing brush, become breeding grounds for vermin and bacteria. In the coming laundry all this will be changed. Just what material will be used in construction we need not predict, but it is certain that there will be very little wood. We are sure that the windows will be permanently closed; ventilation will be perfect; fresh air constantly coming in through air ducts, and the vitiated air will be carried away. In summer the entering air will be cooled and in the winter heated, if need be.

These few predictions will serve our present purpose, but are they visionary? Let us reflect for a moment over the wonderful happenings of the nineteenth century. In this light our vision becomes mild indeed.

VENTILATION IN THE LAUNDRY.

To keep the body in a healthy condition, and render it capable of doing the greatest amount of labor, the lungs have to be constantly and abundantly supplied with pure oxygen. The human body is like an engine; it must have fuel to enable it to perform its work. We eat carbon and breathe oxygen, which come in contact in our body and produce heat, the same as when we shovel coal into the furnace. The carbon is united with the oxygen, and thus fire is produced, which in turn produces the steam, and that produces the power. So we might say it is the heat which is generated that produces the power in the human body. Now, this being the case, how essential it is that the body be supplied with pure oxygen, and this leads us to the question of ventilation.

Those who have given this matter but little thought cannot realize the great importance which is attached to it. There are few industries which require the careful provisions for good ventilating in the work rooms more than the laundry; and it is my purpose at this time, to try and show the great necessity of good ventilation, and also what those are responsible for, who do not have proper ventilation. I consider it criminal to allow a number of human beings to be shut in a close room, breathing the same air over and over again, and besides that having a large number of machines and stoves heated by gas which consume a large portion of the oxygen. It surely is a slow form of death, and sooner or later must cause serious results.

This question of ventilation, of course, does not apply so much in the summer, for then usually the windows and doors are open, but it is in the winter when the chief danger arises. It is generally supposed that if a window is open a little way, it is sufficient in cold weather, and many think that ventilation is not so much needed in cold weather as in warm. This is a mistake, as the consumption of oxygen is just as great in winter as in summer, consequently just as much ventilation is needed. Now, let us look into the reason why ventilation is so much needed in laundries, more than in other places where there are a number of people employed.

We cannot have fire without a loss of oxygen, for it is the oxygen and carbon uniting which causes fire, so we lose the oxygen, and not only that, but we get another product from the combustion of gas for heating the ironing machines, and that is carbonic acid gas, which is sure death to animal life. This gas goes into the air and takes the place of oxygen, and those in a room where a large number of gas burners are being used, such as we have in our modern laundries, must breathe a large amount of this carbonic acid gas, unless it is in some way taken from the room.

So this is the reason why laundries require more especially to be ventilated. The human body gives off carbonic acid gas at every breath. The oxygen breathed into the lungs unites with the carbon in the blood, creates heat, and in turn gives off carbonic acid gas, so between the many lungs breathing it and the many fires burning it, the oxygen in a room can be soon consumed, and in its place carbonic acid gas will be found.

There was a time in past ages when no form of lung-breathing animals could exist, because of the presence of great quantities of carbónic acid gas. After a time this carbonic changed into a vegetable growth and left the oxygen free. Then it was that lung-breathing animals came into existence, all of which proves that carbonic acid gas is death to animal life.

Now, many think that if a window is opened, it will be all the ventilation that is required. This is a mistake, nothing but a forced circulation can give proper ventilation. That can be done perfectly by a ventilating fan run at a high rate of speed. But in order to get proper results there must be openings into the room in various parts of it, from the out-door air. In this way the whole amount of the air in a large room can be changed in a short space of time.

In this matter of ventilation, I have only considered the interest of those who are employed, but besides I will point out where it is a decided benefit to the employer. If the help are in a healthy condition and feel well, they will naturally do more labor than they would if they felt ill and tired, so not only is the laundryman doing an act to benefit the health of those who are employed by him, but he is also doing that which will compensate him in dollars and cents, by having proper ventilation.

My remarks thus far have referred to the ironing room. Now, I would also say a few words about ventilating the wash room, and the ventilation necessary to make that a healthful and agreeable place to work in.

We become so accustomed to dirty clothes by constantly handling them, that we soon cease to realize the nature of them, and many times are in great danger of contracting some disease, either by contact, or by breathing the germs which the goods may contain.

Ventilation fans should be in every wash room, and run winter and summer. These will keep pure air in circulation, and thus get rid of the foul odors in the room. But besides that, the washers themselves should be ventilated, in order to take away the steam, or any odor coming from the washing.

This can be done very nicely by having an exhaust blower, and have a pipe connected with the washer in the outside head. If more than one machine is used, then the different pipes can be connected with one large pipe. Let the fan extend from the washers through the pipe and out into the open air.

I trust I have made this important matter of ventilation clear. I have endeavored to show how essential it is to the good health of those employed in a laundry to have the room in which they work well supplied with pure air, and if what I have written will cause any thoughtless or careless laundryman to no longer deprive his fellow beings from enjoying one of God's rarest gifts, I shall feel that this paper has not been in vain.

'UNOME.

WASH ROOM FLOORS.

A thoroughly good concrete floor, with a floated cement surface, possesses many advantages, but it requires to be laid and graded with the utmost care, and moreover only the best material, such as finely graded granite, should be employed in forming the "body" of the flooring.

GUARDING AGAINST FIRE.

To guard against fires should be the endeavor of all laundrymen, and the danger from this source can be decreased by observing the following points, which are taken from an insurance journal:

Great care should be taken to buy the best oils, and those that can stand the fire test. There is no economy in buying poor oils.

In handling oils in storehouses and stores, wherever it is drawn there should be good drip pans placed directly under the faucet to catch the drip.

Engineers should be forbidden to use sawdust as an absorbent on the floors about engines; sand should always be used, it is a better absorbent, as well as safer.

Ashes should always be kept in metal vessels. Kept in anything else less safe, it is only a question of time when fire will break out. A dollar or two spent in buying receptacles may save thousands.

All greasy clothing, overalls and the like, should be hung up in some place where the air can get at them. Under no circumstances should they be thrown in a heap on the floor, or stuffed away in some cupboard or locker.

The tops of all boilers, and steam pipes leading from same, should be swept clean at short intervals, and no dust allowed thereon. Some engineers are so careless that they dry wood on top of their boilers. This should be strictly forbidden.

Roofs should be kept clean. No accumulation of old carpets and mixed rubbish should be allowed. Some use the roof for storing all sorts of old stuff. The habit is highly reprehensible, as such collections are only nests to catch sparks, burning cinders and the like.

Always see that the bottom of your elevator shaft is clean of rubbish every day. Many fires are traced directly to negligence in this matter and accumulation of dirt and rubbish at a point which makes it certain that a blaze will destroy much property.

Gas burners, more particularly those that are movable, are a prolific source of fires. The walls or whatever may be near them should be protected by metal, or else a wire mask or cage should surround the burner, so that by no possibility can it come in contact with anything that may burn.

FIRE INSURANCE FOR LAUNDRYMEN.

Very many laundrymen are of the opinion that the National Laundrymen's Association should take up the question of fire insurance in laundries, and if possible help to form a laundrymen's fire insurance association.

Now, this question of fire insurance appears to be fraught with much injustice to laundrymen. In a nutshell, they are taxed enormous rates for very ordinary risks. One writer says: "We are paying, in this place, on our laundry plant, $37.50 per $1,000 of insurance, although our building is situated forty or fifty feet away from any other building, and there is no more risk inside than on any other laundry." Or, to look at it more closely, laundrymen are often charged more highly on account of the danger from stoves, forsooth, when ordinary dwelling houses, with stoves (of a much more dangerous kind) in every room, are only rated at a minimum cost. That there is room for united action is very clear, and laundrymen should make their voices heard on this question at the National Convention.

It is significant that in most modern plants the dangers from fires are comparatively slight, because of the precautions taken and the materials used. Cement floors, strong stoves (if any) carefully isolated, electric lights, and separate boiler and engine rooms by no means add to the general risk. The subject will bear investigation.

The Underwriters' Association of Chicago claims that it does not ask unusual rates for fire insurance on laundries, as they are held to be risks beyond the ordinary. This is precisely what laundrymen deny. What they want to get at is, where the extraordinary risk comes in, as compared with stoves in dwelling houses, for example.

FIRES IN DRY ROOMS.

HOW A SAFE CONSTRUCTION CAN BE ASSURED.

Fire in steam laundries, is one of those dangers which the laundryman has to use care to guard against. Not that in his business he is exposed to more risks than other men engaged in any industry where fire and steam are the active factors in the production of the power which runs a plant; on the contrary the laundryman cannot wash without water and has on hand usually an abundant supply of that deadly opposite to fire. Nevertheless laundries burn up.

Chatting recently with a few prominent Chicago laundrymen on these sources of vexation, we gathered up some valuable grains of information.

One laundryman said:

"With proper care in the construction of a dry room, it should not be the place for a fire to originate. My dry room is lined with asbestos sheeting, except the floor, which is cement, and is absolutely fireproof. The reason it has a cement floor is, that it is on the ground floor. If the floor were wood then I should have it covered with iron. I favor an asbestos lining for dry rooms because it not only renders the risk from fire virtually non-existant, but that it prevents a loss of heat from radiation, confining the heat of the coils to where it properly belongs—the dry room itself."

"What is your theory as to the origin of fires from dry rooms?"

"I believe that where they do occur in the dry room, it is from the mistake being made in the first instance of having the pipes too close to woodwork. In time this renders the wood like tinder.

Another laundryman, speaking of fires originating in the dry room, said:

"All pipes should be placed at least one inch from woodwork. Where fires originate in the dry room, I believe they are due to spontaneous combustion. A steam pipe cannot cause fire itself, and you will notice those fires all occur after steam has been turned off. The wood, from being exposed to the heat for a period of years, becomes disintegrated, and, in fact, tinder. It absorbs oxygen from the air, and you have spontaneous combustion. An asbestos sheeting in the dry room is a good precaution, but in no case should pipes be allowed close to woodwork."

Another laundryman thought that danger of fire in the dry room was exaggerated.

"I think," he said, "that the idea is due to the fact that the old style dry rooms were heated by stoves. There is no danger where the pipes are kept far enough from the woodwork to allow of a free circulation of air between the two. There is no more danger than from a radiator in a man's house."

INSURANCE ON LAUNDRIES

AND THE NATIONAL ASSOCIATION.

Seeing quite a little in the Journal in regard to insurance, I would like to say something about it. As some one stated in the Journal a little while ago, they thought that the most of the laundrymen at the present day had a life insurance, and I will add, if they have not, they can get a life insurance as cheap as any other class of business men, but can they get their plants insured against fire at the same rate that manufacturing plants are rated at, where the risks are just as great or more? I think not. Therefore I think mutual fire insurance instead of life insurance would be more of a benefit to the laundryman, and I would suggest that it be something like the following: That the Laundryman's National Association be the head, and the local associations act as branches of the National; and they shall bind themselves together for the purpose of protecting themselves at actual cost against loss by fire. Any laundryman wishing said protection shall first join the nearest local association, and they shall have one or more inspectors, whose duty it shall be to inspect each laundry plant, causing changes to be made where it is thought to be desirable for the safety of the plant and protection against unnecessary expense for the association; said changes, if any, shall be made before the inspector shall recommend said plant to the head offices for insurance; said inspector shall receive a certain amount per day for services actually rendered, together with his traveling and other necessary expenses. The head office shall have a secretary, who shall be paid as the association may see fit. Each member shall pay an entrance fee, this to go toward the expenses of running the association. But to start with, this entrance fee will help to create a reserve fund, which, I think, is quite necessary. After that there shall be assessments made as they are needed. There shall be no policies issued for more than $3,000. If anyone wants more let them get it elsewhere. The reserve fund shall not be less than the largest policy issued, so that each member shall be assured that he will get what he has paid for in case he has a loss by fire. Where the amount in the treasury falls below the stated amount the secretary shall make an assessment, and only then. I do not think it advisable to have a large reserve fund lying idle in the treasury, for we are not after a show, but insurance against fire at actual cost. I hope the above will give the boys a pointer and you can write up a policy for "QUEERCUSS."

Regarding the above we would say: That the insurance laws of a number of states require a bond or deposit of $200,000 with the State Treasurer of one of the States to enable an insurance company to do business within those States.—[Ed.]

THE ELECTRICAL HAZARD.

Public attention has been drawn to the danger from electricity as a fire hazard, and to the waste of property likely to result from careless insulations. A circular recently issued by the Electrical Bureau of the National Board of Fire Underwriters enumerates 815 fires attributable to this cause, within a given period in the United States.

Only a study of the rules themselves will disclose the scope of the work, and show the need for careful attention to every detail, yet the following cautions, based upon the rules, may give some idea of the ground covered, and serve partially to inform those interested, as to important requirements.

1. Have your wiring done by responsible parties and make contract subject to the underwriters' rules. Cheap work and dangerous work usually go hand in hand.

2. Switch bases and cut-out blocks should be non-combustible (porcelain or glass).

3. Incandescent lamps get hot; therefore all inflammable material should be kept away from them. Many fires have been caused by inflammable goods being placed in contact with incandescent lamp globes and sockets.

4. The use of flexible cord should be restricted to straight pendant drops and should not be used in show windows.

5. Wires should be supported on glass or porcelain, and never on wooden cleats; or else run in approved conduits.

6. Wires should not approach each other nearer than eight inches in arc and two and one-half inches in incandescent lighting.

7. Wires should not come in contact with metal pipes.

8. Metal staples, to fasten wires should not be used.

9. Wires should not come in contact with other substances than their designed insulating supports.

10. All joints and splices should be thoroughly soldered, and carefully wrapped with tape.

11. Wires should always be protected with tubes of glass or porcelain where passing through walls, partitions, timbers, etc. Soft rubber tube is especially dangerous.

12. All combination fixtures, such as gas fixtures with electric lamps and wires attached, should have approved insulating joints. The use of soft rubber or any material in such joints that will shrink or crack by variation of temperature, is dangerous.

13. Electric gas lighting and electricity on the same fixture always increases the hazard of fire, and should accordingly be avoided.

A LAUNDRY FIRE DRILL

The Banner Waist Company, which was burned out of its old quarters at 183 South Canal street, Chicago, are now safely housed in yet finer quarters at 237 Market street.

It will be remembered that on the occasion of the fire, which broke out about 3 o'clock on the afternoon of Nov. 17, that the building was crowded with the girl employes of the firm, no less than 526 being on the several floors. Within ten minutes from the time the fire was discovered, all those girls, without haste or fright, had dressed, secured their wraps and pocketbooks, and descended to the street as though the time for quitting work had arrived.

"I attribute the fact that we had no panic," remarked Superintendent John Claus, "to the manner in which the entire force had been drilled for such an emergency. Every Saturday, all through the summer, I had drilled the girls into a thorough knowledge of just what to do in case of fire. I had a kind of school, as it were, and we would locate the fire in different parts of the building, and ask the class what should be done in such and such a case. All were made thoroughly acquainted with the fire escapes, where they were located, and how to get off and on them in case of necessity, and how to get from the roof of one building onto the roofs of adjoining buildings. They were exercised practically in using the escapes, and in a very short while they overcame their timidity and became, as it were, expert firemen. There were only three out of 526 that we could not induce to go on an escape."

"What did you do with them?" asked the reporter.

"We had to let them go. Three timid girls of that kind might create a panic in which not only their own lives, but the lives of others would be sacrificed."

"Will you keep up the fire drill system in your new establishment?"

"Certainly we shall. Twice a month, on Saturday afternoons, we will stop work for an hour or so for drill. Of course, we will select the days when the weather is the pleasantest. I do not think that there is anything of more importance than to have the help in large factories like this, carefully instructed how to save themselves in case of fire, and how to use escapes and all other devices provided for their protection. This kind of drill gives the girls confidence in their own resources, and hence effectually guards us from the danger of a panic."

OFFICE.

The front of the building, whether the building contains the entire laundry plant, or is simply the business department, should be attractively painted, and adorned with signs sufficient to denote the nature of the business done there.

The inside of the office should be finished and furnished neatly and tastefully, but not gorgeously; and kept so.

Hardwood, which need not be of the most expensive kind, finished in oil, makes a very good finish, and with harmonious fixtures, is perhaps as desirable as could be had; but such an office could, by lack of care and attention, be made to present an appearance inferior to and less attractive than its neighbor, which, though finished and furnished more cheaply, is kept in neat and tasteful order.

PERSONAL APPEARANCES.

THEIR EFFECT ON BUSINESS.

(By Nathaniel C. Fowler, Jr.)

Genius and shabby clothes sometimes are together.

Long hair and pure poetical instinct may be inseparable.

He who thinks only of his clothes, may not have time to think of anything else.

He who thinks of everything else except his clothes, may of necessity look shabby.

While many men of genius are long haired and of frayed pantaloons, there are millions upon millions of men with unkempt heads and shabby clothes who have not brains enough even to fan a spark of genius.

The dude is a fool.

The unkempt man is another.

Because a man is a genius does not excuse a filthy personality.

Few of us are geniuses, and most of us stand on the auction block of business to be sold as we appear to be, as well as we are.

The dude and the shabby man both repel trade.

Neatness is essential to salesmanship.

Good clothes well kept, and poor clothes well kept also, are absolutely essential to the proper balance of successful business outside.

The appearance of everything in the business must be appropriate to the business.

It is necessary that everything worn by the clerk, or the business man himself, from his shoes to his hat, should be in harmony with his appearance and his surroundings.

The business man and clerk should not be dressed as a dude, but they should be neatly and harmoniously clothed and presentable to the class of people they meet.

No man is well-dressed when he is overdressed, or underdressed.

The man is well dressed, when 90 per cent. of those who see him, if asked the question when they turned their back on him, cannot tell how he was dressed, but can say that he was well dressed.

Striking, loud costumes should never be allowed behind the counter, and only the fool of a business man will wear them.

THE BUSINESSLIKE DESK.

The desk of business has always accompanied business. If a desk were not a necessity, it is obvious that there would not be a desk. A business man's books can be kept on a barrel head. Business can be transacted over the rail of a fence. But so long as bookkeepers and business men positively refuse to do business without a desk, it is fair to consider the business desk a business necessity.

It is used because business can be better transacted with its use. Practically all accounts and all negotiations of every class are done in company with one or more desks, or the equivalents of desks.

The traveling salesman finds the buyer at his desk. The client finds his lawyer at his desk. The editorial caller finds the editor at his desk. Desks are everywhere, used by everybody, and yet not one man in ten thousand appreciates what may be considered the business sacredness of the desk.

Order is the first law of heaven. It is also the first law of successful business. A convenience is hardly worthy of the name unless it be an orderly convenience. Convenience without order is not convenience.

The character of a man is not always known by the clothes he wears, nor by the desk he uses, but as the man is dressed, so may he be, or at least so may he be considered.

The business is often reckoned by the appearance of the desk.

The old idea of considering a man's character by the company he keeps, has been carried down to business, and a man must be known, to some extent at least, by his business surroundings.

A well-kept man, in front of a well-kept desk, is some evidence of a well-kept business, and a poorly kept man, in front of a poorly kept desk, is some evidence of a badly kept business. True, millions have been made amid surroundings of disorder, but the grand old law of averages is safer to follow than the rule of exceptions, and so long as a well-in-order desk seems to be a part and parcel of a well-in-order business, it will seem necessary that attention to desk management be considered somewhat on a par with attention to business management.

A poorly kept desk means a waste of time. Figure it out, if you will. If the desk is out of order, it probably takes you half an hour a day to find the things you would find if your desk were in order, and half an hour a day is three hours a week, and 156 hours a year, or the equivalent of somewhat more than half of a month of actual business time.

The man with a well-kept desk can enjoy an extra two weeks' vacation without using up any more business time than the man of the desk out of order.—Ex.

"MANNERS MAKE THE MAN."

COMMERCIAL VALUE OF POLITENESS.

The cultivation of courtesy is the most profitable harvest in the field of business.

Politeness costs the least, and pays the best.

A kind word often clinches the trade, and clean-cut politeness frequently builds business.

It is obvious that the customer is unreasonable, and that the practice of courtesy on the part of the customer is as commendable as on the part of the clerk or employe, but so long as the seller desires to sell more than the buyer desires to buy, just so long is it necessary for the seller to use the commodity of courtesy as legitimate bait for the drawing of trade.

Over-politeness is better than gruffness.

There are two lines of railroad running from, say, Timbuctoo to Nyanza, and one road is worth five times as much as the other; the accommodations are nearly identical, the running time is about the same, and the question of safety is perhaps in favor of the larger road; but hundreds, and thousands, of people travel between these two cities upon the cars of the smaller road on account of the gentlemanly politeness and courtesy invariably shown the passenger by every employe, from the ticket agent to the brakeman.

It is a delight to travel amid the surroundings of courtesy, and to feel that you can ask a question and receive an intelligent and cordial answer.

This smaller road is rapidly building up its business, and every through passenger it carries may be considered as one from the larger road. It has won this business almost entirely by act of courtesy, because it has not any better facilities to commend itself to public favor.

In Altruria there are two theaters, one managed by a gentleman, and the other by a human hog. It has been said that the applicant for passes would rather be refused by the gentleman than favored by the hog.

Courtesy is a commodity, and there can be no better trademark for the building and holding of trade than universal politeness to everybody, and a manifest interest in the welfare of the customer.—N. C. Fowler, Jr.

VALUE OF BOOKKEEPING.

Pretty nearly every concern doing a retail business keeps books, but that is not by any means to say that every such concern makes an accurate record of its transactions. The bookkeeping is not often exposed to public view, and therefore escapes much of the criticism which is visited upon other and more obvious parts of a firm's operations, but enough has been revealed to indicate that the business enterprise which is properly accounted is the exception and not the rule.

To this cause is due a considerable portion of the failures which occur. Few men intend to fail. Most men have a wholesome horror of insolvency, and they struggle along, trying to keep their heads above water and not realizing their true condition.

We need not enumerate or suggest all the leaks that may be slowly foundering their mercantile ship. We have seen them all at work, and so has every experienced credit or business man.

Bad bookkeeping ensues from several causes. Lack of education is one. Lack of experience is one. Lack of common sense is one. Lack of honesty is one. Lack of courage is one. Lack of industry is one.

Some men grew up in stores where the bookkeeping was of a primitive sort, and they think that what was good enough for their employers is good enough for them. Their employers prospered because they had great energy, or great acumen, or great opportunity, or all three. Not because of poor bookkeeping, but in spite of it.

Some men are too lazy to keep books properly; some don't want to know how they stand, are afraid to face the facts, and hope somehow to pull through, by good luck, it may be. None of that is business. It is child's play, and any grown man who undertakes to transact business among men should be ashamed to neglect the ordinary precaution of keeping the most accurate account possible of his operations. He owes it to his creditors, to himself, to his family.—Ex.

HAVE YOUR BOOKS RIGHT.

If you are not yourself an expert accountant and you cannot afford to hire such a one permanently, get one to start your books right and instruct you how to run them. Suppose it costs you $50 or $100, and gives you a clean grasp on how to do it; won't that pay in the long run? It's worth something to feel secure all the time.—Men's Outfitter.

BUSINESS LETTER WRITING.

Of course a good many merchants, and excellent merchants, too, never had the benefit of a thorough education, and they can hardly be expected to write a letter that will be as smooth and elegant as a literary gem. Still it does seem as if any man could, by reading over a letter after it was written, see whether he has said the thing he wished to, or something else.

Here, for instance, is part of a letter received recently. Read it over:

Gentlemen—Enclosed please find photograph of senior member of our firm as per your request, who established the present business six years ago and has rapidly grown to six times original size.

After you get through laughing, gentle reader, please reflect whether or not you ever fell into the same error, that of confusing the man and the business. All that is necessary to set that letter right is to substitute "which" for "and" after "ago," or to retain the "and" and insert "which" after it.

A good many young fellows learn business, but never learn to write a business letter, supposing a business letter to be distinguished chiefly by the omission of "a," "an" and "the."

As a matter of fact, a business letter should be the most accurate of all letters. It should be as brief as it can be and express what it is written to say, but it should be as long as necessary to accomplish the same purpose. A great many business letters, so called, are most confusing, totally lacking the first necessary principle, that stated above.

It might be an excellent thing for the young fellows in a store to practise writing business letters to one another, ordering goods, describing them, asking remittances, etc. All the subjects usually covered in the store's correspondence could well be worked over, and new topics would be suggested by the daily incidents of the business.—Exchange.

CASH OR CREDIT.

During the past, many merchants have gathered a bitter harvest of disappointment from the favors they have extended. If there is a lesson in that experience, it would be a pity not to learn it. It may or may not be a lesson to avoid all credit business. Much is to be said in favor of spot cash. When property has gone out of your hand you have lost control of it. Thereafter you are somewhat, if not wholly, at the mercy of another, as to the possession of that article. Good merchandise is generally better than book accounts. Cash business may be smaller, but it is independent, and the cash seller is the cash buyer, with all the advantages which that term implies.

We are familiar with the points said to be gained by credit—larger business, better prices, etc. We grant there is something in it, especially if you have a circle of well-to-do customers. Every merchant must shape his own affairs, but in some way or other he will do well to keep his operations as closely as possible under his own control. If he has capital enough to stand credit-giving, he may find it profitable, but with the great majority of retailers very short credits are the only ones which should be tolerated, and cash is better than the most beautiful set of books which ever graced a desk or doomed its owner to drudgery, anxiety and loss.

Now is a good time to cast up the whole subject anew and arrive at a decision as to the course to pursue from now on. We are entering on better times, and a great many of the retailers' customers will soon feel like branching out and extending their indebtedness. That is the time to be careful, and don't be afraid to say "No" if your judgment tells you that is the word to say.—Men's Outfitter.

WHAT IS CREDIT?

Credit is the nerve force of the mercantile system, and a most sensitive factor. Weakened and paralyzed panics come; convulsions and upheavals occur, and distress is rampant. Credit is the result of the betterment of business conditions, and the fuller appreciation and higher intelligence of the business world, and is the outgrowth of the development of the commercial system. In the primitive stages of barter, money was the only medium of exchange—the credit man was then unborn. The value of credit was unknown, commerce was in its infancy and awaiting the development which created the credit system.

The erroneous impression prevails that credit is capital. Credit is only the medium by which capital is conveyed from the one who has it, to one desiring it, and who has it not. It is the element of barter that succeeded money, without the expense and annoyance of money, and in the measure that credit is pushed by the desires and expectations of the man out and beyond the solid basis of existing values, it becomes a factor for evil, and is dangerous and elusive.

Credit is the advance agent of intelligence. No one fails who does not create debt. Credit, or rather the want of it, causes mercantile panics and mercantile disasters. Credit carries with it an impost. The merchant makes a distinction in prices between money and credit; the difference being the impost.

When credit lies dormant and unused it decays, and its power is lost, and is not unlike the engine of a sawmill out of use. An important commercial factor for good is lost. A great many people claim that credit is an element for evil only, and that it should be discouraged, suppressed, and eradicated; and that a universal denial of credit would work the greatest good to the greatest number. All wrong; all wrong. They can't, or don't look over and beyond that millstone tied to the neck of credit, "The Abuse of Credit."

When credit is misused or abused, the effect of such misuse is cyclonic in nature, and creates distress and disaster. Credit itself does not create evil. It is the effect of the misuse or abuse of credit that does. The ignorance of its good and its benefits causes disaster. You might with equal justice charge that credit is an element for evil only because it creates failures and commercial panics, because no one fails who does not owe.—Exchange.

THE CASH SYSTEM.

The "cash system" continues to extend its sphere of influence throughout the laundry trade, and it seems the general opinion that this is the only proper basis on which to conduct the laundry business. It is generally conceded that cash should be paid for the necessaries of life. Shelter, food, and clean clothes are the basis of a decent existence, and it is not too much, for laundrymen to ask that cash should be paid for the clean clothes they furnish. But beyond all this, is the point, that the cost of laundry work represents largely, wages paid for labor. Labor justly merits cash, and the laundryman expects to pay his help in this manner. It, therefore, is quite seemly that he should ask cash for the small sums of which his bills consist.

STRICTLY CASH.

The laundrymen of Atlanta, Ga., have decided to do business in future on a thoroughly cash basis. They have just issued the following address to the public, which fully explains the methods they propose to adopt in the future:

To our Patrons and the Public:

It becomes necessary for us to inform you, that the practice which has grown up of giving credit for laundry work, has proven hurtful to the laundry interests and its patrons, and it is desirable to avoid the evils attending it.

The rapidly increasing number of accounts, and the endless work of keeping record of and collecting the same, necessitates our adopting the cash system. Our accounts being necessarily small, the time required for collecting, aggregates to the laundry a considerable loss. Furthermore, our own current expenses, mainly for labor, requires cash from us. To place our business on a basis that shall be fixed and reliable, and better both for the laundry and our patrons, we have agreed that on and after March 1, 1896, all laundry work must be paid for when delivered.

For the convenience of our customers, we will issue coupon books, sold for cash, with the following discounts: $3 books for $2.75 and $5 books for $4.50. These may be purchased at the laundry office or from drivers.

These books can be kept at home, and payment made for bundles when delivered, with the coupons, which are of different denominations, so that exact change can readily be made.

Respectfully,
American Laundry.
Crescent Steam Laundry.
Excelsior Steam Laundry Co.
Guthman Steam Laundry.
Home Steam Laundry.
Trio Steam Laundry.
Troy Steam Laundry.
Taylor Steam Laundry Co.

The association of Atlanta, Ga., will be glad to furnish any brother laundryman, with copies of their constitution and by-laws, at any time, and particularly information regarding the success of their cash business. Mr. Hanye, the father of this association in Atlanta, is jubilant over the success of this system, and his advice to all associations and laundrymen is: "Go thou and do likewise."

TWO GOOD REASONS

WHY LITTLE ROCK IS FOR CASH BASIS.

To our customers:

We, the undersigned, laundrymen of Little Rock, have agreed to carry on a strictly cash business on and after Nov. 1. Our reasons for so doing are as follows:

First, our accounts being necessarily small, and endless amount of confusion and expense entailed to an injurious degree, and the loss in bad accounts; and the time and attention it requires to collect, which time we could give to our workrooms, and insure a higher standard of work.

Second.—Our current expenses, such as labor, fuel, gas, water, supplies and rent, are cash, and must be paid when due. The stand we have taken is one we have been forced into; and we regret very much to make our many good customers suffer for poor ones, but we see no other way out of the difficulty.

As a special inducement we have reduced our prices on all shirts to 10 cents each, and underwear to 5 cents on cotton, and 7½ cents on woolen, per garment, to take effect on and after Nov. 1. All bundles delivered after Nov. 1 and not paid for, will be returned to the laundry, and will be delivered again at any time you may ask. Hoping our customers will lend us their aid we remain,

Respectfully,
Frank's Steam Laundry,
Star Steam Laundry,
Excelsior Steam Laundry,
Little Rock Steam Laundry.

ADOPT CASH SYSTEM.

Ashland (Ohio) laundrymen are in line with the cash system. The following explains itself:

We, the undersigned, laundrymen of Ashland, beg to inform you that, on and after the 1st of Nov., 1896, we will adopt the cash system. This is necessitated by the rapidly increasing number of accounts and our inability to collect same. This system may be new in Ashland, but in other cities it is the only one in vogue. With a great many of our customers we regret to be obliged to pursue this course, but as we positively cannot discriminate, we trust that you will appreciate our position.

Ashland Steam Laundry.
City Hand Laundry.
Woodvine Laundry.

N. B.—For the convenience of our customers we have issued tickets in value from one to five dollars. These can be left in a convenient place at your home, and when our driver delivers your bundle the proper amount can be punched.

CASH SYSTEM A SUCCESS.

DENISON, TEXAS, Dec. 21.

Editor National Laundry Journal:

Having received a number of inquiries from laundrymen in different parts of the country as to the result and success of our C. O. D. business, I want to reply that we are doing more business at the present date than we have ever experienced before. There has never been a parcel left the office or drivers' hands without the cash, since Oct. 1st, and this, too, in the face of the fact that in this country there is an established custom of 30 days' credit. I have proven to the many who laughed at the idea at the start, of doing a cash business here, that all it needed was a strict adherence to the above system. We use coupon books of $2, $3, $5 and $10 and find that they give very good satisfaction.

We have 36 shipments in this State, and 18 in the Indian Territory, and I hope in a very short time to have my shipments under the same system as our local trade, the only obstacle now being, that there are some laundrymen offering as high as 40 per cent. to agents, while I will not handle any agency at over 25 per cent.

F. B. CARVER.

OFFICE COMFORTS.

The average business man is at his office eight hours a day; this leaves him 16 hours. He spends about one hour a day going to and from his office, and sleeps about eight hours.

Assuming that he spends one hour a day dressing and undressing, there is left to him but six hours a day for home and social pleasures.

It is fair to assume that every business man is out driving, walking or attending some entertainment at least three hours a day, which leaves him three hours of unoccupied home time, against eight hours of business time. That is, the business man is in his office nearly three times as much as he is at leisure in his home.

Fully one-half of the offices are neither comfortable, commodious nor pleasant.

It is true that some of the greatest men have written the greatest books, and accomplished the greatest deeds in garrets, and have burned the midnight oil amid cobwebs and walls, but no sensible man will claim that an unattractive environment is conducive to the best mental or physical labor.

Luxurious offices may be in bad taste, but they are in no worse taste than the poorly furnished and uninviting offices, when the owner can afford office comforts.

In everything, appropriateness is conducive to the best results.

Few men seem to appreciate the necessity of an awning or curtain, and constantly try their eyes by reading sunlighted letters and papers.

The clerks work better if surrounded with comforts, and with pleasing effects. The business man feels more cheerful, and the visitor is much more likely to be brought into a trading state of mind if he is comfortable.

Extravagance in office surroundings is to be condemned as much as barrenness.

Many a business man locates his office in the most unattractive corner of his warehouse, when there is light to spare in other corners.

It is the business of the business man's wife to be interested in the care of the office as she is in the care of her husband's clothes.

Nobody wants a meddling wife around, nor does a wife desire to have her husband assist in the cooking; but there is a great difference between meddling and interest.

The business man makes suggestions to his wife at home, and she respects, even if she does not follow these suggestions; in return, it is her business to make suggestions about comforts for the home office.—Nathaniel C. Fowler, Jr.

COMPLAINTS FROM CUSTOMERS.

To those who are beginning in the laundry business, I would say, do not be discouraged if you find you number among your customers, some or all of the following types.

We all have them, and your experience would be unique if you failed to do so. If you endeavor to inaugurate clear and correct systems, you will be able to take a bold stand in opposing fraudulent claims, or in dealing with frivolous complaints; on the other hand, do not hesitate to settle promptly for any claims that are correct, and re-do, free of charge, any work which is unsatisfactory. If you cannot be sure that you are in the right, either your systems want altering, or those who should carry them out are not reliable.

First, there is the customer whose list never agrees with the articles sent, and yet this person is the one who is always complaining of "shorts," and will not believe the laundryman if told that all linen received has been returned, however many witnesses can swear to the correctness of the statement.

Then there is the customer whose things are so fearfully soiled when they come in, that no treatment will avail to make them a good color. These people are generally the first to complain, and are offended if told the truth.

There are the customers who do not know their own goods, and are constantly returning some article as not theirs. The laundryman may try to show that there can be no possible mistake, but without avail. "They never had such a garment. All their collars are marked London, and this one is Brighton," but they forget that they purchased one in a hurry when staying at that place.

Then again we have the customer who asserts that you have completely spoilt his shirt, only washed once before. He is sure you use chemicals, and claims a fabulous sum for the article he accuses you of damaging. Customers' memories are notoriously short, and a few positively assert that such an article was bought in such a month of such a year. Those who mark their garments with the date of purchase are few and far between. In some cases I have known shirts, etc., sent over and over again from an outfitter, having been soiled by exposure in the windows, and yet these would be sold as new goods, although they are then in a very shaky condition, from the strong sunlight and from lying in starch. The unsuspecting customer, however, is not aware of this, and throws the whole blame on the laundryman if anything goes wrong.

Closely allied to the latter type, is the customer who assesses any claim at about double the real value of the article when new. People who are apparently honest on every other point, think it no shame to "rush" the laundryman if he has unfortunately lost or damaged some article of theirs, and should the lost article turn up later on, they will unblushingly deny that it is the one claimed for.

Then the office knows the customer who takes nine months or more credit, and considers himself insulted if politely asked for a cheque.

These and many other types will be well known to the experienced manager who will know how to deal with them, but the beginner may feel disheartened if he comes across many of them at starting, and unless some system and order prevail, will find it difficult to prove the claims fraudulent.—London Laundry Record.

LOST OR DAMAGED GOODS AND ADJUSTING CLAIMS.

(By A. T. Hagen, of Rochester, N. Y., at Chicago Convention of L. N. A., Sept. 14-16, 1896.)

To keep our trade and build up our business we must please and satisfy our customers. One of the chief means toward that end is to return all of their goods to them uninjured.

To return all their goods, which I think requires more study and care than to avoid injuring them, will need a good system of marking and sorting; and no matter how excellent our system or how carefully it is worked, we all of us misplace or lose some of our customers' goods.

The first essential is correct counting and marking, which is not difficult but requires care. To insure this, we have each girl put her number upon all of the lists she marks, so that when a mistake is found we can generally trace it direct to the one that made it, and the sorting girls generally have a passbook in which the mistakes are recorded. At the end of the week they are counted, and a placard is posted where all can see it, of the number of mistakes and by whom made. If any girl makes more than one mistake in a week, we charge her 10 cents for each one; and this we have found a great help to us, as it makes them very careful. We have had a few girls leave us because of this, but never a good or careful one. When a careless girl leaves, it is a gain rather than a loss.

In regular shirt and collar work, the number of pieces lost is less than in any other work, and the loss in family work is the greatest owing to the large variety of pieces. One great help in sorting this class of work, is to have the different kind of goods, such as flat goods, flannels, starched goods, etc., come to the sorter together.

Whenever a bundle has to be sent home short, a full record is kept as to what it consisted of, which lot it was in, date, etc., and if the piece comes out later—which it generally does—a record is kept of that also, and what was done with it, especially if it is a "send home." To settle all claims for lost or damaged goods it costs us one-fifth of one per cent. of the gross amount of work done.

DAMAGE TO GOODS.

This, I am pleased to say, has been so reduced in most of our laundries, that we hear very little about it, and most of what we do hear are unjust claims and no fault of ours. Most prominent among these are claims for fading ladies' waists, which are not as frequent this year as last, as many of our patrons have learned there is a vast difference in the fastness of colors that are put into this class of goods. If waists and colored goods are washed with neutral soap and water (say from 60° to 100°) there will be no trouble from fading, providing the colors are reasonably good. We have had a few waists that were badly soiled or stained with perspiration. These we had rubbed with carbonate of soda (or soap), on the collars and cuffs before putting in the machine.

Our markers are expected to see if the goods are in a reasonably good condition, and, if not, to make a note of it on the list—"shirt badly torn," "undershirts shrunk," "waists faded" etc.—which is copied in the record book. We have a separate list for lace curtains, on which we mark their condition, such as "a number of small holes," "large holes," "sunburnt," "bad edges," etc. All of this is a great help when we come to settle claims.

The price paid for a garment is not always a guarantee of the fastness of the colors in it. Some time ago we had a fine shirt sent us to launder, that proved to be a case in point. It was a blue striped shirt, and after washing we found that half of the back part of each sleeve and part of the front had faded badly, while the rest of it was as bright as ever, showing that when the goods were made part of the dye was good and part was poor. This was too clear a case to let pass, so we got the man to let us keep it, and it has helped us more than once when we have had complaints from customers on that subject. Thinking it might be of interest to you, I have brought it with me, and it can be seen any time after the meeting.

We are sometimes asked to pay for damage done to goods by medicine, or other stains gotten on by the owner, and when we wash the garment and try to remove the stain, we remove part of the goods with it. It takes considerable judgment to detect these cases, and even more tact to convince the owner. We have also to contend with poorly made goods. We have all seen brand new turn down collars that were cracked in the first laundering. The fault here is with the manufacturer.

So far, I have spoken of the unjust demands made upon us. Now for the other side, for, strange to say, we do sometimes damage the goods entrusted to our care. There is a certain amount of wear that is natural. Where this comes, the most is in the washing, and previous essays and discussions have shown us that machines must not be overloaded, or goods kept in them too long, in order to bring this to the minimum. When chloride of lime was more generally used, we were troubled some by small holes eaten through the cloth by small particles of chlorinated fluid; but those who still use lime understand better how to precipitate these injurious particles.

What little damage is done in the ironing, comes, some from too hard covering of the machines, and some from careless handling of old or thin goods. When an operator sees that she has a tender garment to iron, in order not to tear it, she must take more time with it, and handle it carefully; not with such tender or exquisite care, but just ordinary care, and ordinary care must be exercised continually all through our business.

Some goods are torn in an old basket, on a nail, screw, or hoop iron that is sticking in it, sometimes in an old wagon that should have been repaired, or replaced with a new one, and again by dragging a large bundle over a rough floor, wearing a hole in the sheet or pillow case in which it is done up.

ADJUSTING CLAIMS.

When a customer makes a complaint there are three things to be considered: Has he suffered a loss; is he mistaken; and is he honest or fair in his claim. The comments made by our markers on the list, and other parts of our system previously described, are a great help in determining this.

Every claim that is made, whether at the office or through a driver, we take a note of, in detail; such as the exact date the bundle was sent us, the number of pieces sent, and the number we received. This account is given to a girl whose business it is to look after shortages, etc. She copies it in a book we keep for that purpose, which is indexed so that we can turn to it readily at any time, even if it is six months after, and see just what the complaint was and what was done about it. As soon as possible, she must look over our records, get all the information she can, and make a comment on it on the page opposite to where she entered the complaint. We are then prepared to talk intelligently to customers whenever they come in. If a driver has brought in the complaint, she must give him all the particulars as soon as she has learned them.

We feel these things should be attended to as soon as possible. Never let a customer come in a second time and find that you have done nothing toward adjusting his claim. Better tell him you have not lost anything of his; be able to tell him why you think so, and that you will not allow anything, than for him to see his case is neglected. Whenever we are satisfied we have lost or injured an article, we settle for it promptly. When there is a doubt we defer it as long as we can, for sometimes we find we are mistaken, and sometimes the customer will come in and say he was mistaken. We have occasionally paid a claim because we thought the customer was sincere in his belief that he had sustained a loss, even when we were satisfied we were not at fault, for a dissatisfied customer is a very poor one.

Here is a claim which I think is worth telling, as it shows how sometimes customers will be at fault, and not the laundry. We had a bundle containing four shirts and six collars left in our main office by a good customer. We laundered and returned the goods to his address. He sent the parcel back, claiming it was not his at all. The goods were marked "Mock." His mark was "1642." We looked through our records for his parcel, which he said contained one shirt, two collars, one pair of cuffs, and one waist, but with no success. The following week our association held its monthly meeting, and among our talk for the good of the trade, we asked if there was any member present who had lost a parcel for "Mock." One of the good, honest brothers spoke up, "Well, I guess I do. I just paid Mr. Mock for four shirts and six collars." Now, how did that Mock bundle get into the laundry? First, our customer was a machinist. By close inquiry, we learned that he had called in the other laundry on his way to his business to see the proprietor about some shafting he was making for him, and laid his parcel on the counter. After he had completed his business, he picked up what he supposed was his parcel, but which proved to be Mr. Mock's parcel, and left his package there, as it was afterwards found lying upon one of their shelves, with a ticket upon it marked "1642," no name. Now, if we had not found the owner of the Mock parcel, of course we would have been expected to pay for this parcel. It simply shows how sometimes we are blamed for other people's mistakes.

VERY SENSIBLE ADVICE

ON MARKING GOODS.

INDIANAPOLIS, Ind., Dec. 29.

Editor National Laundry Journal:

Among the many details of laundering, there is one that in many instances does not receive the attention it really deserves, and that is marking.

A man will not usually employ as bookkeeper or clerk, a person who does not write a good, neat hand. Is there any more reason for him to permit the linen of other people, given into his charge to be laundered, to be defaced and disfigured by the marker?

The writer has the opportunity of seeing the work from a couple of hotels; one is a first-class house, the equal of any in the west, and it is a fact, that the linen of their guests is ruined by senseless marking. The owner should claim and get damages. I have seen the tab of a shirt so covered with marks that it was necessary to open a new account inside the yoke. Also collars and cuffs with a dozen marks on them.

As an example, I saw a cuff this morning marked as follows: 451 in four different places, three times crossed out, 451x, 4451 and the owner's name in full twice, spelled differently each time.

Different laundries employ different methods of marking. Some mark full name, some initials, others a number or a combination of number and initial, etc. Some mark collars and cuffs at the end, others in the middle; nearly all make use of the under side of the tab on shirts, when there is one; a few make use of the yoke, and a still fewer number the neckband at the back.

Now, then, this is all right as long as it concerns regular customers, but is the source of much trouble when each laundry holds to its own particular method with transient trade. In a short time articles are marked and remarked, until it not only defaces the linen, but is confusing to the assorter as well. Adopt any method you please, and a good method is a good thing, but it should be used with regular work only. When marking other work, the marker should look out for, and use the marks already on the goods; those that are dim or of doubtful indelibility can be brightened, not marked in a new place. New goods, or unmarked pieces, should receive the owner's old mark. The important thing, is to stop unnecessary marking, and this disfiguring of goods, for even in the best laundries the customers have cause enough for complaint without this.

It is true that there are some men, room-mates, or of the same family, who are constantly getting each other's linen mixed. This can not but result in a multiplicity of marks, for which the laundry is not to blame.

Let the laundrymen insist on their markers using more care and judgment in doing their work, and also insist on the marks being small and well formed. If your marker can not do this, get some one who can. Strict attention to details is the price of perfection. INDIANA.

THE MARKING SYSTEM

AS PRACTICED ON HANDKERCHIEFS EXERCISES THE LAY MIND.

There has been considerable feeling shown, especially among those who feel that their handkerchiefs are things that they are called upon to display from time to time in their left upper breast pocket, with the business suit, and in giving tribute to the winners of a boat race, or some such event, at the apparently foolish manner in which their little mouchoirs are multilated by the heartless laundryman's marks.

It is not pleasant for a man to walk around with his name in prominent characters printed on the part of his handkerchief which protrudes from his pocket, and it gives him but little pleasure when he exhibits his number on his laundryman's books, to the public.

But can handkerchiefs be laundered in the modern laundry without marking them, is the question that the laundryman is called upon to solve. As everyone is aware, who has had any experience of the methods of the steam laundry, the greatest care is taken in the marking room of any first-class establishment, to have the marking done in such a manner as not to show, and to employ the most minute characters possible. Nevertheless accidents will happen and handkerchiefs will suffer.

A NEW DEPARTURE IN MARKING GOODS,

IS THAT DONE BY THE SEWING MACHINE—PARTICULARLY SUITABLE TO TABLE LINEN AND FLAT GOODS GENERALLY.

There is no getting over the fact that there is a large and growing class of customers who dislike the marking system at present in vogue in many laundries. Especially is this so in regard to such goods as sheets, napkins, table linen of every description, and indeed of flat goods generally. The ordinary marks, where table linen of the finer qualities is used, are regarded as a positive disfigurement, and then, another kick of the customer, arises from the fact, that every new laundry he goes to will re-mark his goods, and that is not pleasant—say for a drummer, an actor, or any other man who has to do much traveling.

As a new departure from the usual systems, a number of the more prominent laundries all over the United States, are introducing the system, common in England, of having the goods marked with thread. Sewing machines are being introduced, and the goods are marked with them. Of course it is not necessary to state that the machine is a necessity where this system is adopted, as it would not be possible to mark goods by hand, without an expenditure of time and labor not to be dreamed of in a "hurry-up" age like ours.

With a machine, the work is accomplished neatly, rapidly, and as the name is stitched in with red thread, the goods sustain no damage. Goods marked in this manner are sorted without delay, and mistakes, except through absolute carelessness, are rendered well-nigh impossible. Another advantage is that the goods, so marked, remain marked; and that the marking, if undisturbed, will wear out only with the articles themselves.

Where the tag system, in flat work, and fine work more especially, is used, the sewing machine can be utilized to the best advantage in making the tags, and it is now being generally employed for that purpose.

In laundries situated in towns and cities where the customers are steady, marking with the sewing machine will be found more than usually advantageous, as so few changes will be required, the markings not being liable to fade out or become obliterated.

The general introduction of the sewing machine for the purpose of marking goods has opened for the sewing machine companies a new sphere of usefulness, and marks the adaptability of means to ends which is a striking feature of the close of the Nineteenth Century.

THE MARKER'S TABLE.

In many laundries the marker simply uses a table for marking, throwing the goods in a heap on the floor, from which they are sorted out into numerous other heaps, of shirts, underwear, etc., to the obstruction of the place and the detriment of the goods.

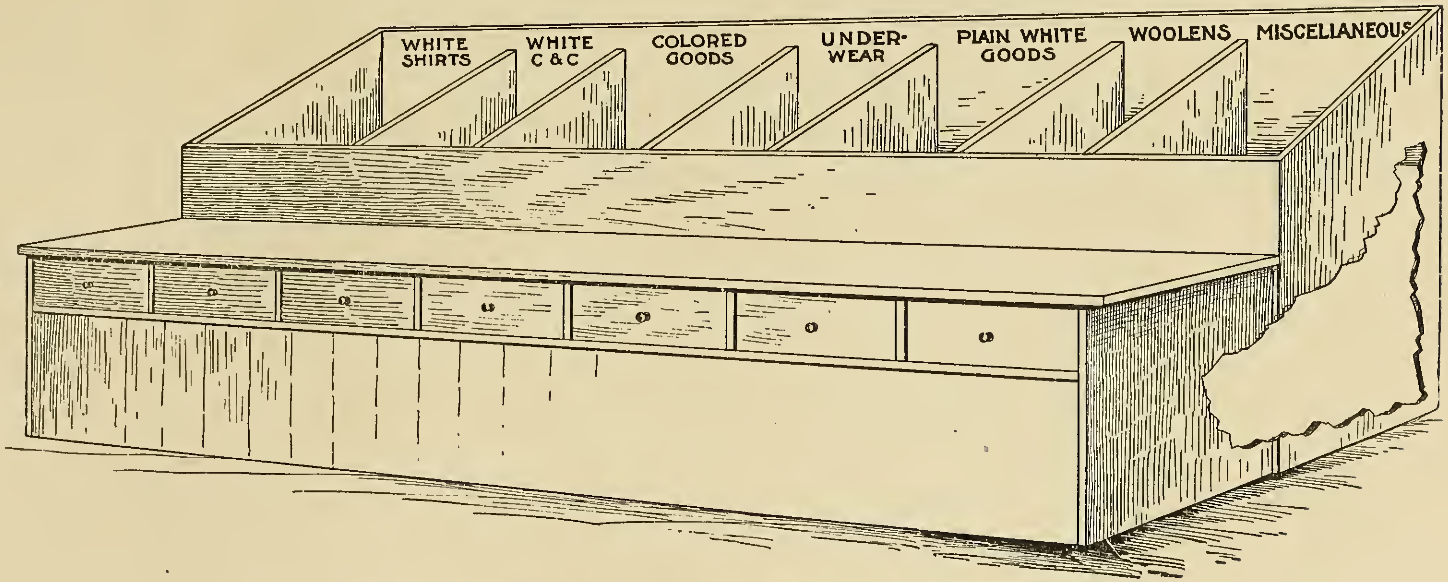
We present a diagram on page 127; with more width to accommodate the bins for sorting, this piece of furniture can be made more useful, the condition be materially improved at a slight expense, and a great economy of space and time obtained. The space beneath the table part is intended to form part of the bins.

The bins for collars and cuffs should be provided with boxes or baskets that will fit closely into them, the same to be on rollers so that they can, when full enough, be run directly to the washer, saving time in picking them out of the bin. This plan can be applied to any or all the other bins if desired.

WATER FOR LAUNDRY PURPOSES.

For the laundry, a copious supply of soft water is one of the principal requirements, and in choosing a site for a large steam works, it is the thing most to be borne in mind. A pond or stream shows a good deal of its character in its face, so to speak.

A water much discolored with vegetable matter, such as peat, is bad for any industrial purposes, and the same may be said of water that deposits ochrey matter on the



MODERN MARKING TABLE WITH BINS.

See article on page 126.

stones over which it runs. At the same time, insoluble matter in suspension is no objection if settling tanks are provided, but when all the solid substance is deposited, the water should have a good color and no disagreeable odor.

The best way of testing this is a comparative one. A small sample of the water to be tested should be compared with an equal body of distilled water in a good light, and, after the bottle has been allowed to stand in a warm place for some time, it should have no disagreeable odor on removing the stopper. If it has, the source of supply is very possibly contaminated with sewage.

Water may be clear, even sparkling, and yet totally unfit for laundry purposes. A hard water, that is to say, one containing certain mineral salts, will take many dollars a year out of the pocket of the laundryman, and he will produce bad work with it.

UNSATISFACTORY WATER REPORTS.

The question of a pure water supply in the laundry grows daily in importance. To secure it, many devices have been resorted to by laundrymen with more or less success.

A reporter of the National Laundry Journal spent hours trying to find out if there were any analysis of the waters of the United States, published, which would be of practical use to laundrymen, and was much disappointed with the results. In nearly every instance, in the analysis of the waters made under the direction of the Geological Survey, the degree of hardness—a matter of vital importance to the laundrymen—was not determined, and could be only guessed at by the composition of the total solid residue.

The analysis of waters published by the various health departments throughout the country are of just as little use.

The reason is, that the examination is made to determine the value of the water for domestic and not for technical purposes. The analysis is therefore made to determine only the sanitary value of the water; while the presence of a certain amount of free ammonia or albuminal ammonia, as indicating the existence of present or previous sewage contamination, is of great importance when the water has to be used for drinking purposes, it is of no earthly concern to the practical laundryman.

Give the laundryman a soft water, not impregnated with iron, clear and free from suspended matter, and he has just the water that he wants.

Although the chemical analysis, for which the public pay yearly thousands upon thousands of dollars, have yielded to technical pursuits—the laundry business especially—little information, they have set laundry machinery and laundry supply men to thinking.

The laundry machinery men have evolved filters that will separate all organic and inorganic suspended matter quickly, and furnish them at sizes well suited in ordinary cases for laundry purposes. These filters have become almost indispensable to the well equipped laundry, and very few first-class laundries are without them; but although the filter should have a distinct value in every laundry, it does not pretend to make hard water soft, but the laundry supply man has been able to offer the means of doing this at a comparatively low cost.

It is true that the analysis of waters furnished from time to time are of no use to the laundryman; still such a partial examination as he requires will be made for a small fee by any competent chemist. All that is necessary to know is the degree of hardness—i. e., soap-destroying power—of the water, and if it be contaminated with iron or sulphur salts. In every case where the water is suspected, such an examination should be made. It will save both money and trouble in the end.

TO SOFTEN HARD WATER.

Mix 3 parts powdered borax and 1 part pulverized alum together thoroughly.

Dissolve 4 ounces of this compound, for every 10 gallons water to be purified, in a bucket of cold water, pour into the hard water and stir up well. Slight discoloring of the water will result, precipitation will at once begin, and in a short time the lime and other matter in the water will have settled into a compact mass at the bottom of vessel or tank, and the clear water, which can then be drawn off, will be found soft, pure and fit for any purpose in the laundry.

As water varies so much, approximate quantities can only be given. The quantity required can be readily ascertained by one or two trials. To accelerate precipitation increase the proportion of alum.

Two tanks should be used. Fill up one and let it settle while using from the other. Place outlet in tank 15 inches from bottom, and have another in center of bottom, to rinse out sediment before filling up.

For muddy or impure river or creek water, use equal parts of powdered borax and powdered alum, mixed. Stir in 2 or 3 ounces for every 100 gallons of water, and the impurities will settle to bottom of vessel.

To clarify water with pressure filter, mix borax crystals and alum crystals, in equal proportion, and introduce a few pounds into alum chamber. Wash out often, and clear soft water will be obtained.

Take a clear glass bottle of 1 gallon capacity, fill it with the hard or contaminated water, put a tablespoonful of the mixed powder into it, shake it well, place it in a good light, look through it, and the process of precipitation will be seen as it proceeds, and in a few minutes, lime and other foreign matter in the water will have settled at the bottom of bottle. The clear water can then be poured off and tested with soap or blue.

DETERGENT PROPERTIES OF SOAP.

Potash exists in plants in combination with various acids. When the plants are burned these combinations are broken up, the acids decomposed into carbonic acid and water, the liberated potash unites with a portion of the carbonic acid in the formation of carbonate of potash.

Wood ashes are the chief source of commercial carbonate of potash, and they contain from 20 to 50 per cent. of their weight. This carbonates and is obtained by bleaching the ashes, and boiling the solution to a condition of dryness.

Carbonate of potash may be changed by a very simple operation into caustic potash, fitting it for soapmaking, by the use of caustic lime. The metal sodium closely resembles potassium in both appearance and properties. Under normal conditions, respecting temperature, it is a silver white body, and possesses the plastic properties that potassium has, has the same affinity for oxygen, and whenever the opportunity affords, it enters into a chemical combination with it in the formation of that most useful compound, "oxide of sodium," NAO. (soda).

Sodium is a very abundant metal, constituting more than two-fifths of chloride of sodium (common salts), existing as a very large ingredient in rocks and soils. There is a striking similarity in the properties of potash and soda; they are both deliquescent, both have a strong affinity for fatty acids, and also readily enter into a chemical combination with the same fats, in the production of soap.

For commercial purposes, sodium is chiefly obtained from common salt. The compounds of sodium are universally distributed throughout this mundane sphere. They are found in the atmosphere, and in the smallest particles of dust. In the earlier period of the world's civilization, soda in a crude form, was obtained from leaching the ashes of sea-weed and reducing it to a state of solidity by evaporation. LeBlanc discovered the process of manufacturing it from common salt. The operation in short, consists of treating chloride of sodium (common salt), with sulphuric acid, forming sulphate of soda (Glauber's salt). The next operation is a substitution of carbonic acid for the sulphuric acid, making carbonate of soda (soda-ash), a product very largely used in the arts.

The next operation is the elimination of carbonic acid leaving the oxide of sodium (caustic soda) of commerce. Within a few years, the Solray process, a shorter method, has been in operation in Syracuse, N. Y., and the large trade they have secured for their product is the best of reasons for the practicability of their formula. It will be observed that the earlier methods of obtaining soda are exactly analagous with modern methods of obtaining potash—to-wit: Leaching the ashes of sea-weed and reducing by evaporation, thereby securing a solid crude soda. Leaching wood ashes, and reducing by evaporation secures a solid crude potash also.

Previous to the discovery of LeBlanc, the laundry soaps of civilization had for their basic principle, potash. Immediately following the putting of his formula into practical operation for the obtaining of soda from common salt, the art of soap making underwent a complete transformation.

The older members of society remember with what determined tenacity our mothers clung to their ash barrel. In the springtime, when the sun began to shed its genial rays, our mothers would have their boys take from places, well protected against the wind and weather, her dry ashes, slightly dampen them in the leaching barrel, and pound them with a maul until they assumed a compact mass, forming as a finishing touch a nicely concave receptacle in the upper end of the barrel for water; cut and split, cords of hard dry wood for boiling purposes, and drive the supporting forks, to sustain the pole upon which the kettle was swung.

We have a distinct vision of our mother's general appearance on these important occasions, in her homespun frock and turbaned head, rapidly oscilating between the boiling kettle and leaching barrel, with a feather in one hand and an egg in the other, very intelligently, as she supposed, determining the exact strength of her lye. After several days of vexation on her part, and heavy burdens upon the boys, she produced a compound which has no place now in modern society. Her daughters, greatly to the chagrin of their mother, would never learn her processes, consequently the ancient manner of domestic soap making, with crude potash lye, has been placed among the lost arts, and the soap with a soda bleach, rapidly supplanted its potash brother.

To-day it is a rare occurrence to meet in the commercial world a piece of potash soap. The soap made with a soda base has so thoroughly intrenched itself in trade conditions, that it is not possible to have its supremacy disturbed by a soap with a potash base.

There is a little contention among soap makers and soap users as to the relative detergent properties of these two kinds of soaps, a very small percentage contending for potash, and a very much larger percentage for soda. My individual judgment is, if the proposition of the relative detergency of the two soaps were submitted to a vote, after a thorough test, that a vast majority of the voters would be favorable to the soda soap. It is claimed by some practical laundrymen, that woolens cleansed by the use of a potash soap, will come from the wash room in a much better condition than if cleansed by the use of a soda soap, and I frankly confess I do not understand the philosophy of this proposition. If both soaps are fabricated with the same fats, neither of which contain free fat or free alkali, both used in the laundry under exactly the same conditions, and the after treatment of the woolens are identical, that the condition of the woolens that have been cleansed with soda soap will equal in finish those cleansed with a potash soap. However, there are two classes of soap; take your choice and pay your money.

TEST FOR SOAP.

Twenty parts are dissolved in water, and then mixed with five parts of diluted sulphuric acid.

The fat will then rise to the top, and the mineral impurities fall to the bottom. In this way the most flagrant adulterations can be detected.—Bird's Cleaner and Dyer.

SOAP MAKING A SCIENCE.

SOME GOOD SUGGESTIONS BY AN EXPERIENCED SOAP MAKER.

(Written expressly for this publication.)

Ever since the day that Adam and Eve made the discovery of their necessities, the inhabitants of this sphere have been confronted with the hardest possible conditions incident to the washing day.

We know from well authenticated historical data, that many of the more ingenious of Adam's children have devoted their untiring energies in perfecting a washing apparatus. The present status of laundry machinery is an evidence of the amount of intelligent labor bestowed on its development.

Notwithstanding the large amount of intelligent labor expended in the construction of aids towards cleanliness, I have never seen a satisfactory explanation of the chemical change that takes place in the washtub in the transformation of soiled linen, into the immaculate linen turned out in our first-class laundries. Here is an occupation in which all mankind is deeply concerned, ignorant of the philosophical principles involved in the simple operation of washing, an occupation as old as the race.

Let us have a thorough solution of this chemical problem. There are many laundrymen making the soap used in their plants, by formulas retailed in the open market for $50 and less. I have seen many of these interesting documents, but have never seen one that I attached any particular value to, for the reason that a good value of soap cannot be made by fixed arbitrary instructions.

After describing the three methods of making soap now in vogue, I will endeavor to show that a cold made, or semi-boiled soap, both of which are made by a fixed formula, are from necessity imperfectly made. The formula for a purely cold made soap will, in a general way, run something like this: For

MAKING NEUTRAL SOAP

"Take 500 pounds of clean tallow, and melt it; bring it to a temperature of about 120° F.; liquid caustic soda lye, 250 pounds, at 36° B.; put the 500 pounds of tallow into a cooling frame, and slowly pour the lye into the cooling frame containing the tallow, rapidly agitating the mass; while the lye is being poured into the tallow, continue the agitation until the tallow is thoroughly commingled with the lye, then cover up, and in 24 hours you have 750 pounds of neutral soap."

SEMI-BOILED SOAP.

The formula for a semi-boiled soap runs in the same channel, excepting the 500 pounds of tallow is put into a jacket kettle, and the 250 pounds of lye is commingled with the lye in the kettle instead of in a frame. When the tallow and lye are thoroughly mixed the mass is left at rest for several hours, when it is gradually raised to a higher temperature, and constantly agitated until it assumes the appearance of a homogeneous mass. In the

STANDARD BOILING PROCESS,

the operator is not particular as to the number of pounds of fat he puts in the boiling pan, only to protect himself against an overflow. He runs his stock into his boiling pan, turns on his heat, reduces his fats to a liquid, takes perhaps one-third of the lye essential for the saponification of the stock at 8 or 10 degrees B., boils for several hours, opens up his pan with a strong brine, lets it rest. When the impurities in his fats and alkali together with the glycerine subsides, he draws them away from his pan, turns on his heat, gives it more fresh lye; continues this operation until every particle of the glycerine is liberated, and the fatty acids are combined with their equivalent of alkali. By this method of making soap, the skillful artisan, with any kind of stock, can produce a neutral soap.

The formulas given herein are not given for the purpose of instructing the laundryman in the difficult art of soap making, but to illustrate the difference between the formula and the common sense method of boiling.

I will now proceed to show that a soap made either by the purely cold plan, or the semi-boiled plan, from the necessary conditions involved, must be imperfectly made. Tallow is the fat generally used for the making of soap in the laundry. Tallow is a combination principally composed of stearine, palmitine and vlein. In the process of saponification this combination is broken up; the glycerine is released from the vlein, stearin and palmitine and subsides with the spent lye and the impurities contained in the tallow and alkali. The vlein is changed into oleic acid, the stearin into stearic acid, the palmitine into palmitic acid, and, in order that a neutral soap may be made, this change must be a radical one; that is, this combination must be changed by the thorough releasing of all the glycerine, fitting the fats for the reception of the alkali. By the boiling process the soap maker has every opportunity for the manipulation of his stock so as to secure the essential condition. By the cold process the operator has no opportunity for the complete separation of glycerine from the vlein, stearin and palmitine; or, in other words, his stock is imperfectly fitted for the reception of the alkali, for the reason that all the glycerine remains in the combination he calls soap, and a percentage of glycerine remains in combination with the fats, consequently the operator is certain to have free fat in his cold made soap.

Another serious objection to the cold made method is that the formula is arbitrary, in that it specifies that a certain number of pounds of liquid lye at a certain degree must be employed with a certain number of pounds of tallow. It never takes into consideration that tallow varies in quality. The higher grades of tallow will yield more than the medium and lower grades, consequently it requires a larger per cent. of lye. It never takes into consideration that the alkali varies in quality—some 60 per cent., some 70 per cent., and some 76 per cent., pure. Another serious objection to the cold plan is, that the soap must contain all the impurities of the tallow and alkali. It is certain that it is chemically impossible to make a perfectly neutral soap by this plan. The product will in every instance contain both free grease and free lye, besides all the impurities in the soda and fats. The semi-boiled plan, perhaps, is better than the cold plan, in that it is liable to have less free grease. In every other respect the objection to either one may be legally made against the other. Soap makers have for the past fifty years experimented to obtain a shorter and a more economical method for making soap than by the boiling plan. Up to date they have all been failures. There is but one correct method of making soap and that is by boiling. We cannot make soap by a formula—it requires the skilled knowledge of an experienced artisan.

SOAP POWDERS.

In making ammonia-turpentine soap powder, the ammonia and oil of turpentine are crutched into the mass shortly before removing it from the pan, and if the powder is scented, for which purpose oil of myrbane is mostly used—the perfume is added at the same stage.

To produce a cheaper article, the best filling to employ is talc, this being superior to waterglass, in that the latter hardens the powder to such an extent that rubbing through the sieve becomes a very difficult task, and indeed can only be performed while the mixture is still warm. There is always a lot of residue on the sieve, which must be returned to the pan and worked up again in the succeeding batch; and, moreover, the finished powder is less soluble, and at the same time of greater density, than when prepared without waterglass, so that the consumer seems to be getting less for his money, and is therefore unlikely to be favorably impressed with the smaller-sized packets.

The second quality soap powder contains, in addition to the above-named ingredients, thirty parts of talc, stirred into the materials after all the soda is melted. Another cheaper grade may be prepared without filling by reducing the proportion of hard soap to fifteen parts per 100 of soda, and conversely a better quality can be made by increasing the ratio of soap to soda.—Seifenabrikant.

WASH ROOM METHODS.

AN ESSAY BY MR. JOS. HARVEY, OF BUFFALO, N. Y., AT ANNUAL CONVENTION OF L. N. A., AND DISCUSSION THEREON.

BOSTON, Sept. 1897.

Mr. President and Gentlemen—

It is not my purpose to weary the gentlemen of this convention with a long, tiresome paper on a subject so universally distorted as that of washing, but will simply outline to the best of my ability, the ideas of a man who has been, from obligation, too much of a general utility man, to settle down and thoroughly give any one particular department of the laundry the study necessary to write —as the aim of all writers should be—intelligently on the subject.

What I consider the most important feature in a wash room is, a man with sufficient intelligence to interpret your wants properly, a man you can trust to do as he is told, whether you are present or absent; who will thoroughly inspect his machines at frequent intervals to see that they are in proper condition, and not a man who has taken all the knowledge off the "wisdom tree" and is literally eating up your customers' goods to satisfy a craving which it is impossible to appease. The laundryman who employs a man whom he can trust at all times is to be congratulated, for his mind is at rest, which is a great satisfaction, for the wash room is an important point in the laundry.

At this point in my paper I ask permission to substantiate my claim by a practical illustration of a person whom you can trust. In July, 1893, I was in need of a washerwoman. A little frail woman, a widow, with two children, applied for the position. She had never worked in a laundry, and knew nothing of laundry methods, but I employed her, and was thankful for her lack of laundry knowledge, as she seemed anxious to learn, and do what was correct to please me. By careful training, and cautioning her never to deviate from my instructions without consulting me, I feel that I have accomplished very satisfactory results with her, for during the years she has been in my employ, I have had few, if any complaints, and have never paid one cent for anything she has ruined in handling, and she had entire charge of my hand work until this summer, when she was given an assistant. I attribute my success in this case, to kind treatment, and at the same time a positiveness so distinct that there was no chance for her to apply my meaning in any direction save that I am responsible for her work, and that it means a mutual affair of bread and butter to both of us. With this treatment, and an employe such as I mentioned in my first important feature of a wash room, there should be no serious trouble in any well regulated laundry.

A second feature is cleanliness. The floors should be clean and dry, and can be kept so where your machines are properly connected with sewers and your washerman does not overfill your machines with water, and overcharge them with washing materials, running your supplies over the floor and into the sewer, thereby causing a loss of material as well as keeping your room in an untidy condition.

Another point in making a neat room, as well as being a safeguard against damage to your work, is to have your shafting, pulleys, etc., thoroughly cleaned as often as twice each month; hangers properly protected with oil cups, and all exposed water and steam pipes covered to prevent dripping of grease or water, causing rust or other spots.

So much for cleanliness in the wash room; but I wish to touch upon one other point which is of considerable interest, and that is the handling of goods in lots, being sure always to keep both white and colored goods separate. This means almost a double number in each lot, but as colored goods do not require bleaching nor so much time in handling, this can be done very easily and will facilitate your work in other departments. This, with close attention to machines, not allowing them to run longer than necessary will add to the pleasure of doing not only good work, but doing it quickly and with less expense.

In conclusion, I wish to give a formula for washing (taught me by a tramp), which has proven satisfactory, and one which I have tried and found very simple as well as expeditious. This system, if used as follows, will do most excellent work.

First of all is the quantity of water used in the machine, which for collars and cuffs would be naturally less than for shirts. Not more than one and a half inches in the cylinder of a machine is required to wash collars and cuffs, and not more than two or three inches for a load of shirts, when run as follows:

First.—Run on cold water, with a little soap; run five minutes, then turn on hot and cold water to a very moderate temperature, making a good suds; then add your bleach, running in all about fifteen minutes; then turn on steam and gradually boil to a degree that you can just bear your hand on cylinder; run off, say ten minutes longer.

Second.—Run on water for second suds, running ten minutes longer.

Third.—A short suds about five minutes, or, if not crowded, I should say two suds of about five minutes each.

Then rinse in two waters and blue to suit the eye.

This system, if run as prescribed, will do the work in from fifty minutes to one hour on either shirts, collars or cuffs.

As I said at the beginning of this paper, the systems of washing are so universally unlike that I should not like to attempt to lay down a positive rule for this line of work, but would like to explain this system in a few words, and by so doing occupy as little of your valuable time as possible, as I dare say we would all of us prefer to be "doing" grand old Boston than listening to such papers.

The small quantity of water used allows your goods to drop on the ribs of the washer with greater force, causing more pounding than it is possible to get from an overfilled machine, consequently forcing the soap and water through the goods, and naturally doing the work with greater speed; also requiring less washing material, which means a saving of dollars, a very important feature to the laundryman in this age of low prices and small profits. I use a bleach in first suds because I find it to be a washer as well as a bleach, when used with suds at a proper temperature, and by boiling at end of suds, and two or three suds, rinse, etc., following, there is no possible chance for any bleach to remain in your goods, to cause trouble in the ironing room, where, by this mode of preparation, your goods arrive in a sweet, clean and perfect condition for the other departments.

The President: If we get our goods through the wash room in proper condition it is a great deal easier to finish them up properly. I would like to hear this subject discussed at considerable length by the members. We will devote some time to the discussion of this subject.

Mr. Bowman: I would like to ask how many shirts Mr. Harvey washes in a lot when he uses only two or three inches of water.

Mr. Harvey: I run from 100 to 125 white shirts.

Mr. Bowman: Do you find that those shirts are always clean, or do you have "go-backs?"

Mr. Harvey: Occasionally we have a "go-back." I think you will have them under any system of washing. That amount of water is more satisfactory than any other that I have tried.

Mr. Bowman: How many rinses do you use?

Mr. Harvey: Two rinses.

Mr. Nichols: Is your water hard or soft?

Mr. Harvey: We have medium hard water.

Mr. Wilkins: I have followed very nearly this same method and I was always troubled with what is called black specks. I have gotten a little away from that.

Mr. Bowman: I have endeavored for the last two years to follow the plan mapped out by Mr. Harvey. I have not been able to get to it yet, but I have reduced the expense of washing considerably; and I have had the same trouble that the gentleman here speaks of in regard to the black specks. Fortunately for me, a tramp came along, as Mr. Harvey says, and he told me how to get rid of those. We now use one tablespoonful of caustic soda in the first rinse, dissolved in water, and we have had no trouble since we have done so. I think in ninety-five times out of a hundred, you will find the black specks, as we call them, is unsaponified grease. I will not say the use of caustic soda will get rid of the black specks in all cases, because the circumstances may be different. We found it worked that way with us, and so in a great many other cases.

Mr. Cooper: In speaking on this subject of the use of caustic soda, let me say, I had some time ago, a talk with a very practical dyer. He told me of an experience he had with his head dyer. He said there was a certain class of goods on which they could not use a certain brown dye without it dyeing in streaks. He finally changed dyers, and hired a German, who learned his trade in the old country. This German, with the same class of goods and the same dye, had no trouble. He asked him why that was. He said, in Germany, they are always taught to keep the rinse alkaline until the soap is washed out, and his dyer used a handful of carbonate of soda. I went back to my laundry and commenced experimenting with carbonate of soda, and I considered it of great benefit in whitening the clothes and in getting the yellow out of the seams and neckband.

Mr. Royce: I would like to ask Mr. Cooper if he uses the bleach and then the alkaline rinse afterwards, or do you rinse you goods thoroughly before you bleach?

Mr. Cooper: We use the alkali before the bleach.

Mr. Eastwood: If the alkali is put in before, it will not answer the same purpose as if you put in carbonate of soda. There is a certain amount of danger in using pure caustic soda among the goods. I find putting in caustic soda is usually safe, and if put in the suds there is less danger, because then you get it thoroughly mixed.

Mr. Cooper: I am a believer in caustic soda, and a great believer in carbonate of soda. You all know, if you wash your hands in a basin, and the water is a trifle hard, a scum will form on the water. If you will put carbonate of soda in the water, it will become slippery, and no scum will form there. Carbonate of soda will keep the water alkaline until the grease and foreign matter in the goods are rinsed out.

The President: I would like to ask if any one has any experience with borax in the wash room in the first rinse.

Mr. Lloyd: We use borax in our laundry on colored goods largely, and it gives us very good results.

Mr. Stewart: I have tried borax in washing goods, and I never had so many black specks in my life. For breaking water, I use lye. A gentleman here said he used three or four waters for suds. I don't see where there is any saving in that. I put about four inches of water in my washer. I break the water with lye, so that it feels soft before the goods are put in. I then add my soap, enough to make a light suds, fill the machine half full, and run half an hour, and then I run the water off, and put on boiling water, and have my lye dissolved in water before it is put in; add the soap, and run fifteen minutes; add my bleach, which is chloride of lime, right to the suds, and, when washing in this way, I have never been troubled with black specks; whether the lye takes them out or not, I don't know. Then I give one hot rinse and one cold rinse, and my goods are clean and all right.

Mr. Woodruff: We use ammonia; we take 26 degree ammonia, and then run about the same quantity of water in the machine which the gentleman spoke of, perhaps a little more, and give the clothes a ten-minute run; we use a half pint of 26 degree ammonia to a machine; we do this before putting in any soap at all; it takes out the stains, the loose dirt, and the starch, and then we run the water off; we put in our first suds, and run as the majority of laundries do. The use of ammonia shortens the time of washing and costs very little.

Mr. Nichols: I have never used either borax or ammonia, but I have used crystal carbon soda. In our city they put in some large filters, and they use an excessive amount of alum in those filters, and I have never found anything which would make the water in proper condition to get desired results. I have tried almost everything. The water is naturally hard, and adding alum to it makes it still harder, of course, to wash with. I have been experimenting on it for some time, and if any laundryman knows of anything which would give the desired results, I should be glad to hear from him.

The President: If it is permissible for the chair to speak, I will give my own experience. For some time we have been using borax with very satisfactory results. Our section is a limestone structure. Our water is the next thing to rock, very hard; we have tried almost everything in our wash room with varying degrees of success, until we got hold of borax, after the price of borax became sufficiently reasonable to become available; we have tried ammonia, and have used soda, but from borax we have had admirable results. In our first rinse, which is something similar to Mr. Harvey's, a rinse of about five minutes in perhaps two inches of water in the inside cylinder, we use about a quart of the solution of borax, the only thing which is added besides the water; we add borax to our soap; in fact, we buy regular borax soap all the time, and I do not think, in the past three years, we have had a black speck in our place; we were formerly troubled with them quite a good deal. I believe borax to be one of the most cleansing things, and one of the greatest savers in the use of soap which can be introduced in the wash room. I would like to have some of our eastern people tell us their experience with it.

Mr. Royce: I would like to ask the president how much borax would be required in hard water.

The President: We have a 20 gallon jar that we make a separate solution in; we put all the borax in the jar that the water will take up, and we use about a quart of that solution to each 100-shirt washer.

Mr. Royce: The matter of black specks is not the occasion of levity usually; in fact, I think they provoke sadness more often. They are like the poor, we cannot get rid of them. When the gentleman was speaking about his caustic soda method, it reminded me of the old saying, "Set a thief to catch a thief." I have heard a great many theories in regard to black specks, and I don't know that any of them are correct. One theory was that black specks are caused by caustic soda; and on the homeopathic principle of medicine, that like cures like, the theory would be correct.

As I understand it, there are two kinds of black specks, one of which is caused by hard water, which is sometimes called lime curd, and then there is another black speck which may come in soft water, which I think is called by chemists insoluble soap, and it is formed largely by the action of caustic soda on the animal matter and the dirt that is being cleansed.

These theories are not, of course, original with me, and I do not put them forth as being correct, but simply as suggestions that I have heard. But I believe this, speaking with regard to washing with soft water—I know nothing about washing with hard water—that there is no caustic soda whatever used, yet if a good live suds is always kept in the wheel there will never be any black specks. A great many years ago I encountered black specks. I do not think I have seen any for perhaps fifteen years. At that time I found that the best way to get rid of them was by the use of turpentine. If we found any black specks we immediately subjected the goods to a hot wash which was heavily charged with turpentine, and the black specks immediately disappeared.

Mr. Woodruff: Lime curd, so called, is merely soap. It is lime soap, the same as we speak of soda soap or potash soap. It is the insoluble lime soap that forms the black speck. It seems strange to call lime curd a soap, but chemists call it a soap, an insoluble soap. It gets into the band and water will not touch it.

FAMILY WASHING.

AN ESSAY BY MR. A. T. HAGEN, OF ROCHESTER, N. Y., AT L. N. A. ANNUAL CONVENTION AT BOSTON, SEPT., 1897.

"Each year," said Mr. Hagen, "shows that there are more laundries in the country, and that there is more laundry work being done, but a large number of us have found that we are getting about as many shirts and collars as we can expect to get, and for any increase of business we must look for another kind of work, and there is no other that gives better promise than family washing; but this, like mangle work, will yield a smaller margin of profit than shirts and collars.

It has always been a difficult problem to regulate the price so that it will be an inducement to the customer and still profitable to the laundryman. It is also necessary to arrange the price so that our patrons cannot take advantage of us. The most satisfactory way we have found to accomplish this is to do the work by the pound. That is, we weigh the work as we receive it, and charge four cents per pound (some laundries charge five cents and are fortunate enough to get considerable business at that price.) We wash it all, starch all the starch goods, ironing only the flat pieces, the others being merely rough dried.

We make no charge less than 20 cents. If a bundle weighs less than five pounds we charge 20 cents for it. The average weight of this work with us is 15 pounds.

If a bundle weighs 40 pounds or over we do not mark it, just carefully count it out and carry it through as a special lot, and in that case we wash all the white pieces together, and are particular not to mix them with the other goods.

"The list we use for this work is similar to our regular list, except that it has attached to it, another list, perforated, so that it can easily be torn off, and on it is the name and address of the customer, and only the total number of pieces in the bundle and how many pounds it weighs. This lower half only is sent home with the goods. The upper half is kept at the laundry as a record of what they had in. If a complaint is made of some piece being short, the customer must state what she had in without our list to go by.

"Marking and sorting is the most difficult as well as the most expensive part of this kind of work. In marking we have two girls work together. One opens the bundle and counts the pieces, the other one counts them over again, marks those that need it, and puts them in seven piles, as follows: Bed linen, table linen, towels, handkerchiefs, white wearing apparel, colored goods, flannels.

"The washman takes the different kinds of goods and washes them separately. We have several washing machines with partitions in them, so that when the table linen, towels or white wearing apparel happens to run small he can wash similar goods of two different lots at the same time. A small washer can often be used to advantage on this work.

Starching.—It costs very little to starch such pieces as need starching, as we only dip them in a thin starch and run them through a rubber wringer. They do not need any wiping off.

Shirts, collars, cuffs and lace curtains, we do not do by the pound, but do them in the regular way and at regular prices. This family work has brought us some increase in shirts and collars, for where we get the one we generally get the other.

There is little to say about ironing, as everything is rough dried except the flat work, and that costs us less to iron than to put in and out of the dry room.

Sorting.—We put 24 bundles in a lot, and our sorting shelves are made with 24 bins or partitions. The lower ones are the largest for the larger bundles. The flat work is sorted first on a table; then the wearing apparel is sorted in the shelves. This is done by one girl; then another girl comes and counts them and looks them over carefully, and if they are all right she ties them up. Whenever a bundle has to be sent home short we make a record of it in a book kept for that purpose. The bundles are large, and there is such a variety of pieces that it takes great care to avoid mistakes, so we put good girls on this kind of work. It is a great help to the sorters to have the different kinds of work of the same lot come to the sorting room together, and not have two or three lots of flat work ahead, and the girls waiting for starch work. It is hard to keep pace with this work during the first part of the week, as all the customers want it returned in time to get it ironed. This is the principle reason that led us to starch those pieces that need it (formerly we did not do any starching), for then the customer does not find so much fault if the goods are returned a little late.

To accommodate those who want all the goods ironed we have a two and four cent rate; that is, two cents apiece for all flat work and four cents apiece for all wearing apparel. In order to obtain these rates each bundle must contain at least 36 pieces and it must all be plain work. If they want any pieces starched we enter them on another list and charge regular prices.

FAMILY WASHING.

The more people live in flat buildings, fitted up for the most part with quasi laundry accommodations, the more they dislike the nuisance of the extra fuel bill involved in the firing up of the laundry stove, and the more they wish to avoid the peripatetic laundress who puts in an appearance the first days of the week, and the expenses in her train. She needs blue, soap, starch, and occasionally smuggles a percentage of all these articles. The consequence is, that the average flat dweller is seeking relief from the extortions of the slipshod washerwoman, and in what better form can it come than in sending out the family wash in its entirety to some neighboring laundry, where it is done up rough dry, or completely finished at moderate cost—at any rate at a cost considerably lower than that involved in the old way. Nor is this condition of affairs confined to the larger towns.

From all accounts it would appear that people the world over are getting sick of the inconvenience and expense of Blue Monday, and if the laundryman will only get out and hustle a bit, there is not the slightest doubt but that he can corral a great deal of this class of trade. There is money in it for some time to come, and it is an open field at present. Look it up and try house to house canvassing, by circular or otherwise, and you will find a good thing.

WASHING SHIRTS, COLLARS AND CUFFS.

OTTAWA, Canada, Dec. 12.

I would like to say a word to "Improvement" about washing. Like many others, he bleaches in second suds. I practiced that myself for some time, but have come to the conclusion that to bleach in suds is not quite as satisfactory as to do so in a separate water—say the fourth after suds are run off. I would further suggest, to boil second suds full time; that is, a good half hour, for is it not the soap and hot water we depend on for removing the dirt?

You may say boiling so long yellows the goods; if so, what does it matter, when you use bleach to whiten? Bleach, as I understand it, is not a dirt remover; at least it is not used as such in a steam laundry. It will to a certain extent remove stains, but only after the stained parts are thoroughly washed.

I wash collars separately. In a 100-shirt washer I put from 80 to 100 white shirts; run on cold water for ten minutes; then lukewarm, with soap, for fifteen minutes; next hot, with enough soap to form good suds. Run this for thirty minutes, boiling hard all the time, after which run at least three hot rinses of five minutes each; run bleach for ten minutes, after which give two hot rinses; then hot and cold rinse, into which put not over two liquid ounces of acetic acid in solution; run ten minutes; run this off, and put in cold water and blue; run for fifteen minutes.

In all, allowing for running on and off water, you may occupy three hours and thirty minutes; but possibly you are so circumstanced that you can afford the time or cut it shorter in some respects. MACK.

LACE CURTAINS.

A Chicago laundryman, in conversation with a reporter, said:

"There is no trouble whatever with lace curtains in washing by machine, where proper care is employed, and the work turned out is fully equal, if not better than hand work. There are a few precautions which should always be observed. Except you have a load, which is hard to get, lace curtains never should be washed with other goods without being in bags. The meshes in the bags are sufficiently large to allow a thorough washing, while the network prevents the curtains from getting entangled with other goods; all the trouble in the past was from this; the heavy goods got entangled with the lace curtains, and, of course, the more delicate fabric suffered.

"How long do you think it necessary to keep them in the washer?"

"Thirty minutes is fully sufficient. Of course, if you have not a load, and have them in with other goods, they follow the usual course. So long as they are in bags, the amount of time they are in the machine makes no difference whatever."

"How about sash curtains?"

They should never be washed except in bags. Sash curtains, as a rule, are made of a very poor quality of goods, and are not made to stand much washing.

CHLOROMETRY, OR THE ESTIMATION OF CHLORINE BY THE GAY-LUSSAC METHOD.

AN ESSAY BY MR. A. CASTAING, THE WELL-KNOWN CHEMIST.

BOSTON, Sept. 13–15, 1897.

There is a short chapter on chemistry, gentlemen, which, if thoroughly understood and appreciated, will prove of greater value to the laundryman than any other with which he has to deal. It concerns the strength of bleaching compounds, whether chloride of lime, chlorozone or chlorinated fluids in general.

Commercial bleaching powder consists of a mixture in variable proportions of calcic hypochlorite, that is, a combination of lime with hypochlorous acid (the true bleaching agent), calcic chloride and hydrate, that is, a combination of lime with chlorous acid and water, and in some cases the preparation contains considerable quantities of calcic chlorate, that is, a combination of chloric acid with lime, due to imperfect manufacture and of no value whatever in bleaching; in fact, it is productive of much injury for the reason, that being taken up by the linen during the bleaching process, it will be later on decomposed in the souring operation with the evolution of so much chlorine, or chlorous acid, or oxygen as to produce holes in those places with which it has come in contact, the fibre being completely destroyed. Many laundrymen have had this unfortunate experience, I am sure, and no doubt they are still wondering why such a mishap occurred, having used the same method and the same amount of bleach as usual.

Chlorozone, the mode of preparation of which I fully described at last year's meeting, is a sodic hypochlorite, saturated with atmospheric oxygen, positively free from sodic chloride, or chlorate, and consequently may be called a chemically pure bleaching compound.

As to the various chlorinated fluids on the market, I must say, with due respect to their manufacturers, that I test them from time to time and have not yet found a single one which possesses the qualities of a strictly pure hypochlorite; some contain caustic soda to a rather alarming excess, and others large quantities of chloride, or chlorate, due to the same cause as in the case of chloride of lime, that is, imperfect manufacture.

Now, then, gentlemen, chlorine gas is what you want and what you pay for, not limestone or caustic soda; indeed, you all expect to get as much of it as you possibly can for the money. But how can we determine the real value of a bleaching compound, will nine hundred and ninety-nine out of a thousand ask? Well, at the risk of incurring the displeasure of some of the laundry supply dealers and manufacturers, I will endeavor to help you in this by giving you a plain description of the most accurate method of estimating chlorine existing as hypochlorite (the true bleaching agent, I repeat), without recording the chlorine present as chloride, or chlorate, both of which are worthless, and the latter, as I said before, might be very injurious to the goods entrusted to you.

Descroizilles' process for estimating chlorine consists in finding out the amount of bleaching compound required for discoloring a certain quantity of indigo solution, but the results obtained are always doubtful.

Bunsen's method is based upon the amount of iodine liberated from an excess of potassic iodide solution in presence of a given quantity of hypochlorite solution properly acidified with hydrochloric acid, etc., but this method is also defective, as it records the chlorine existing as chlorate as well as hypochlorite.

It was in 1835 that Gay-Lussac skillfully put to advantage the facility with which arsenious acid, that is, a combination of oxygen with arsenic, takes up a new dose of oxygen so as to be changed into arsenic acid, a higher combination of oxygen with arsenic; and thus he was enabled to determine with more precision than by any other method, the commercial value of bleaching compounds. This commercial value depends entirely upon the amount of chlorine in combination as hypochlorite. Consequently, the greater the quantity of arsenious acid changed into arsenic acid by the oxygenating action of a hypochlorite, the greater the volume of chlorine contained in the sample tested. Whether in a state of free gas, or of hypochlorous acid, chlorine always acts in the same manner upon arsenious acid. The water which holds in solution the two compounds, that is, arsenious acid and hypochlorite, is decomposed into hydrogen and oxygen; and, as it is a great principle in chemistry that nothing can be lost, the moment that this decomposition takes place the oxygen unites with the arsenious acid, changing it into a higher acid, that is, arsenic acid, whereas the hydrogen unites with the chlorine, forming hydrochloric acid (also called muriatic), as shown by the following scheme:

$$\left.\begin{array}{r}\text{Arsenious Acid}\\ \text{Water}\left\{\text{Oxygen}\right.\end{array}\right\} = \text{Arsenic Acid.}$$

$$\left.\begin{array}{r}\text{Hydrogen}\\ \text{Chlorine}\end{array}\right\} = \text{Hydrochloric Acid.}$$

As the French weights and measures have been for some time universally adopted in chemistry, allow me to give you here, an idea of their equivalent value to our weights and measures: Thus, 1 litre of distilled water weighs 1000 grammes or measures 1000 cubic centimetres, and is equal to about 35 fluid ounces or 16800 minims, or 16800 grains. Consequently, 1 gramme equals 16.8 grains or 16.8 minims.

One litre of dry chlorine gas weighs 3 grammes 17 centigrammes, at a temperature of 32° F. and under a pressure of 29.9 in., and if dissolved in a litre of water will change into arsenic acid 4 grammes 439 milligrammes of arsenious acid previously dissolved into a litre, or 1000 cubic centimetres of water. You may, therefore, easily understand, that if you take a certain volume of arsenious acid solution, and keep adding to it some chlorinated dilution, the strength of which is unknown to you, until the arsenious acid is changed into a higher state, that is, arsenic acid, you can readily determine the volume of chlorine, by the amount of arsenious acid solution required to that end. If, for example, it takes one volume of chlorinated dilution, to 1 volume of arsenious acid solution, it means that the former contains one volume of chlorine gas; or if it takes less than one volume, it contains so much more chlorine, as the degree of strength of a chlorinated solution is in inverse ratio to the number of volumes of the arsenious acid solution used.

In order to detect when the arsenious acid is completely changed into arsenic acid, we make use of the fact that a solution of hypochlorite poured into arsenious acid solution, slightly colored with indigo, does not destroy the bluish tint until its action is exhausted upon the former. I shall illustrate this later on by making a sample test before you.

HOW TO PREPARE THIS TEST LIQUOR.

The chlorometric solution of arsenic acid, or test liquor, is prepared as follows: Take 4 grammes, 439 millogrammes, of chemically pure arsenious acid, finely pulverized, put them in a beaker glass, add to it 32 grammes of chemically pure hydrochloric acid at 22°, and an equal volume of distilled water, heat gently until the arsenious acid is thoroughly dissolved, then pour the solution into a flask graduated to 1 litre, rinse the beaker glass three or four times with distilled water, pouring each rinse into the flask; finally, fill up the latter with distilled water to the mark 1 litre, and shake the mixture. Of course, I do not think, gentlemen, that any one of you should go to the trouble of preparing this test solution, as it requires some experience in laboratory work, but it is essential that you should know how it is made. Any reputable chemist or druggist may prepare it for you, if you simply give him a copy of this formula and modus operandi.

HOW TO TEST ANY CHLORINATED COMPOUND.

For testing chloride of lime proceed as follows: First, take from different parts of the lot of chloride of lime to be tested 4 or 5 tablespoonsful, mix them thoroughly, then weigh 10 grammes of this well mixed sample and triturate them awhile in a porcelain mortar, adding little by little, enough water to make a very thin paste, which you pour into a glass cylinder graduated to 1 litre; rinse thoroughly, with three or four waters, the mortar and pestle, and add these rinsing waters to the cylinder, then fill it up with water to the mark 1 litre, shake well and allow the excess of lime contained in the bleaching powder to settle, so as to obtain a clear solution, which shall represent exactly 1 per cent of chloride of lime, since you took 10 grammes of it, and dissolve them in a litre of water, or 1000 grammes or cubic centimetres; second, put into a two ounce glass, shaped like a sherry glass, 10 cubic centimetres of test liquor, and color it with 4 or 6 drops of indigo solution; third, fill up to the mark zero, with the 1 per cent. solution of the chloride of lime, a cylindrical, graduated burette, 100 divisions or degrees of which are equal to the 10 cubic centimetres of test liquor, and consequently each degree is equal to 1-100 of the volume of the liquor; then pour gradually this solution into the glass containing the arsenious acid liquor, stirring it constantly with a glass rod, and as soon as the blue color begins to be attacked, drop in the solution very cautiously, till the bluish tint disappears; read on the burette the number of divisions of chloride of lime solution which have been required to attain this result, and write it down on a piece of paper. Let us now suppose that you have used 142 divisions of the chloride of lime solution, you shall thus draw the conclusion that these 142 divisions, representing, in other words, 14.2 cubic centimetres, contain 14.2 cubic centimetres of chlorine, and to find out how much chlorine is in 100 cubic centimetres of this solution, you simply say, "If 14.2 cubic centimetres, or 142 divisions of chloride of lime, are equal to 10 c. c. or 100 volumes of test liquor, 1 division is equal to 142 times less volumes, and 100 c. c. are equal to 100 times more volumes;" thus you multiply 100 by 100 and divide by 142, and find 70.4 degrees, that is the actual strength of the sample tested.

Should you want to test a chloride of lime bleaching liquor, such as usually prepared in the wash room, dilute 5 volumes of it with 95 volumes of water, and proceed as stated above. But, as this chlorinated dilution contains 5 times the original bleaching liquor, instead of 1 per cent., as in the example of the chloride of lime test, you should divide by 5, the number of degrees found at the end of the testing operation. As a general rule, if you should use 2, 3, 4, or more volumes of any bleaching fluid in preparing the dilution, you should always divide the number of degrees found by 2, 3, 4, or whatever may be the figure representing the percentage of dilution. Of course, the volume of arsenious acid solution to be used remains always the same, viz., 10 c. c. Furthermore, in preparing dilutions of bleaching liquids, which you suspect to be stronger than the usual chloride of lime bleaching liquor, take 2, 3 or 4 parts of it, according to the supposed strength, and enough water to make 100 parts. For instance, if you take 2 parts, or 2 c. c. of a bleaching fluid, you should add 98 c. c. of water to make altogether 100 c. c., and do not omit to shake well the mixture before filling up the burette with it; then, when the test is finished, divide by 2 the number of degrees found with this dilution, so as to obtain the actual number of degrees on the 1 per cent. basis.

This is all the information required for making a sure estimate of the degree of chlorine existing as hypochlorite in any bleaching compound, and, as you see, gentlemen, it is not necessary to be a professional chemist to apply this simple method, which the scientific world named after its eminent discoverer, "Gay-Lussac."

At the close of this instructive paper, Mr. Castaing displayed, over the President's table, the chemical apparatus and test liquor required for the accurate estimation of chlorine, and then, in full view of the attending members, he tested the only bleach submitted to the convention. The results of the operation showed that this bleaching compound contained 50 degrees of hypochlorous acid, the true bleaching agent.

Calcium hypochlorite, or so-called chloride of lime, should test at least 100 degrees in order to represent a fair commercial value, and a bleaching liquor, properly made from it in the proportion of 1 pound per gallon of water, should contain at least 10 degrees. As to sodic hypochlorite, the standard test has been advanced to 50 degrees since the discovery of chlorozone, and today more than two hundred laundrymen can vouch for this statement, for the bleaching compound tested by Mr. Castaing was chlorozone.

IS CHLORINE NECESSARY IN THE LAUNDRY?

BY C. I. GOODHART, OF CHICAGO, AT ANNUAL CONVENTION AT CHICAGO, SEPT. 14TH, 15TH AND 16TH, 1896.

Chlorine is a greenish gas obtained by heating aqueous hydrochloric acid with per-oxide of manganese. The acid is a solution of hydrochloric acid gas, a compound of chlorine with hydrogen in water. The per-oxide of manganese is an oxygenous compound of the metal manganese.

Chlorine may also be generated by heating together common salt, manganese per-oxide and sulphuric acid. It possesses a strong, suffocating odor, and when not too freely inhaled, steam, the vapor of aniline, or ammonia drawn into the lungs, will give relief.

Metallic oxide, heated in chlorine becomes chlorides. Lime thus heated becomes chloride of calcium with liberation of oxygen.

The aqueous solution of chlorine acts powerfully upon all animal or vegetable substances, and was used for bleaching purposes as early as the seventeenth century. Its action consists in combining with the hydrogen, which is always present in all the animal and vegetable tissues. Upon this property of chlorine rests its application in bleaching.

During the latter part of the eighteenth century bleaching by chlorine was introduced in Glasgow by Watt, the well-known engineer. The vessels in which chlorine was first manufactured were made of glass, then later of wood, and as the demand for chlorine increased the apparatus for its production was enlarged, and a vessel made of strong lead, fixed in a metal jacket, was substituted, a stone agitator being fixed to mix the charge of salt, manganese and sulphuric acid.

The art of bleaching consists in inducting the rapid operation of whitening agencies.

In the early part of the eighteenth century the bleaching process was very tedious. It consisted in steeping the cloth in alkaline lyes, which was called bucking, and then spreading the fabrics on the grass, which was called crofting. This bucking and crofting was repeated several times, then steeped in sour milk, washed and crofted until the fabric had acquired the requisite whiteness. This process occupied about one summer. The bleachers were called whitsters from their occupation.

The first mode of using chlorine in bleaching, was to transmit it through the water until the latter was saturated. Into this solution the goods were put and heat applied to bring the chlorine to act upon the coloring matter. A later experiment proved that a little caustic soda could be added to the solution with benefit, yet great inconvenience attended these methods of bleaching. Meantime, the fact was discovered that alkalies combine with more chlorine and water, retain it with more tenacity and yield it more readily to the coloring matter. The workman now had more security, for the gas, being in chemical combination with the alkali, did not escape, and this combination did not prevent its action upon the goods.

The next improved step in the application of chlorine, was the use of lime instead of alkalies. Dry lime was employed for the absorption of the chlorine, and the product obtained, called bleaching powder, has ever since remained a convenient vehicle for the chlorine used in the bleaching industry.

The name of the first laundryman to use bleaching powder for destroying the coloring matter usually found on white linen or cotton goods, such as shirts and collars, is unknown. This class of goods, when placed upon the market for the public, is of an almost perfect whiteness, but after being worn for any length of time by the consumer, the oil, perspiration, acid, and iron of the human system, and the action of the atmosphere, act in a manner to discolor them. These goods, left for some time on the shelves of the merchant having them on sale, change their color, which proves that the light and air, unaccompanied by moisture, tend to destroy all the work accomplished by bleaching, in changing the raw, brownish material to a beautiful clear white, the same as light and air will cause the green grass and leaves of spring to change color during a drought, or from the absence of water.

In the laundryman's process of restoring color and brightness to shirts and collars, of course the first and essential operation is the washing process. To tell an assemblage of laundrymen how to wash seems superfluous. Therefore, assuming that the goods have been perfectly cleansed, the second operation necessary for the complete restoration of the desirable color to the goods, is a thorough elimination from them of all matter, either animal or mineral, which might interfere with the whitening, restoring, or as commonly called, the bleaching process. Bleaching is the process of whitening or depriving of color, an operation incessantly in activity in nature by the influence of light, air, and moisture.

There has been used in different laundries at different times, numerous chemicals, such as acids, salt and acids, and many other compounds, but these were found to be either inferior to liberated chlorine, or more dangerous to the goods treated with them, with the natural result of their being discarded. At the present time the agent used for this bleaching process by ninety-nine per cent. of the laundries of the world, is the subject of this paper—namely, chlorine.

This chlorine performs for the laundryman, what air, light, and moisture was and is doing for the average washerwoman of today, with the exception that the chlorine process is attended with more or less injury to the goods.

Is this chlorine absolutely necessary to the laundry? Is there not some other method of restoring whiteness to these goods without its aid?

If hung in a moist condition in the open air, they will bleach by the simple action of light and air, and all must admit that their term of usefulness to the consumer is longer than when attended by chlorine in its commercial state, and more especially so if the chlorine is used as it is by many, whose great object is the saving of time.

Can we not devise some method of drawing upon nature to perform for us in the laundry, in a short interval of time, the same as what she did for the original bleachers in a longer time?

Since the bleaching properties of chlorine may be found in the light, air, and moisture, it seems reasonable to surmise that these elements may be employed by the laundryman for a similar purpose and with less cost, injury to goods and time.

It is doubtful in the minds of some, whether success will favor the idea of a glass dry room, built on the roof of the laundry, to admit all available light, and into which pure, fresh, heated air is allowed to continually enter, while the impure air is drawn out. Yet it seems that a dry room, arranged in this manner, must combine the essential elements of out-door drying, meet the requirements of speedy operation, and be the economizer of the time now consumed by the washing machines, the saving of power, and all other expenses connected with the present chlorine bleaching process. Plants, flowers, and vegetables were at one time raised during the summer months in the open field only, but now it is a well known fact that some of our vegetables come from the hothouses, where heat, light, atmosphere and water have been supplied indoors.

If the elements of nature heretofore mentioned could be made to do for the laundryman, in a more rapid manner, what it did for the first linen bleachers, and what it does for the domestic laundries, chlorine will not be a necessity in the laundry.

Mr. King: I would like to ask whether it would be practicable to so construct a room that the chlorine could be liberated and permeate the clothes, and whether it is possible to bleach clothes entirely out of water, or whether when they are partly dry.

Mr. Goodhart: I have not suggested that chlorine be allowed to enter the room any more than that contained in the atmosphere. The idea was to use nature to do the bleaching, instead of doing it artificially by chlorine. You cannot bleach goods unless they are wet. The idea was to permit the air to circulate rapidly, first being heated, doing the same as the sun is doing out of doors on a hot day. Goods hanging out of doors dry very rapidly. We can heat the atmosphere with steam as the sun does it now, and force it through the dry room, and in that way get the same effect that we get out of doors.

Mr. Woodruff, of Mobile: It would be impracticable to admit chlorine gas into a room, unless it would be hermetically sealed, and when inhaled it is very fatal. Not long ago some college students at Cornell attempted to play a practical joke by liberating chlorine gas in the banquet hall, intending it for the benefit of some students, and it killed the cook.

There is another bleaching agent that has come upon the market lately, though not largely manufactured, which I think would be more economical than chlorine, which is called hydrogen per-oxide, H_2O_2, almost the same as ordinary water, which is H_2O. It is in liquid form, and heat or sunlight will generate the gas very rapidly, and it is necessary to be very careful in opening the bottle. It is a very strong bleaching agent; and being so near water, I do not see why it could not be manufactured very cheaply.

THE COMPOSITION OF CHLOROZONE

AND HOW IT IS MADE.

NEW YORK, Oct. 22, 1896.

Editor National Laundry Journal:

At the 13th annual convention, held at Chicago on the 14th, 15th and 16th of September last, an excellent paper was read by Mr. C. I. Goodhart, the subject being·

IS CHLORINE NECESSARY IN THE LAUNDRY.

Certainly there is nothing that a progressive laundryman appreciates more than new ideas, or points, on the bleaching operation, and as a consequence Mr. Goodhart's essay created an unprecedented sensation among the 200 or more members present at the meeting. They all had something to ask in reference to what chlorine could or could not do. Ex-President T. A. Selz, of Dayton, Ohio, called me up and invited me to contribute a few more remarks on chlorine, etc., and later on it was moved and carried, that I should tell how I make chlorozone. In reading in the trade journals the report of this session, I failed to find a full account of my impromptu remarks on washing and bleaching, and the description of the process for the manufacture of chlorozone was conspicuous by its absence. A good many laundrymen are interested on the subject treated, judging from the inquiries which for the past three weeks I receive every day from all sections of the country. As it would be a great task to write to each one individually a copy of my remarks, may I ask you to be kind enough to allow me the hospitality of the columns of your journal, thus affording me an opportunity to give a collective answer to all concerned. The following is what I said in regard to chlorine and chlorozone:

"Chlorine is a very dangerous gas. I would not advise anyone to go into a room, or to put wet linen in a room where a large volume of this gas would be admitted, as both the linen and the person would stay there forever. They would disappear from this world—the person dying from suffocation, and the linen crumbling to pieces, its fibres being completely disintegrated.

I believe the question was asked whether dry clothes could be bleached under the influence of chlorine gas. No, they can not. Chlorine by itself is not a bleach, but the oxygen, which it liberates from the water, is the bleach that does the work. When the bleaching is done on the grass it is accomplished by oxygen. Chlorine has a great affinity for hydrogen, oxygen being a powerful oxidizing agent. You all understand what is meant when we say that a metal is oxidized. For example, if iron gets rusty, we say that it has been oxidized by the air and moisture, or in other words, it has been attacked by the oxygen of both these elements. The bleaching of linen is due to the effect of oxygen upon the coloring matter present, which under its influence becomes oxidized, or discolorized, thus imparting a white color to the fibres. It is through the action of chlorine upon the water that oxygen is liberated from it, and the goods dipped into it are bleached by this gas, as it passes through them. This explains why the old process of bleaching upon the grass is still favored in some parts of Ireland, and other European countries, as in this case there is no expense attached to the generation of oxygen, nature supplying it. The linen being spread upon the grass, takes up during the night the moisture of the dew, and, while still damp, is penetrated by the oxygen, which all plants, grass, foliage, etc., liberate during the day under the influence of the rays of the sun, and thus, little by little, the fibrous, as well as the coloring matter present is oxidized, or bleached.

You all have to use chlorine in one way or the other, if you want the goods to get a white color. The X-rays, alluded to by Mr. Cannon, will not do it; they might bleach a conscience, but they can never bleach linen.

In answer to Mr. Noblett's question I said: "It takes from four to ten weeks, according to the degree of whiteness desired, to perform the bleaching upon the grass. There is what is called one-quarter, one-half, and three-quarter bleach. Shirt manufacturers, and I see some of them here, know what that means."

Mr. Noblett then asked me whether chloride of lime, oxalic acid, or acetic acid, really accomplishes the bleaching. My previous remarks should have been quite sufficient in answer to this question, but apparently they had not been heard, so I further stated, repeating myself to a certain extent:

"The chloride of lime is the real agent that helps the bleaching, but the real agent that accomplishes the bleaching is the oxygen, which is liberated from the water. The scientific name of chloride of lime is "hypochlorite of calcium" (lime), because it is a compound of hypochlorous-acid gas and lime, as discovered towards the end of 1834, and not chlorine gas and lime. Consequently hypochlorous acid, and not chlorine gas, is used in bleaching, and may be called an oxygenated oxacid of chlorine. Take, for instance, a half a gallon of weak solution of chloride of lime and put into a washing machine with 35 or 40 gallons of water. This dilution will contain a certain amount of hypochlorous acid, which will begin to decompose the moment you put the clothes in the machine. First chlorine and oxygen will be evolved; the former assimilates hydrogen from the coloring matter of the fibres and from the water, forming hydrochloric (muriatic) acid, and liberating oxygen, which by its union with the element of the coloring substance, effects the bleaching. When the oxygen is liberated in a too concentrating state, it unites with the fibre, producing an oxide, and completely destroying the texture. This will happen under the action of a strong acid, such as sulphuric or oxalic, upon the particles which are often found in commercial chloride of lime, and are mechanically held in suspension in the solution. Muslins, and such clothes as have an open texture, are liable to this injury, if due care be not taken to allow these particles to fall to the bottom of the solution before using it.

The object of the sour is to neutralize the lime or any other alkaline basis which may be present, and unless removed, materially affect the bluing, and also to prevent the recurrence of a more or less yellow color, contracted by the influence of the air upon the resinous matter of the cloth, which is only temporarily decolorized. This substance is insoluble in alkalies, but is dissolved by acids with the aid of heat, and for this reason, it is better to sour in warm water. Acetic acid being perfectly harmless and evaporable, it is advisable to use it in preference to oxalic or sulphuric acid, both of which are very hard to rinse out, and are not evaporable, and as a consequence the goods being dried are liable to have their tensile strength more or less impaired by the concentration of these non-evaporable and intensely corrosive acids. However, none of these acids (acetic, oxalic, sulphuric) is a bleach; they all act as neutralizers of the alkaline basis, and solvents of the oxidized resinous matter, and nothing more.

Mr. Rogers then asked me which was the best time to use the bleach, with or after the suds, and I replied:

"It depends on the bleach you use. If chloride of lime solution, whether softened with caustic soda or not, is the bleach you are using, you should first thoroughly wash and rinse the goods before putting them in the bleach, then rinse them well again before souring, etc. In this manner you will avoid the so often discussed "soap specks." By the way, let me tell you all, that these specks should never trouble any one of you, if the two worst enemies of soap were discarded from your wash room—I mean chloride of lime and caustic soda. Besides their destructive effect on linen, they both decompose the soap in a different manner. The former, as it comes in contact with some of the soap, which is not thoroughly rinsed out, forms a hard, insoluble soap, settles upon the fibres, and the latter, unless used just in such a proportion as to neutralize the lime and no more, partially decomposes the soap into fat again, which produces another style of soap specks, "the dark, sticky, oily spots." Why then, not use instead of caustic soda, which always plays havoc with the goods intrusted to you, that excellent and harmless dirt cleaner and hard water softener, "crystal carbonate" (English make), or "monohydrate soda carbonate" (American make) and, instead of the troublesome chloride of lime, why not adopt altogether 'the reliable sodic-hypochlorite,' which does not contain any traces of lime or free caustic soda?"

At this point Mr. King asked me how much it costs to manufacture chlorozone, and, supposing that he only had the plant in view, I answered:

"It depends upon the amount you want to manufacture. I can put up for you a plant that will cost \$1.50 to \$15,-coo. If you want to make it in a small way, a plant costing \$1.50 will answer."

Then it was moved by Mr. Hagen, and carried, that I should be requested to tell how I make chlorozone, and I substantially described the whole process as follows:

"Chlorozone is not a mere trade mark, it is a chemical formula, and anything that has a chemical formula is not a quack medicine. The formula is:

$(4Na_2O$ plus $XH_2O)$ plus $4\,Cl_2O$ equals $(Na_2O, Cl_2O_3$ plus $2\,Na_2O, Cl_2O$ plus $Na\,Cl)$ plus XH_2O.

I have been manufacturing hypochlorites for 18 years, and it is claimed that I thoroughly understand this branch of chemical industry. This may account for my having lost the hair so soon! The patent on chlorozone expired long ago, so that there is no secret about it. Chlorozone is made by the decomposition in the cold of hypochlorites, or of chlorides, by an acid and a current of air, and by the incorporation of the resulting hypochlorous acid gas, into an alkaline solution till perfect saturation. We have got to get chlorine somewhere (I shall drop the word hypochlorous acid) from the chloride of sodium (kitchen salt), or from the hypochlorite of lime, one of the two. There is also a way of getting it by electrolysis from the chloride of magnesium, and that is what they call bleaching by electricity; but, as you see, it is always bleaching by means of chlorine. If you want to obtain this gas from the chloride of sodium, you have to act upon this salt with an acid that will take hold of the sodium and liberate the chlorine. Strong sulphuric acid (pure, or, better still, mixed with equal parts of water) and about one-half of its weight of kitchen salt and peroxide of magnese, are used for this purpose. This is not a private formula, by any means, for it is to be found in any good chemistry, and was discovered about 1821. I was not born then. I do not mean to say that I might have discovered it, but I can assure you that I had something to do with the improvement of chlorozone, which obtained a pretty high prize at the Paris Exposition of 1878.

At the present time I use chloride of lime, because it is cheaper to get the gas from this compound than from any other source. I decompose it with muriatic acid, not with sulphuric, though it might be used, but it does not liberate the same volume of gas as the former acid does. The apparatus employed is composed: First, of a receiver containing the acid, provided with a graduated gauge and a cock at the bottom for regulating the flow into a hypochlorous acid gas generator, which is placed below and contains the chloride of lime; second, of a gas washer, being about one-tenth full of distilled water, the object of which is to retain any trace of acid that might be carried by the gas; third, of two saturators, holding the alkaline solution; fourth, of a glass bottle, filled to three-fourths of its capacity with distilled water colored with indigo-blue, which is intended to show any interruption in the non-absorption of the gas in the alkaline saturators; lastly, an air pump or an exhauster working by a jet of steam or current of water. The whole of these apparatus are tightly connected together by a system of glass and pure gum tubings, properly set through the holes, or openings, with which each recipient is provided at the top. Now, if we let the acid flow into the gas generator, and at the same time start the current of air, chlorine gas is evolved in presence of the oxygen of the air in the nascent state, thus forming an oxygenated acid of chlorine; that is, hypochlorous acid gas. This gas goes through the water of the washer, and from there to the saturators, where it is absorbed by the alkaline solution till complete saturation under the influence of a constant current of air, the final product being chlorozone; that is, a highly ozonized chlorine, the ozone having been supplied by the atmosphere and the chlorine by a hypochlorite. Chlorozone contains 50 chlorometric degrees, according to Gay-Lussac's test, which is the most accurate of all the methods for testing the volume of chlorine held in a liquid. It is based upon the fact that arsenious acid is changed into arsenic acid by the oxygen which chlorine liberates. Consequently, gentlemen, chlorozone is the only concentrated and reliable sodic-hypochlorite known, and if you carefully apply the process I have described you will be able to make it as well as I do."

A. CASTAING.

FLANNELS IN THE LAUNDRY.

Flannels and silk undergarments should be treated in much the same manner. Soap should never be rubbed on the garment, and the washing and rinsing waters must be of the same temperature. Pure soap will not injure flannels, so it is economy in this case, as in others, to buy the best. Make a good soapsuds, using water a little more than lukewarm. Wash the flannels in this, plunging them up and down, but not scrubbing them, as this thickens the texture. Use as many soapy waters as may be necessary, having them as nearly as possible of the same temperature. Rinse in several lukewarm waters and put through the wringer. This is the advice given in Table Talk, authority also for the following:

Flannels should never be twisted in the hands. If impossible to use a wringer, lift the flannels from the water with one hand, and with the other squeeze the garment until comparatively dry, then shake it thoroughly and dry in the same temperature in which it has been washed. Many who are most successful in washing flannels, never wring them at all, but take them from the water and allow them to drip until they begin to dry, finishing the process by the fire. It is either poor soap, bad handling, or quick changes of temperature, that cause flannels to shrink. If they are ironed, they must not be left to dry beforehand, but ironed while damp until dry.

A word about shrinking woolens. Most laundrymen leave their woolens too long in the washer. Never rinse them in the washer. Take them out of the suds, pack evenly in the extractor, get up a good speed and pour four or five pails of water (same temperature as that washed in) in center of extractor. They will be soft and you will say that is the finest way to wash flannels you ever saw. I am washing flannels today that I washed over two years ago and have no complaints.

HOW TO WASH BLANKETS.

Woolen blankets seldom look the same after they are washed. They turn yellow and lose that dainty fluffness that make them at first so beautiful. However, when soiled, they must be cleaned, so prepare an abundance of hot suds, using the best soap. Some experts prefer warm water, others hot water, and others, again, cold water. Take your choice; but remember one thing, do not change the temperature, for that is what thickens the blanket and makes it stiff and hard. If your first suds be of hot water, have the second of hot water, and rinse in hot water; and the same with warm or cold. If hot water be decided upon, dissolve half a pound of borax in five gallons of water, so hot that you can just bear your hand in it. Wash one blanket at a time, move it back and forth, rub the dirty spots, wash fast and wring lightly. Then put it into another suds, hot, and with borax as before; wash in the same manner, and, after wringing thoroughly, rinse in hot water, and again in clear hot water, in which has been dropped a little indigo. Now your blanket is ready for hanging up, and there is an art in this process. Stretch a long clothes line so the blanket may catch all the sunshine possible, and also be well shaken by the wind; throw just enough of it over the line so that it may be pinned to the under side, and snap the wet blanket a few times to get out wrinkles and make it dry straight. When dry, take it down and fold it exactly true. All this should be done rapidly, for the chief point in washing woolens is, not to let them soak. Under the microscope we see the fibres of wool all little twists and curves, and soaking makes them expand or contract in an irregular way that changes the texture.—Cotton Factory Times.

BLANKET WASHING.

Blankets should be soaked in water heated to about 100° F., in which has been dissolved 1 ounce of powdered borax to every 5 gallons of water, for five or ten minutes previous to washing. This will enable the borax to permeate the material, and by its energetic action on the soiling matter, loosen it, and render it easily solvent when subjected to the action of the soap.

Woolens and blankets should be very carefully handled while being wrung; each article should be handled separately, and built round the sides of the extractor lengthwise at full length of the article, and not rolled up ball shape and thrown into the extractor in a pile promiscuously. When taken out, each piece should be shaken out, and shaken well into shape before being hung up to dry. If wrung out thoroughly they can be dried in a couple of minutes in a properly ventilated dryroom at a temperature of 150° F., which will have no injurious effect on the goods.

It is worth remembering that cold rain water and soap will remove machine grease from washable fabrics.

TO EXTRACT WAX TALLOW SPOTS.

Dip in benzoline, rub them, and they will quickly disappear.—Bird's Cleaner and Dyer.

NITRATE OF SILVER STAINS.

To remove nitrate of silver stains, use: Iodine, one drachm; iodide of potassium, one ounce; mix; dab the stains with the above mixture, and in about half a minute wash with one ounce of cyanide of potassium, in five gallons of water.—Bird's Cleaner and Dyer.

OLD DRY PAINT STAINS.

Paint stains that are dry and old, can be removed from cotton and woolen goods with chloroform. It is a good plan to first cover the spots with olive oil or butter.

TO EXTRACT PAINT AND TAR.

Benzoline is no doubt as good a solvent as can be found; if woolen goods, moisten the spot, then rub, and moisten and rub again, until out; for silk, lay it on a tea tray and sponge it out, or use a hand brush; if there is much on the garment, it may first be plastered over with fresh butter or lard to soften it; spirits of wine or methylated spirits, is used by some in lieu of benzoline; pure naptha, or benzine, is the same thing as benzoline.—Bird's Cleaner and Dyer.

REMOVING RUST STAINS.

"Stains of rust may be removed from the linen and similar fabrics without injury to the material. The articles must be first well soaped, as if they were to be washed in the ordinary way. An iron is heated, and on this laid a wet cloth. When the heat makes the cloth steam, the rust stain is laid on it, and a little oxalic acid is rubbed on with the finger. The heat and the moisture hasten the effect of the acid on the rust, and when this has disappeared the soaping and washing may be continued."

REMOVING STAINS.

ELMIRA, N. Y., Dec. 21, 1895.

Noticing that one of the brother laundrymen was having trouble with pink goods, I will give my method of removing red from white goods. First take sulphuric acid, pour and stir in your water until you can taste that it is sour, something like lemon. Run your goods in this about five minutes, then take some chloride of lime, make a good strong bleach and put in a separate tub or machine as the case may be. Then put the goods in it and leave them for about five minutes.

If this does not take all the red out, give them another bath in the same acid water, and in the bleach as at first. This will take any red that will get in the goods out, no matter if it has been in them for years, and been boiled a dozen times.

For a load of fifty shirts, or as many collars and cuffs, use about one and one-half gallons of the lime bleach. I will gladly answer any questions from laundrymen who wish to enquire through the Journal, on this or any other subjects concerning the laundry business.

H. A. TWIGG.

STAINS AND MILDEW.

Mildew is easily taken out of white goods with chloride of lime, but it cannot be used on colored clothes. Put a small amount of lime in cold water, and stir until it is entirely dissolved; then strain through cheese cloth, and immerse the mildewed article. Work up and down, and as soon as the spots have bleached out, rinse it through three or four waters and dry.

Fruit stains of all kinds will come out of white goods if they are taken in time and treated exactly right. Raspberry and strawberry stains will disappear if boiling hot soft water is poured over them. Oxalic acid will remove all other fruit stains, and a bottle should always be kept in the laundry. As it is very poisonous, it should be plainly labeled and kept out of the way of children. Get the acid in crystallized form, put in a bottle and pour cold water over it. If part remains undissolved, add water as the solution is used. It is sure to remove fruit, leather or ink stains. Touch only the spots, and rinse quickly and thoroughly when they disappear. For lace or muslin add a little salsoda or ammonia to the first rinsing water. Dilute the acid at first, and make it stronger if necessary.

Boiling hot soft water will remove tea, coffee or chocolate stains. If tea stains are of long standing, soak in glycerine, and wash the latter out with cold water.

Use diluted ammonia for orange and lemon stains.

Make a thick paste of lemon or pieplant juice, salt and starch for red iron rust, and expose to the sun. If one application is not effectual, try again. Oxalic acid is just as sure for black iron rust.

Alcohol or molasses will take out grass stains.

Cover wine stains with salt and lay in the sun.

Nothing will remove blood stains better than cold soap suds, to which kerosene has been added. Kerosene will also remove tar or fresh paint.

Machine or vaseline oil will come out easily when washed with soap and cold water.

When the color has been taken out of colored material with an acid, diluted ammonia will sometimes restore it. Chloroform is also an excellent restorative of color.

MILDEW PREVENTION AND CURE.

In warehouses, stocking large stores of cotton goods for long periods, mildew was at one time a formidable trouble of constant recurrence, and is still a disease, so to speak, that has to be guarded against. In the laundry it is happily a rare thing, but that it has to be dealt with from time to time by the laundryman, is evident from a question asked at a recent meeting of the trade, Mildew is a fungoid growth on vegetable fibre, such as cotton or linen. Examined under the microscope, it will be seen that each spot of the taint consists of innumerable little fungi, which are all propagating their species at the expense of the fibre. The conditions most favorable to the commence-ment and spreading of mildew, are moisture and warmth.

Formerly mildew was much commoner on a large scale because the finisher had not learned his trade properly, and the sizing of cotton and linen goods was done very crudely, no preservative element entering into the composition of the size. The cotton manufacturers were taught one or two severe lessons in the courts before they mended their practice in this matter. The crude and heavy sizing of cotton goods shipped to India, the faulty packing of the cases and the warm damp air of the long and slow sea passage were exceptionally favorable circumstances for the growth of mildew, and it very frequently happened that a cargo of cloth was very considerably damaged.

Mildew long neglected simply rots the cloth, for even if the fungi start upon the sizing material, they quickly spread to the fibre and tender it by feeding upon it. Neglect, therefore, will quickly allow any material attacked by mildew, to become almost valueless. In the case of the Lancashire manufacturers, it was quickly decided that they were to blame; in fact the courts laid the whole mischief to the charge of the materials used in sizing, and a test case, involving thousands of pounds, which went against one of their number, frightened them into making investigations which resulted in the discovery of an effectual preventive.

A specific and never-failing remedy was found in chloride of zinc, which is now very largely used as a constituent of the size for cotton and linen goods. It is a white, very soluble, deliquescent substance, that is to say, it has the power of readily absorbing and retaining moisture, and moreover, it is antiseptic. Many other salts were tried before this was used, but it was found to be by far the best means of preserving cloth from the ravages of mildew. It still retains this position after many years of use, and no manufacturer of goods intended for shipment, especially to warm climes, would think of making a size without using chloride of zinc.

In the laundry, it is easy to see that mildew may be something to be cured or to be prevented. In cases where families have neglected to send their linen regularly to the wash, or from some cause or other have stored it for some time, a mild form of mildew is quite likely to occur, for dirty linen stored in a warm and damp place is in favorable condition for the production of the minute fungi that constitute mildew. On the other hand, it may happen that the laundryman has to store linen for a considerable time, when a family is away from home or from other causes, which will be readily apparent, and in this case it may seem necessary at times, to take special precautions against mildew, and an ounce of prevention is worth a pound of cure, very emphatically in this case. Happily it is a very mild incipient form of the disease at worst, that the laundryman has to deal with, but, nevertheless, not only does this mildew attack weaken cloth more or less, but it is certain that once attacked the cloth is more liable to the disease in future. Still the laundryman will find chloride of zinc an invaluable preservative, and the best way to use it would be in the starch solution. There is just one thing he must guard against. It happens to be one of the most easily adulterated drugs, so that he should go to a respectable tradesman for his chloride of zinc.

As for cure, as we have already said, a complete cure is impossible when once the cloth has been attacked with mildew. However incipient the disease the taint has weakened the fibre to some extent, and this lost strength cannot be given back to the cloth. In appearance, however, clothes mildly attacked with mildew, can be made as good as ever by the ordinary processes of the laundry. The best way is to rub well with yellow soap, using plenty of salt in the water. This will kill the fungi just as well as the chloride of zinc, although it is not as good a preventive. The articles should be dried in the sun if possible; and air and sunshine, it may be remarked, are the best possible preventives in themselves against mildew, but of course neither one or the other is always available. It would be well, also, where the laundryman has to deal with mildew, if after killing it in the fashion above described, the cloth was well steeped in chloride of zinc, or zinc solution, to prevent the recurrence of the disease.—London Laundry Record.

WASHING SHIRT WAISTS

WITHOUT THE USE OF MACHINERY.

If there are any unwashable buttons or trimmings, remove them, brush the dust from the seams, and throw the shirt into clear, cold water for an hour. If you are afraid of the color running, add a handful of salt. After washing in warm suds and drying it, make your starch by dissolving a tablespoonful of dry starch in a quart of water.

Thick cambric blouses should be only starched at the collar, cuffs and down the front hem. To the starch should be added half a teaspoonful of gum arabic, dissolved in water with a little borax. Wring the shirt dry out of the rinsing water, and hold it by the back of the neck. Gather up collar, cuffs and front hem and work in the starch, after which wring those parts in a towel, and rub them for half an hour, at the end of which they are ready for ironing. Iron first the yoke, then the collar, inside and outside, then the back, front, and last of all, the sleeves and cuffs. A shirt board and sleeve board are very helpful, and indeed the latter is a necessity.

CHEAP IMITATION WAISTS CAUSE LOTS OF TROUBLE.

That laundrymen are sure to have more or less trouble with ladies' waists goes without saying, and is a fact that is recognized by all laundrymen. The rush on these delightful, airy dreams of the cool and refreshing, has given rise to cheap imitations of what were the honest turnouts of well-known firms, and for which have been substituted, goods which are not only cheap but nasty. They sell at prices at which it is impossible to produce fast colors on good fabrics, and which are not worth the washing. Nevertheless, they will find their way to the laundry, and the laundry will be held responsible for the faded colors.

As a matter of fact, colors will fade under the best of circumstances, in the course of time, but in the case of these cheap waists, they will fade from mere exposure alone. The atmosphere exercises its ordinary bleaching influence on them in a marked and rapid manner, and of course it is simply impossible to expect, that colors which fade from mere exposure to the air, will stand washing, and it doesn't matter in what manner the washing may be conducted, the results will be alike unsatisfactory.

Where the laundryman's trouble comes in is, that when he accepts the washing of these goods as they come to him in the bundle, he is held responsible for what it is impossible for him to prevent.

SHIRT WAISTS AND SOAP.

The consensus of opinion seems to be that a pure neutral soap should in all cases be used in the washing of these frail fabrics with their varied colors.

It is worth while in this connection, noting, that whether the soap is made or bought by laundrymen, it is of paramount importance that it be a perfectly pure article, if good results are to be obtained.

No men take greater pains to do their work thoroughly and well than laundrymen, and in no trade is it of greater importance that the basis of all supplies should be good. Particularly is this the case with soap, and if so much depends, as it appears to do, on the quality of this article in washing these shirt waists, for the fading and tearing of which, laundrymen are, in nine cases out of ten, unjustly held responsible by an over-exacting public, it is not too much to expect that they in their turn, should desire to have everything they buy of the best, and it is only fair to say, that the supply men of the trade meet their wishes by using every effort to furnish materials of such quality as it is absolutely necessary laundrymen should have.

The cool way in which cheap dry goods stores sell cheap colored waists and then lay the blame of the fading which takes place when washed, on the chemicals used by laundrymen, is only equaled by the impudence of the customer who asks $3 for a shirt waist she paid 89 cents for the week before. This is just the sort of thing that laundrymen may meet with at any time, and it is to the credit of the trade, that they maintain their equanimity, good temper and sometimes their profits and always their customers, in spite of it all.

THE WAIST THAT FADES.

Wet it with cold water and soap and rub with a white cloth. If the color comes off on the cloth, it will not do to wash in machine; it must be done by hand.

SILK GOODS.

SILK GOODS may be cleaned by spreading them on a stone slab and brushing them carefully with a solution of a neutral soap in water.

Every laundryman should know the simple method of determining whether his soap is neutral, acid, or alkaline. For a few pence any chemist will sell him a little book of litmus test papers. These are of a blue color, and on tearing one out and steeping it in a solution of his soap, it will at once turn red if the soap be acid. Most soaps, however, are alkaline, and these are preferred for the ordinary uses of the laundry, but any laundry supply man will supply a neutral soap for special purposes.

To return to the silk, when spread on the stone slab, care must be taken to brush it always the way of the design. It is then rinsed and steeped in a solution of sulphurous acid. After another rinsing, it should be wrung between two dry cloths, and finished without thoroughly drying. This is the only way in which the laundryman can avoid the tears which are so often seen in cleaned silks.

There is no doubt about it that the best plan with satins, brocades, and small articles of silk, such as ribbons, is to clean them be the dry process. All that would be required would by a bowl and some benzine. However, they can be renovated pretty well with egg yelk. This is rubbed well in, then washed out with lukewarm water, and the articles are rinsed in cold water and dried. The luster will need restoring to the silk or satin, and this is best done with a solution of gum tragacanth. Add the gum to equal parts of good vinegar and water, stir well until dissolved, strain the mixture through a cloth, and dip the articles in this until they are thoroughly moistened. Then squeeze out the gum carefully and dry the article, carefully spread out on a smooth board, in the sun.

Black silk is best cleaned, whether the article be large or small, with ox gall. A warm solution of ox gall is made by adding boiling water to it, and this is rubbed into the silk with a clean flannel. The mixture is squeezed out, and the operation repeated until the goods are perfectly clean. They are then rinsed in several waters. Black silks are renovated in the French laundry with a weak solution of coffee, The silk is merely damped with this, not thoroughly wetted, and the luster is restored by rubbing with a soft handkerchief. Colored silks, such as handkerchiefs or fabrics, should never be washed with soap. Quillia bark should always be used, as it has no influence on the most delicate colors.

LAUNDERING FINE EMBROIDERIES.

When the embroidery is complete, put the whole piece right into suds formed of tepid water and the purest white soap, and wash carefully, rubbing the soap on the parts of the design where the stamping still remains distinct. Work it between the fingers until all trace of the pattern is gone from the linen, treating in the same way any part of the linen that has become specially soiled. Care should be taken that the water is not very hot, as even the best silks in some shades, will run a little if put into anything like boiling water.

Rinse thoroughly of the soap, and ring out gently, as much of the water as possible, stretch into shape, fold evenly, and roll up for pressing. This should be done at once, before the piece has time to dry, for if ironed when wet, the dressing of the linen is preserved and the stitches are set in place, so that any number of subsequent washings will not destroy the effect.

On a perfectly clean cloth, over a thin flannel or cotton batting, spread the embroidery, wrong side up. With as hot an iron as can be used without fear of scorching, begin the pressing, from the center outward, until the work is partly dried. Then press out the wrinkles towards the edges, which can be stretched in the finishing.

If the work has not been drawn or puckered in any way, the linen will be perfectly smooth and the design raised on the right side from having sunk into the thickness of the flannel underneath. Never press any embroidery on the right side, as it is ruined in this way.

When the piece is ironed on the wrong side until thoroughly dry, turn it and run the iron over the plain surface of the linen, and over the hemstitched edge if there should be a finish. Fringed edges should be brushed after they are dry.—Philadelphia Enquirer.

WASHING FINE HANDKERCHIEFS.

Few laundresses wash fine embroidered handkerchiefs properly. Too often they go to pieces in the wringer, or are rubbed into holes on the washboard. The dainty piece of cambric that is carried more for show than use may be washed by the owner in her own bowl. This done, all dust should be wiped from a large window pane, and the handkerchief, while it is wet, spread smoothly over the glass, all creases spread out and the corners kept flat. When the handkerchief is dry it will be crisp and new in appearance.—Chicago Tribune.

TELLS HOW TO WASH COLORED GOODS.

HUTCHINSON, Kas., April 18.

I noticed the inquiry as to the best method of washing colored bosom shirts with white bodies. With your permission I will give my views on this subject.

In the first place let me say, as good a color cannot be obtained on colored bosom shirts, as on the plain white, for the following reasons:

First—The majority of the white shirts with colored bosoms are cheap, the material used in their manufacture being inferior.

Second—The colors are often very delicate to begin with.

Third—These shirts, as a rule, are worn longer without washing, than plain white shirts, because the bosom does not soil so easily, yet the dirt is being literally ground into the white bodies.

Fourth—In washing these shirts no acids or bleaching compounds can be used without danger of injuring the color of the bosoms.

The following is the formula I have used with better results than I have found with any other:

First Suds—Run about 2½ inches cold water in cylinder and add 4 oz. borax; run about 5 minutes, then turn on steam, heating water slowly, till as hot as possible without injury to colors; add a small quantity of soap and run 10 minutes; then add soap enough to make a suds, and then run in this suds 20 minutes.

Second Suds—Run 2½ inches of water in cylinder. (This water should be previously warmed to about the same temperature of first suds when run off.) Add 4 oz. borax, and soap to make suds; run in this 30 minutes, and clothes are ready for warm rinse of 10 minutes (water the same temperature as second suds.) We are then ready for cold rinse and blue.

Note that no sour is used in above formula, as acids tend to fade colors.

Always use neutral soap, avoiding caustics as much as possible.

Have been using aniline blue, perfect shade, with excellent results. CHAS. HELME.

COLORED COTTON GOODS.

Colored cotton goods such as spreads and quilts, should be washed through two suds of seven or eight minutes each, making up the suds as before, then putting in the goods so that the soap solution may penetrate the material thoroughly and perfectly, as water alone would not have the same effect.

A good neutral tallow soap should be used, and plenty of borax, which will not affect the colors except to brighten and clear them. It is always safest to wash colors that bleed, like cheap reds, blues, etc., separately. Where any doubt exists as to whether a color will stand the suds, dip a corner in the liquid soap, and it will at once show whether it will bleed or not.

Colored cotton goods should be soured slightly in last rinse water. Give two rinses in warm water. If soap be left in the goods it will make them hard and harsh to the touch when dry. Use acetic acid for souring.

As to the running or fading of new stock colored goods a Chicago laundryman remarked to a reporter of the National Laundry Journal:

"We wash all kinds of colored goods, and we have no trouble whatever with either running or fading. We get every color ever seen in shirt waists, and we put all colors in the machine together. We use an entirely neutral soap, and the whole thing in a nutshell is, that where you use a perfectly neutral soap, the goods will not fade."

WASHING OF OVERALLS.—Successful Formula.

CHICAGO, May 10.

Herewith find my formula for washing overalls for the benefit of a New York inquirer:

Ten minutes of cold water and caustic soda, rinse cold water twice; five minutes cold suds, turn on steam until water comes to a boiling point; run ten minutes; two hot rinses, fifteen minutes soap and caustic, and boil; one warm and one cold rinse. If overalls are very greasy, run in two caustic waters, ten minutes each. Never use hot water at starting, as it sets the black oil and grease.

F. H. WENDLING.

TROUBLES WITH ANILINE BLUE IN A STEAM LAUNDRY.

A DISCOURSE BY MR. D. M. COOPER, OF ROCHESTER, N. Y., AT THE ANNUAL CONVENTION OF THE L. N. A., AT BOSTON, SEPT. 1, 1897.

Mr. Cooper: The pleasure of addressing this convention in Boston, is one which I hardly looked for this year, but since your worthy president has invited me to address you on the subject of blue, I will ask your attention for just a few moments. We will call the subject, "One of the troubles with aniline blue in a steam laundry; its cause as I found it, and the best way to remedy it."

The trouble to be remedied was blue streaks, or spots in goods, which caused a great number of send-backs in our laundry work.

A peculiar coincident happened at this time. Strange to say, the very time when this trouble occurred, we had changed to the use of a blue of another manufacturer. Of course, true to the nature of mankind, we blamed the bluing manufacturer; he came on to Rochester, and after several days of careful research, failed to find the difficulty, and left our place, I think, with about as bad a case of blues as I had myself. I then became desperate, and was determined to find out the cause of this trouble, and went through a number of experiments.

I went into the wash room and watched carefully a full load of shirts through the washing process. As soon as they were extracted I sent them to the starch room, had some starched up and ironed at once, and I personally inspected every shirt in this lot. Not a shirt had a blue spot. I then returned to the wash room and repeated this experiment with the same result. I was then free to blame the washman for the trouble, and I told him if every load of shirts was handled the same as these two lots, I was satisfied we would have no trouble.

Later on in the week the trouble commenced to develop again. I then went to the washman, and he could not explain, but he put the question to me, "Did you ever notice that later on in the week this trouble is much more pronounced than in the forepart of the week?" I thought the matter over and found it to be a fact, which was contrary to the theory that it was from the washman slighting the work, because we all know if any lots in the laundry are slighted, it is the first few lots in the week. So I thought perhaps it was something besides this. I had a lot of shirts washed up, placed on the floor about four o'clock in the afternoon, and left to lie exposed until seven o'clock the next morning. On examining these shirts, every part of the goods exposed to the air, in the top of the truck, showed the same development of blue. After carefully removing these from the truck, not one shirt in the truck below this top layer had any trace of the trouble. This showed conclusively that something was getting on those shirts exposed to the air.

I then went back to our ventilator system, which is a system called the McCreary system. It is constructed as follows: We placed a large fifty-inch blower in a ceiled room in the basement. From this room there is a large twenty-four inch conductor pipe running up through each floor to about twenty-five feet above the building. Down this pipe we suck the cool, fresh air, and distribute it through another system of pipes, to our several apartments, more especially the wash room. In this room we perhaps send one-half of the air from this ventilator system.

Upon investigating this blower room, I found that during some extensive improvements in our boiler system, our mechanics had cut a hole through the wall between the blower and boiler rooms, to remove some pipes. Through this hole we were conducting a strong current of air from the boiler room. I then felt we had discovered our trouble. The question came, what was it? It struck me at once it was sulphurous gas. I returned to the office to brush up on chemistry.

Chemistry explains the trouble very nicely, as it says sulphur, when liberated in the air, united with two parts of oxygen becomes sulphur dioxide. In certain conditions it will unite with three parts of oxygen, becoming sulphur trioxide. It also says when sulphur dioxide comes in contact with the water, hydrogen two parts, oxygen one, they unite and make sulphurous acid gas.

Let us go back to sulphur trioxide. It also says when sulphur trioxide comes in contact with water, it manufactures sulphuric acid. This was our trouble right here. Sulphurous acid is a bleacher; sulphuric acid is a developer of colors. To satisfy myself this was correct, I took ten shirts and put them through the wash process; blued them a little extra heavy, and placed them around in ten different places in the laundry. No. 1 shirt I placed on the roof out doors; No. 2 shirt on the table in the mangle room; No. 3 shirt on top of the blue barrel in the wash room; No. 4 shirt on top of the clothes truck in front of the blower system; No. 5 shirt was suspended from the ceiling where the strong draught of air would strike same; No. 6 shirt was placed on top of the washing machine; No. 7 shirt in the basement, at least seventy-five feet away from the boiler room; No. 8 shirt was placed in the hole cut through between the blower and boiler rooms; No. 9 shirt I placed on the coping around the top of the boiler; No. 10 shirt I placed on the coal pile in front of the boiler. You will see, as I will show you by these shirts, that Nos. 1, 2, 3 and 7 are exactly the same color as they were when placed in these positions. No. 4 shirt, placed on top of the clothes truck, shows more blue developed in streaks; also No. 5; No. 8 shirt, placed in the hole between the boiler and blower rooms, you will notice shows a very marked development of blue in streaks. No. 5 shirt, on top of the boiler, is really the bluest shirt of the lot, while No. 10, placed on the coal pile, shows a very pronounced blue streak where the sulphur fumes had struck the goods. We will see by this, that the nearer we get to the boiler and boiler room, the more pronounced the trouble, showing us right here the ill effect of allowing the sulphurous gas to get into the laundry, more especially in the wash room, as we see by these experiments that if sulphur dioxide is allowed to come in contact with wet goods, it will make sulphuric acid, and therefore destroy the color in goods. On the other hand, if there is an extra amount of air, that will make sulphur trioxide. If this comes in contact with wet goods, it will start up the slow manufacture of sulphuric acid. We can all see from this, it is very essential to keep sulphurous gas away from either wet or dry clothes.

I made then a further test. I had three shirts washed and blued the same as the other goods, and placed them behind the boiler at one corner, where the extra amount of air would not strike them, but the sulphur fumes could. In three hours time, upon removing these shirts, the color was gone entirely, showing that the sulphur dioxide had attacked the aniline color.

I then placed these shirts near the open window in our marking room, where a current of air from out doors would strike them, and in one hour's time the blue developed in streaks the same as before, showing that in this current of air we got one extra part of oxygen, which was necessary to make the sulphuric acid.

I then had three shirts washed, blued, and hung them in a tight closet, and placed on the floor a ladle with some pulverized sulphur in it, lit the same, closed the door, and kept these shirts exposed to the sulphur fumes for three hours. Upon removing them, the color was all gone, showing in this case we got the same sulphuric acid. I then had the shirts rewashed and blued, and placed the ladle upon the sadiron heater. When the fumes of sulphur commenced to rise, with my left hand I held a shirt in the fumes, and at once you could see the color commence to fade, showing here that we were manufacturing, the same as before, sulphurous acid. I then reached over with my right hand, removed the rubber tube which supplied air to the sadiron heater. I held the tube up so as to blow the air with the fumes of sulphur on to the exposed goods, and instantly the blue commenced to develope in the goods, more pronounced on the part of the goods most exposed to the current of air together with the sulphurous fumes, confirming what I have said before, that this extra amount of air, supplied with the sulphurous gas, went on with the same slow manufacture of sulphuric acid, which developed the blue.

It seemed to me, gentlemen, this was a very important subject for the laundrymen of the United States, and I thought it of sufficient importance to bring to Boston, to present before you in a body. I hope it will be of some assistance to some of my brother laundrymen here, and I thank you all very kindly for your close attention.

Mr. Lawrence: What fuel do you use?

Mr. Cooper: We use half hard and half soft coal. I think you will get sulphurous gas from either hard or soft coal.

Mr. Lawrence: Will you get it from wood?

Mr. Cooper: That I could not say. I think not, but Mr. Castaing, I think, can tell you.

Mr. Castaing: No; you cannot get it from wood, as wood is composed of cellulose, tannin, silica, gummy substances, etc., and no sulphurated compounds are to be found in it; consequently no sulphurous acid could be generated from the use of wood as fuel.

As I was not here at the beginning of Mr. Cooper's remarks, I do not know exactly the trouble he experienced, but I infer from the few words I have just heard, that some sulphurous acid was suspected to have been generated by the coal used in his furnace, which had acted upon the blue of the shirts in the dry room or elsewhere. As all bituminous coal contains sulphurated bodies, therefore there is no doubt in my mind, that the sulphurous acid came from that source.

In regard to Mr. Cooper's theory, as to the change of sulphurous acid into sulphuric acid, his theory is perfectly correct. I take this occasion to remind you of what I said yesterday in reference to sulphurous acid as a bleach for woolen and silk goods. Sulphurous acid acts in an entirely different manner from another acid made from sulphur, that is, sulphuric; just the same as hypochlorous acid and chloric acid, both of which contain chlorine, yet one is a bleacher and the other is destructive of vegetable fibres.

Mr. Hagen: The laundrymen must not allow the goods to lie around after they are washed, unless they are covered up. Furthermore he must not allow any coal gas from the boiler room to get into the laundry. One can scarcely call himself much of a laundryman unless he is something of a chemist.

Mr. Castaing: That confirms what I said yesterday, gentlemen, when I told you that you should pay more attention to the direction of your wash room and employ more intelligent help. Instead of having a man who oftentimes can hardly read, take care of the most important part of your business, why not secure the services of a man with a certain training in chemistry. You all realize that the laundry industry is growing very rapidly, and in a very short time capitalists will be thinking of monopolizing this branch, as they do many others, such as sugar refining; and they will establish a laundry and conduct it on the same scientific principles they conduct the sugar trust. They will have chemists to take care of the wash room; and instead of paying twelve or fifteen dollars a week to the head washer they will pay from three to five thousand dollars a year.

Instead of spending so much money in decorating your offices, or advertising your trade, don't you think it would be better to devote a little more attention to the fundamental portion of your business—that is, the wash room? Could there be a better advertisement for you than the reputation acquired by the superiority of your work? You might economize in some other department; for instance, why not a good, conscientious woman at the head of such department, as you now leave to the management of an expensive man, curtail your advertising expenses, and apply the saving thus realized to the payment of bills for chemicals used in the wash room—for you all use chemicals, notwithstanding the fact that some of you print on your laundry lists, "No injurious chemicals or acids used in this laundry"—as that would bring you more business than any other form of advertising.

Mr. Burges: I would suggest that until the time comes, when each laundryman can afford to have a chemist for a washman, that it would be wise for the laundrymen in a state or several states to combine and raise a fund to secure the services of a chemist, to show them just how they can proceed intelligently in the wash room. I think it would be a good scheme.

Mr. Royce: Some months ago I drew up an agreement to be signed by various laundrymen, to employ a chemist, and sent it out to be signed by a laundryman who was willing to go into it, he to send it to another laundryman, until a sufficient number had been obtained. I sent it out last October, and there were on that list ten New England laundrymen. I would be glad to know what has become of that paper.

Mr. Burges: I would ask Mr. Royce if my name was on that paper. I never knew there was such a scheme on foot.

Mr. Royce: I cannot answer that question. I don't remember what names were on it.

Mr. Hagen: I think if there was more attention paid to the interior workings of the business, and less attention paid to getting business outside, and especially getting business away from one another, we would all have more business, and there would be fewer agent and discount troubles that we have found we have to contend with. [Applause.]

The President: I am quite sure that if we would expend more money on our wash room and less on display, it would be more profitable. If the wash room is filthy, without intelligent help in charge, it is easy to prophecy what you find at the other end of the line.

TO CLEAN SILK.

The English Society of Arts offered a prize of $100, for the best process of cleansing silk, woolen, woolen and cotton fabrics, one that would not change their color or injure them in any way. The winning receipt was as follows:

Grate two good sized potatoes into a pint of clear, clean, soft water. Strain through a coarse sieve into a gallon of water, and let the liquid settle. Pour the starchy fluid from the sediment, and it is ready for use; rub the articles gently in the liquid, rinse thoroughly in clear water, dry and press.

AN EXCELLENT SUGGESTION.

Regarding an item entitled, "Hints on Cleaning Eider Down Quilts":

From experience, I would like to say that it would be well to have a heavy woolen blanket, soaking wet with water, on hand, so in case of fire, it could be used to smother it, as benzoline, benzine, or gasoline are very dangerous liquids to handle anywhere, and will ignite without being near a light or flame of any kind.

I remember a case in point, that happened to my father a few years ago, at Louisville, Ky. His dry cleaning department was over 175 feet from any flame whatever, and the stuff ignited and did great damage.

If precautions are used such as I suggest, it might be the means of saving the life of some worker in the dry cleaning process, as a few gallons of the liquids used will produce enough gas to cause an explosion and perhaps destroy a building as well as life. Respectfully yours,

C. F. Hosch, Nashville, Tenn.

NEW DRYING CLOSET.

SAVES TIME, SPACE AND FUEL.

There has recently been granted a patent on a hot blast drying closet, which from trials made, seems to be remarkably serviceable. The closet is divided into three parts or chambers, the central one being the heating chamber, and those on each side the drying chambers. A fan placed above the heating chamber causes a continuous circulation of air up it, then into the drying compartments, and then up again into the heating chamber, all three chambers being connected top and bottom. The closet has no objectionable features and has these advantages: It dries quickly, thus enabling laundrymen to get out work on short notice. It saves space, a very small closet doing a large amount of work, and further, if desired, exhaust steam may be used for heating, thus saving fuel, the exhaust going to the water heaters, after passing through the drying closet.

The operation of the improved closet is more exactly as follows: Cold air enters the middle chamber through an air inlet and casing and tends to keep cool the bearing of the lower end of the shaft which moves the fan. The air is heated in the chamber by radiators or other suitable means. The air should always be heated to above 212° Fahrenheit, and the best results are obtained when it is heated to about 220°. The fan being set in motion by means of power transmitted through a pulley to the shaft upon which the fan is mounted, exhausts the air from the middle chamber, draws it up into the chamber on the left, forcing it thence, down into the chamber on the right. From the chamber on the right, it in part, passes back into the middle chamber, and in part escapes from the hot closet through an outlet pipe. The circulation is thus made rapid and continuous, and the clothes are dried almost instantly, not simply by the ordinary slow absorption of the moisture by the air, but chiefly by rapidly heating the clothes and water therein, to a temperature above 212°, and expelling the vapor or steam. When this method is followed, less ventilation is necessary than would otherwise be required, and a small hot closet is enabled to dry a large quantity of clothes.

SOME EXPERIENCE ON DRY ROOMS.

You can fill a dry room full of wet clothes with no ventilation and it will take from seven to eight hours to dry. Why? Because there is no agent to take off the moisture. I had occasion to repair a dry room where it took seven hours to dry 100 shirts, and I thought I would experiment; so I put at one end, a cold water coil, consisting of about 800 feet of one-inch pipe, running the entire width of the dry room and eighteen inches from the floor. At the same end, in the center of the wall, I put a twelve-inch hole, and had a galvanized pipe running to a fan, so as to draw the moisture from the clothes on the coil, and condense it.

From the fan, which set on the outside of the wall, I run a twelve-inch galvanized pipe, running over the top of the dry room and entering at the other end. By this means I kept the clothes agitated so as to have free circulation, and my clothes dried in half an hour, but I would not advise the adoption of this plan, because it takes power to run a fan, hence the large coal bill.

The best and cheapest way to ventilate dry rooms is natural draught. To build a well-ventilated dry room is to have an eight-inch pipe on the inside, fifteen inches above the steam coil, running the entire length, full of perforated holes, about one inch in size, three inches apart. Then run a pipe out, through the top of the dry room to the atmosphere.

Have a damper in pipe above dry room, so you can regulate draught, and with a double coil of steam pipe with headers, and sixty pounds of steam on boiler, I guarantee you can dry in one-half to three-quarters of an hour.

By saving the condensed steam from steam coil in dry house you will have pure water for your flannels, providing you have it arranged to blow out coil every morning, until all the iron rust disappears. Then shut off and turn in tank. You will find by so doing that you will have less woolen shrinkage. I. D. L.

A NEW DRY ROOM.

These dry rooms, are a unique feature of the laundry. They are 4x8x8 feet, and separated by a space sufficient to allow the bars to be drawn out within six inches of their length. This, as has been found in practice, leads to no inconvenience whatever, the entire bar being easily reached. There are three bars to each room, namely, two 18-inch and one 12-inch, and 180 shirts can be dried at once.

It will be noted that the majority of fires in laundries originate in the drying room. The drying rooms in this laundry are virtually fire proof. This result has been accomplished by lining them with asbestos cloth one-sixteenth of an inch in thickness.

Steam is supplied to the dry rooms through a triple circulating coil, instead of the usual double one, which gives 480 feet of pipe and again results in a great economy of space.

By an ingenious arrangement the rooms can be used like the twin engines of a steamer, either together or separately. When only one room is needed the other room can be entirely cut off, affording a big saving in the cost of drying, over the large dry room only partly filled with goods.

There is another great advantage in these duplex dry rooms, and that is in drying flannels. Every laundryman has encountered the difficulty of drying flannels and such goods as collars and cuffs together. When collars and cuffs are dried with flannels we have nearly always got trouble with lint and complaints from our customers. On the other hand, when they are dried separately there is no trouble. With this drying system we are never obliged to dry flannels with collars and cuffs. We dry flannels in one room and collars and cuffs in another.

The exhaust is provided for by a 30-inch fan and is as near perfect as it is possible to be, and there is an absence of that "dead and heavy air" observed in so many dry rooms. The use of asbestos cloth as a lining renders it more than usually easy to deal with the insurance companies, and the idea should not be lost on laundrymen as it is a valuable one.

STARCH FOR STIFF WORK.

Use all corn or two parts corn and one part wheat.

To every pound of starch used, add 2½ ounces powdered borax and ½ ounce pulverized alum, dissolve together in a little cold water, then add sufficient water to make the required quantity of liquid starch. Boil 10 minutes, when the starch should be thin enough to penetrate the fabric quickly and thoroughly.

For gloss add ¼ ounce white wax for each pound of starch.

Some brands of starch boil very thick. By increasing the quantity of alum, the thickest kind of corn starch can be boiled thin in a few minutes.

To obtain clear blue white work with borax, let the starch cool off till under 130 F., then add a little bluing before using.

STARCH WORK IN DENMARK.

EXPERIENCE WITH RICE STARCH.

COPENHAGEN, July 8.

We should be pleased to give our experience as to rice starch for the benefit of our brethren in the trade.

In this country laundrymen have used nothing but rice starch for many years. A few years ago corn starch was introduced here by an English concern, but the grade of work it produced was so far below what we were used to, that I do not think more than five barrels of it were sold here.

Wheat starch is only used very little here, and then exclusively for simple and coarse goods, such as colored aprons, shirts, etc. Of course there are several brands of rice starch, and after experimenting with most of them, we may safely say, that the quality of work produced is as different as that from cheap corn, and good wheat starch.

If the starch Messrs Hillier & Co. used has eradicated the blue color from their collars and cuffs, then they may as well discontinue the use of that brand of starch—it is no good; nor is the trouble in the borax at all. We use borax in our starch and are having splendid results. This is how we get them:

We take pure rice starch, use no corn or wheat starch with it, but dissolve a small portion of borax in pure water and add this to the starch. We use no wax, parafine or glycerine, as a domestic finish is asked for and we get it in fine shape on a combined ironer. We run the goods 12 or 15 minutes in the extractor, and we can say that our collars, cuffs and shirts are coming out stiff and white, with a good body to them, and flexible enough for anybody.

Use such a starch as we speak of, and borax with it, and you will never have any trouble with the shade.

THORSEN & JESPERSEN,
Copenhagen Steam Laundry.

THE STARCHING OF DARK GOODS.

Several laundrymen have recently written regarding the starching of dark blue and black waists so as to prevent the starch showing through on the garments. One writes:

"Can you inform me as to what is used in the starch, if anything, to prevent the starch showing on dark blue and black waists and where the same can be purchased?"

Another asks much the same question. He writes to know how to starch "black collars and cuffs so they will not show white when ironed."

In answer to both it may be stated that nothing can be used in starch to prevent the trouble in question. It arises from not properly wiping off the excess of starch, and from not using a thin starch. The wiping off should be done thoroughly and on both sides, not on one.

A manager of a large waist company's laundry, finds no difficulty whatever in starching waists, which the firm handles by thousands. He prepares his starch of two-thirds wheat and one-third corn. Twelve pounds of the wheat starch is added to twenty gallons of water and boiled up for twenty-five minutes. Then six pounds of corn starch is added and the boiling continued for five minutes more. This starch is applied to the goods, all that can be got in, and then the surplus is carefully removed by wiping thoroughly on both sides. By following this process he says that he experiences no trouble, even when dealing with such a glossy fabric as sateen.

IN FAVOR OF BORAX.

A correspondent who thinks he has the matter "down pretty fine" sends in some pointers on borax. He says that a wash room where there is not a supply of borax on hand, is like a ship at sea and short of provisions. The laundryman who does not use, or does not know how to use borax to advantage in washing and starching will soon have to take a back seat.

Borax will not discolor pure starch or pure water, and all trouble in this respect can be avoided and the starch kept white and clean, by using a little powdered alum along with the borax, the two together in combination forming a pure white milk-like substance that does not crystallize, but can be kept in solution for any length of time. It is more convenient, however, to use it in powder form as given in formula for making starch. Why borax and alum in combination should cause the linen or cotton fabric to absorb so readily is a question in chemical affinity which it would take too long to explain here.

Borax in the starch keeps the goods clear and white, the material absorbs the starch quicker, and the penetration is complete. It saves time in wiping off; it gives a smooth elastic finish that is sure to please; it works equally well with all corn, all wheat or mixed starch, thick boiling or thin boiling, and will give a tough, pliable finish with either, while it will not blister nor stick to the hot roll.

When starching by the formula given below was introduced in our laundry, one operator on ironing machines remarked, "These iron slick," while another said, "What gives them that smooth, flexible feeling?" The improved finish and appearance was apparent to all—starcher, ironer and finisher, and, what is of more importance, it is appreciated by their patrons.

Here is the starch formula and it will be found a good one:

Mix two pounds powdered borax and one pound powdered alum together thoroughly; rub them together through a sieve or crush them under a roller; put in a box and keep dry.

Use one pint (dry measure) of the powder to five gallons liquid starch. Mix the powder in with the raw starch, dissolving it in cold water, then boil in the ordinary way. If using all corn starch, make it thick, it will boil thin in a few minutes and give good results in domestic, medium and high gloss finish, soft or stiff, as desired, according to consistency of starch used.

Mixed starch gives an exquisite finish, and a high gloss can be obtained by adding a little white Japan wax. Try a batch of shirts and collars, according to this formula, and the result will be first-class laundering, with less starch, cheaper starch, and much less trouble in wiping off and doing over "go-backs."

BORAX IN THE STARCH ROOM.

Borax is most useful in the starch room. The starches in the preparation of which borax is used, require no cooling, and give a finer gloss than those starches which contain no borax. Borax can, however, be used in either hot or cold starches. The stiffening and brilliancy it imparts are permanent, and the glaze is very fine.

PREVENTS BLISTERING.

MANDAN, N. D., Feb. 7, '97.

"Same Old Trouble," says a great many of his collars and cuffs go back on account of blisters.

I would like to state, for the benefit of the trade, my views about it: For collars and cuffs I use pure corn starch. I make my starch very thin and use hot—let it cook briskly, or boil 3 to 5 minutes, and to 2 gallons of starch use one square of pli-a-bol, dissolve pli-a-bol and add to your starch while cooling. See that the goods are starched thoroughly, wipe down and dry as quickly as possible. I use dampening sheets for collars and cuffs; wring sheets as dry as possible, then fold in your collars and cuffs, let them remain in damp from 5 to 8 minutes, and I think you will have no trouble in regard to blistering.

DAMPENING AND IRONING.

SOME PECULIAR METHODS EMPLOYED AND A FEW SUGGESTIONS FOR MAKING IMPROVEMENTS—MACHINE DAMPENING PREFERABLE TO THAT BY HAND.

The best way of which I know, to begin a disquisition on ironing, and ironing rooms, is to say something about dampening, as the results obtained in ironing, depend to a large extent, on the goods being properly moistened before being brought in contact with the heated rolls or irons.

HAND DAMPENING.

One way to dampen shirts, very prevalent among the smaller laundries, is, to dip the skirt of the shirt in warm or cold water, then wring out, fold the wet part over the dry, piling one shirt on top of another, pressing the bunch by means of a screw press or weights, such as a bosom board, an old mill stone, or anything else handy.

Another method of dampening by hand, in some respects preferable to the former, is, to dampen by means of wet rags, which are wrung out through rubber wringer or extractor, and placed single ply over bosom and upper part of body. The shirt is then doubled up and pressed in lots as in the former case. Both are slow processes of dampening and very uncertain as to results. There are few laundrymen who are compelled, for want of better facilities, to dampen by these old-fashioned methods but what have trouble now and then. The shirts get too damp, or not damp enough, or they get wet in splashes, a dry spot appearing here and there, spoiling the appearance of the work and trying the patience of the operators of the ironing machines.

Collars and cuffs are generally dampened in sheets, these being long, short, broad, narrow, thick or thin, according to what is considered the correct thing by those concerned. It seems, however, to be an utter impossibility to get the sheets wrung out exactly the same every time. so, that, used as vehicles for transmitting the moisture to the goods, they will contain a certain quantity of water and no more.

It is a good plan in dampening shirts by hand wringing, to leave a strip under the bosom dry to prevent tearing. If cloths are used, these should be half the size of a shirt, and of heavy muslin.

Collars and cuffs should never be made damp enough to stick to the covered roll or ironing board

The nature of the starch should be taken into account in dampening shirts and collars, as starch differs very much in the facility with which it absorbs moisture. If all wheat starch has been used, the goods should be pressed for about thirty minutes, and then allowed to lay for about thirty minutes covered with damp sheet. Rice starch ditto, as the dampness takes considerable time to permeate the fabric when starched with wheat or rice starch. If all corn starch is used, less time is necessary, as corn starch takes up moisture quickly, and shirts, etc., may be dampened, pressed, and made ready for ironing, in fifteen or twenty minutes if necessary.

The time required to dampen articles starched with mixed or combination starch, will be found between that given for corn and wheat.

There are laundries where the shirts, collars, and cuffs are dampened down and left for several hours, or over night under light pressure, or none at all, and very good work is sometimes obtained by this method, although the surest and best results are obtained in short order when a good press is used, and good results are what is wanted in most of the steam laundries.

Ladies' starched clothes are dampened in sheets, like collars and cuffs, or sprinkled and rolled up tightly, each article separately, and allowed to lie until ready for ironing, or they are sprinkled, folded up in bunches, and pressed in same manner as shirts.

In the up-to-date laundry, that is run on the progressive plan, where trade increases year by year, and the appliances for doing the work are increased accordingly, the dampening is done by machinery.

MACHINE DAMPENING.

Three machines are used, one for dampening shirts, another for collars and cuffs, and a steam or hydraulic press: With these there is little trouble in getting uniform results, and it can hardly be otherwise.

In dampening by machine much time is also saved, and only by sheer carelessness, can a shirt or collar be torn or injured in any way.

Not long since, a novel method of dampening shirts by a hand machine came under my notice. A rubber roll wringer was used, which was fastened on to the side of a tub full of water, the skirt of the shirt was inserted from the outside, and run through far enough to immerse the skirt in the water, when it was rolled back again, folded up and pressed in the usual way. Whether this method is an improvement on wringing out by hand, is a question which can best be solved by giving it a trial.

SHIRT IRONING.

The ironing and finishing of a shirt, collar or other article requires a certain amount of skill, care and judgment.

One mode of ironing a shirt with only a single machine, is to iron neckband and yoke by hand, then put bosom on board, and iron it, setting up neckband by hand with ring or pad. In this way, better results in the shape of bosom and set of shirt are obtained.

There are laundries where two machines are used in ironing a shirt—a bosom and a neckband ironer, and much better work is done than it is possible to do on a single machine. The bosom is ironed first, being clamped in position at neckband, which keeps the bosom in shape; then yoke, neckband, and wristband are ironed on neckband machine. In some cases the inside of yoke and wristbands are ironed first on neckband machine, the bosom next, and neckband last.

On every trip, I come across laundries that have just added a neckband, sleeve, body, or some other machine that facilitates or improves the work, and are thus getting into condition to overcome the competition of other concerns.

A very wide difference of opinion exists among laundry proprietors in regard to the amount of work an operator on a bosom ironer should turn out per hour; or day. In one case 200 shirts, ironing bosom, neck and wristband, and the collars and cuffs going with these, are considered a fair day's work. In another laundry, 100 shirts, and the collars and cuffs, are deemed a good ten hours' labor on a combined ironer.

One employer considers thirty bosoms an hour a satisfactory turn out, another wants fifty bosoms an hour, while a third expects 100 an hour and gets them. Of course, a good deal depends on the machine used. Twenty shirts and hour, ironing bosom, neck and wristbands, is as much as should be called for, and an average of fifty bosoms an hour is doing very well on a bosom ironer.

Fickleness seems to be a failing very prevalent among the proprietors of small steam laundries, and some others that would not come under that category, in their relations and dealings with the help. Periodically they pack up the sins of the establishment, and making a scapegoat of the manager, foreman, or all-around man, they tie the burden of their iniquities on his back, and bounce both together. The "boys on the road" expect to meet a new foreman or manager every time they get around that way, and they are seldom disappointed. They see a new face, but everything else is just as of yore.

Laundry foremen and managers seem to have a weakness in this respect also. Given to wandering, they will, on the slightest provocation, pick up their traps and walk. Looked at from a business standpoint, there are unpardonable sins that justify the discharge of an employe, and there are interferences on the part of employers that make the position of a manager or foreman untenable.

The changing of the felts on the bosom board, and in fact on all ironing boards and padded rolls, once a week, is a good plan, and many laundries have adopted it. Two felts are called for; one is used for a week, then taken off and replaced by a new one. The old one is then soaked in water for a day or so, and dried soft again, ready for use, each being in use every alternate week. In this way the padding is kept softer; a yielding surface is presented to the bosom at all times; a nice finish is obtained, and more pressure can be used than ordinarily, if necessary, without danger of injury to the goods.

Wherever there is a bosom and a neckband ironing machine, there should be a body ironer also.

In laundries located in towns where help is at a premium, a body ironing machine is the right thing in the right place. It does the very best kind of work, and does it quickly. One operator and machine will do the work of three or four hand ironers.

Boys, as everyone knows, who get around among the laundries, make good operators on any of the machines, and a laundry equipped with the machinery for doing the work, is seldom at a loss for help, for where girls are scarce, boys are sure to be plentiful, and either can do the work as well as the other on machines used in the ironing room.

It is well for a laundry proprietor to get an insight into the methods pursued in other establishments than his own.

One need not go far nowadays, to find a laundry larger and better equipped with machinery than his own.

Those who have never seen a full line of ironing machinery in operation, have still something for which to live. There are operators on the bosom ironing machine, that will iron shirt bosoms fast enough to keep two neckband, two sleeve, and two body ironers hustling to keep the pace.

IRONING HINTS ON FLAT WORK.

Table linen is rarely starched nowadays in the best laundries, but is taken direct from the hydro-extractor to the ironing machine and finished. This non-starching of table linen is an advantage from the laundryman's point of view, as his ironing machine cloths or felts will keep much cleaner with this process. If starch is used it must be thin boiled starch. Once through the ironing machine is best for table linen, as it then, even if unstarched, receives a slight stiffness; which would be broken by a second passage over the iron. Too much pressure is not advisable, as it makes the articles look thin, puts on a vulgar-looking gloss; while turning out the under side very rough, wears out the roller coverings very rapidly; and gives the engine more work than it need have. A medium pressure, with well-padded rollers is more effective. Table linen must be very carefully folded to look nice; much handling not only breaks the stiffness, but dulls and creases the napery. Serviettes look best folded in three.

Twilled sheets will generally require to go twice through the machine. All sheets should be folded in four and then rolled; they look better done this way than folded again and again. Neither table linen nor sheets will look well unless the edges are straight, and this can only be attained by careful feeding into the ironing machine and avoidance of pulling the cloth on its passage through. Hemstitched articles require particular attention on this point.

All monograms and embroidery should be touched up by hand, from the back, on a very soft surface, so as to avoid flattening them.

Curtains are sometimes put through the ironing machines, but the result is not so pleasing as when they are framed; the pattern is flattened down, the curtains are slightly glazed, (a circumstance which is often puffed by those who use this plan, by calling it a "dust-resisting finish"), and they do not hang so straightly as when done on frames. By this latter method, they are turned out more as they were when new, and by the use of the boxes, now so generally employed, can be finished at great speed. The ironing of starched curtains on the machine, also dirties the ironing surface; many laundrymen keep sheets to put through after so many pairs of curtains in order to clean off the starch from the iron. Some laundrymen fold their curtains on pins so as to get each pair the same size when folded; but as curtains differ so much in size there seems no reason why they should be all folded to one pattern.

Roller and other towels, pillow and bolster cases, handkerchiefs and other flat articles, may all be done on a table linen machine. The tendency of the operators is to pull on the edges as the articles go through, but this should be stopped, as it spoils the shape of the goods, and makes the back edges come out in points. Fringes of towels, etc., should be shaken out or beaten on the edge of a table. Combing or brushing should only be resorted to when absolutely necessary, as they rapidly destroy the fringe; of the two evils, the latter is the greater. Pillow-case strings require touching up with a hand iron after passing through the machine.

The heated rollers of shirt and collar machines should never be cleaned with brick dust or such materials as will scratch the surface, for if once the polish is lost, it will be very difficult to get it back, and without it the work will be unsatisfactory. Thorough cleaning with soap and water is all that is necessary. This should be followed by waxing, by means of a piece of wax wrapped in a cloth, (or it may be used without the wrapper), and then rubbed off with a dry cloth, to remove the superfluous wax. The rollers must be heated as much as possible without scorching; if too cold the work will be streaky. If there is fear of the rollers rusting when at rest, as from Saturday to Monday, they should be thoroughly waxed (not greased), and the wax should be rubbed off before the machine is required for use. When ironing a shirt on a machine, the front should be raised free from the board each time it comes toward the operator, to let the steam escape, otherwise the bed will soon become saturated and hard.—Exchange.

HINTS ON IRONING.

SOME POINTERS MAY BE FOUND.

The coverings of the rollers of table linen ironing machines, and the boards of collar and shirt ironing machines, need careful attention. If they are too hard or too soft, the best results will not be obtained. The covering should be tightly put on, and should be springy to the touch. On collar and shirt boards, a sheet of rubber insertion or rubber belting is often used as a groundwork; then a piece of swansdown, thick blanket or wool felt;

and lastly, a muslin cloth. Some laundrymen replace the latter by fine sailcloth, which is said to last very much longer, and not to mark the goods, as might be supposed. The muslin must be repeatedly changed, as it soon becomes dirty and sticky from the starch. The felt also should be frequently removed and washed, or it will get hard, and the work will not then be good. Such pieces as are good may be used again.

Many laundrymen have now put in the complete set of shirt machinery, and find it a great saving of time, as well as giving good results. A shirt can be dealt with by using the neckband, wristband, sleeve, yoke, body, and bosom ironing machines, and also the starching and dampening machines, in less time than it would take by hand.

Other goods can be done on these machines also; take, for instance, a lady's blouse. It is first starched in a starching machine, dried, dampened in a dampening machine, put in a press to make the dampening even; then the collar, cuffs and body are ironed on a sleeve ironing machine; the puffed sleeves are done on a puff iron, and the collar is shaped on the same. It is then ready for folding and packing.

Fancy shirts and other articles can be treated on these machines, while the frills are goffered by a power driven machine made for that purpose.

Boiled starch is used for the above purpose; many of the starching machines are equally suitable for raw starch, and the careful laundryman nowadays tests the consistency of his starch with a Twaddell hydrometer before using.

The quantities of starch required to obtain the necessary consistency, depend on the quality of the starch used; but, roughly speaking, four pounds of starch, and a half pound of borax should be used for 100 shirts. For curtains, three ounces of starch to each pair of curtains is a good amount to allow.

Tinted starches are now supplied by some firms for curtains, laces, etc., and give good results. Servants' dresses, bed hangings, quilts, etc., should be starched with boiled starch, taking two pounds of starch and two ounces of borax to fifteen dresses, or one pound of starch and two ounces of borax to one gallon of water.

Those who possess a body ironer will find that flannels can be successfully ironed by it at a quick rate of speed, and also socks and stockings.

Ironing is an art, and requires skill, obtained by practice and study; and though many people seem to think that anyone can handle an iron well enough to do body linen and flannels, these should receive as much attention as any other branch of the work. Besides being a good manipulator of the iron, the thoroughly capable worker should possess, and be able to use, a little common sense.

For body linen, the iron should be hot, and the articles fairly damp, but prints and colored articles of this description should be only slightly damp, and the iron moderately hot. Fancy aprons and articles frequently known as "finery", should be done with raw starch and ironed wet. Silks and delicate fabrics should be ironed under a piece of fine linen, with a moderately hot iron only, otherwise the color may go. A heavy iron or tailor's goose should be kept for pressing gentlemen's clothes. They cannot be made to look nice if only an iron of ordinary weight is used.

SOME PRACTICAL HINTS ON IRONING MACHINES AND METHODS.

Every experienced laundryman of the present day recognizes the fact that modern mechanical invention has, day by day, while increasing his facilities for getting out more work, and of a better quality, increased his business responsibilities.

To obtain the best results from the machines used in the ironing department, more than having the machines is necessary. There must be a knowledge of the proper methods of keeping the machines in condition to perform their work in the most satisfactory manner. In the case of

COLLAR AND CUFF MACHINES,

an old fault was, to have the pad roll insufficiently padded. The hard pad roll used to cause grayish or yellowish streaks to appear around the seams at the edges.

The temperature of the roll will also give rise to this streaky appearance. If the heated roll be too dry, which is indicated by the pieces jumping or springing out after passing between the rolls, this condition of things will be observed. To remedy this, the roll should be thoroughly waxed by means of a piece of wax wrapped in cloth, and then rubbed dry, but not too dry.

Another cause of the formation of streaks, is having the collar machine too cold. The iron should be heated as much as possible without scorching.

A good many laundrymen are in the habit of sending streaked collars and cuffs back to the wash room, but that is unnecessary. All that is required is to pass a damp cheese cloth over the article, and send it once more through the ironer.

Another frequent source of trouble, is the

CRACKING OF TURN-DOWN COLLARS.

To prevent this, where there is not a special turn-down collar machine, the collars should be made pliable, by putting hot water in the reservoir of the dampening machine, and when turned into the cuff shaper, the guide should be pulled out the full length and the pressure should be slackened. This will prevent the cracking.

It is a matter of no little importance, especially in damp weather, to keep the heating rolls of ironing machines from rusting during periods of disuse, as from Saturday night until Monday morning. This can be satisfactorily accomplished by rubbing the rolls well over with wax, which can be rubbed off again when the machine is ready to start up. This will be found preferable to the employment of grease in any form.

The following method is recommended in the starting of new machines, such as shirt, collar and cuff, and wristband and neckband ironers: Take a bar of sapolio, and rub the heated roll with a lather from the sapolio, using for that purpose a piece of flannel. Warm water, of course, is better than cold, for the lather. After rubbing until the roll is bright, clean and dry it thoroughly. Then heat the roll, wax it, set the pressure on, and run the machine. Let it run an hour or two, waxing every now and then, until the cloths on the padded rolls are sufficiently waxed; now take a piece of goods, such as the back of an old shirt, starch and dry it, and keep it running through the machine for half an hour and your machine will be in good trim.

ELECTRICALLY HEATED IRONS

SAVE TIME AND LABOR.

At the Central Indiana Hospital for the Insane at Indianapolis, the equipment of the laundry with electrically heated sadirons has reduced the number of employes at the ironing tables nearly one-half. The reasons why such results are possible are that the electric irons are constantly applied with a uniform amount of heat, nearly all of which is absorbed by the work, and by reason of the constant supply, every rub is equally efficient. There being no appreciable heat radiated from the iron, it is apparent that, in a room where the temperature can be regulated, and there is no vitiation of atmosphere, due to combustion, much more work can be accomplished.

CARE IN THE IRONING ROOM.

CLEANLINESS.

Carelessness is the greatest fault in the ironing room. After your goods are well washed and starched, they must be ironed properly to get fine work. In the first place be very careful in taking out of dry house, so the shirts don't get dirty by rubbing against the dry house, dropping on the floor, or lying on dirty tables. Have tables and racks thoroughly cleaned twice a day; in fact, everything should be kept neat and clean, that the shirts and collars come in contact with, to insure good work.

Next comes the

DAMPENING

process. Be sure your shirts and collars have a uniform dampness. If you get them too wet, it takes the stiffness out, and if they are too dry they will iron rough, and the operator will be rubbing with a sponge. The result will be a go-back, which is a bugbear in the laundry business. Some dampen by machinery, some dampen by cloths, and some by dampening the skirt of the shirt and laying it over the bosom. Dampening by machine is faster, just as good, and any intelligent person can soon gauge the machine so there won't be any trouble. Shirts and collars, after dampening, should be under the press not less than half an hour. Collars dampened over night and left under the press, will iron better in the morning.

Next comes the

IRONING

process. To iron collars see that your heated rollers are clean, and after they have the proper heat, wax them good and rub with a dry rag. After the heated rolls are in condition for ironing, and padded rolls are in condition, put on pressure two to five minutes until padded rolls get warmed up. The great fault I find in collar machines not doing good work, is the fault of the operator in not understanding the adjustment of the machine.

I once had occasion to take charge of a plant in the South, and the former superintendent had lots of trouble with the collar machine. In the first place the rollers were one-half inch out of level, and the proprietor was thinking of condemning the machine, but after everything was set true and properly adjusted, I turned out fine work.

Good help is very essential in the business; a bad operator can do as much damage in five minutes as you can repair in ten hours, and they will be laying the blame on the other operators, such as this shirt wasn't starched properly, or it was not dampened right,or some excuse, and the next thing will be several go-backs. Probably the foreman will be down stairs, not knowing what is going on in the ironing room, and result is, that next week the driver will complain about losing his customers.

I. D. L.

PIECE WORK VS. DAY WORK.

The fairest system of wage paying is that of piece work, and this is the system in use in most laundries for ironing. In other departments it cannot so easily be made use of, and therefore payment by the hour, day or week is substituted.

Piece work superinduces a kind of high pressure speed, which only the stronger women can keep up for any length of time. It has also perhaps, a tendency to make the worker more spasmodic, and less regular, than the day worker. Again, another evil in connection with piece work, is the tendency to scamp the work and do as much as possible, so as to earn a little more. This has to be counteracted by an efficient overlooker, who returns to the worker, anything not well done, and deducts the amount from her book. It would only be fair, that in case of a "turn-back," due to a piece worker, that a little more was taken off her book than would have been paid her for doing it, as there is loss of materials, gas for irons, etc., wasted for nothing.

In day work, the overlooker has to see that the hands do a fair amount of work—in piece work, that they do good quality work. Piece work can only be used where the hands are constantly engaged on one class of work. In laundries where they are moved from wash house to drying room, and thence to ironing room, the day or hour system is usually adopted.

Payment by week is the most satisfactory in the long run, as by either the day or hour system, the worker is inclined to dawdle and make the work last out as long as possible, whereas, if she gets so much for the week of 60 hours, and can leave when her work for the week is done, she will be inclined to push it on, and this is an important consideration in a laundry.

The usual price paid for ironing on piece work is roughly one-fourth of the price charged to the customer—thus, if shirts are charged 4d. each on the price list, the ironer is paid 1s. a dozen for doing them—London Laundry Record.

HOW TO HANDLE GASOLINE

FOR LAUNDRY PURPOSES.

MAYNARD, Mass., Jan, 20.

Editor National Laundry Journal:

Regarding the proper handling of gasoline, knowing that many users are unfamiliar with its properties, and experience much difficulty in its use, especially in cold weather, I respectfully submit the following for their consideration:

Where a pressure blower is used to generate the gas, it should not take its air from within the laundry, for this air being charged with moisture, carries quantities of water to the generator, and this settling at the bottom of the generator, prevents the proper flow of gas, until it is drawn off.

Arrange the blower to take dry outer air, and hardly any trouble will result. A good way is to have the duct to the blower of sufficient length to place in it, a small steam coil, and thus the air to the generator will be warmed and help the flow.

These generators should be buried in the ground, below where the frost will reach them, and their capacity will thus be appreciably increased, and little trouble will be experienced with them, though a means should be provided for running out the residuum from time to time.

I should be glad to aid any who experience trouble in any way with the use of this dangerous fluid.

F. H. HARRIMAN.

GASOLINE IN LAUNDRIES.

In reference to gasoline, let me say, that our generator is placed inside the laundry, so is the blower, which also draws the air from the inside, nor is there any means provided in generator for drawing off residuum, none being required, as no water accumulates there.

Where there is trouble in generating gas from gasoline, the cause will probably be found in the gasoline, and not in the air supply.

There are two kinds of gasoline used in laundries, common stove gasoline, and that of higher test, made and sold for mechanical purposes only.

Where no generator is used, and the supply of gas is obtained by the ordinary gasoline burner, common gasoline is all right. Where there is a generator, and power blower, that sold for mechanical purposes only should be used, and there will be no trouble in keeping a steady flame in the machines.

GAEL.

THE SORTING TABLE.

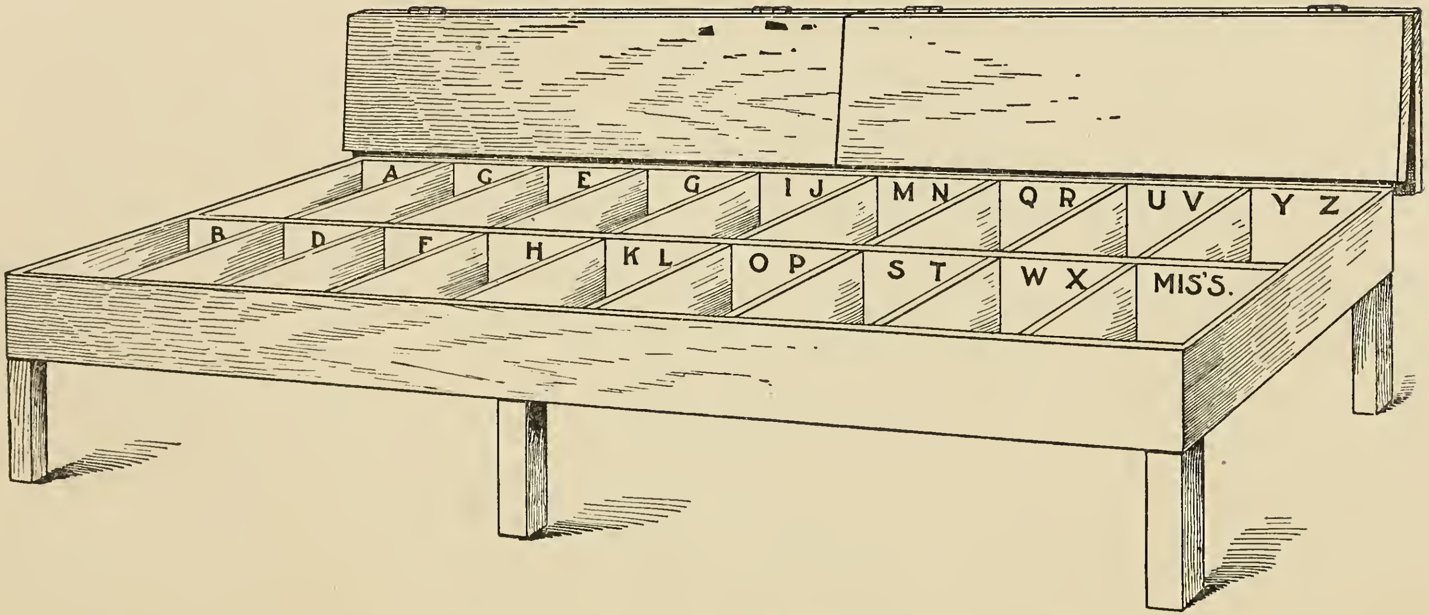
On page 210 is presented a diagram for a sorting table that will be found convenient. The top, or cover, is made in two parts, split lengthwise, the latter being hinged together, and the whole hinged on the table so as to raise and fasten up in sections.

Beneath the cover is a space about 10 or 12 inches deep, the full width and length of the table, divided to suit convenience, and lettered or numbered, according to the system of sorting collars and cuffs. Light lumber can and should be used for the boxing beneath.

The reason for making the cover in two parts is, that after sorting your collars and cuffs into the different bins, you can, while taking them out of the bins at one end to sub-sort them, have the other end of the table to work on.

SORTING BOXES.

The economy and convenience in having sorting boxes that can be moved from one place to another, without delay, or destruction, over those that are built and plentifully nailed to the floor and side of the building, is evident. The boxes shown in diagram on page 212, are built six in a section, each section to stand upright, and can be fitted closely in a tier to fill any place desired, and added to conveniently, as trade increases.



SORTING TABLE, SHOWING TOP ON HINGES AND FOLDED BACK.

See article on page 209.

Where any unusual season rush is anticipated, more can be put in, and after the season is over, stored away for another time.

The boxes shown are 10½ inches square, inside measurement, and about 16 inches deep. Any size desired can be used. A much larger box is used in some laundries, and made to answer for two small packages in sorting, but the smaller box will likely be found most practical, using two or more of them for large packages.

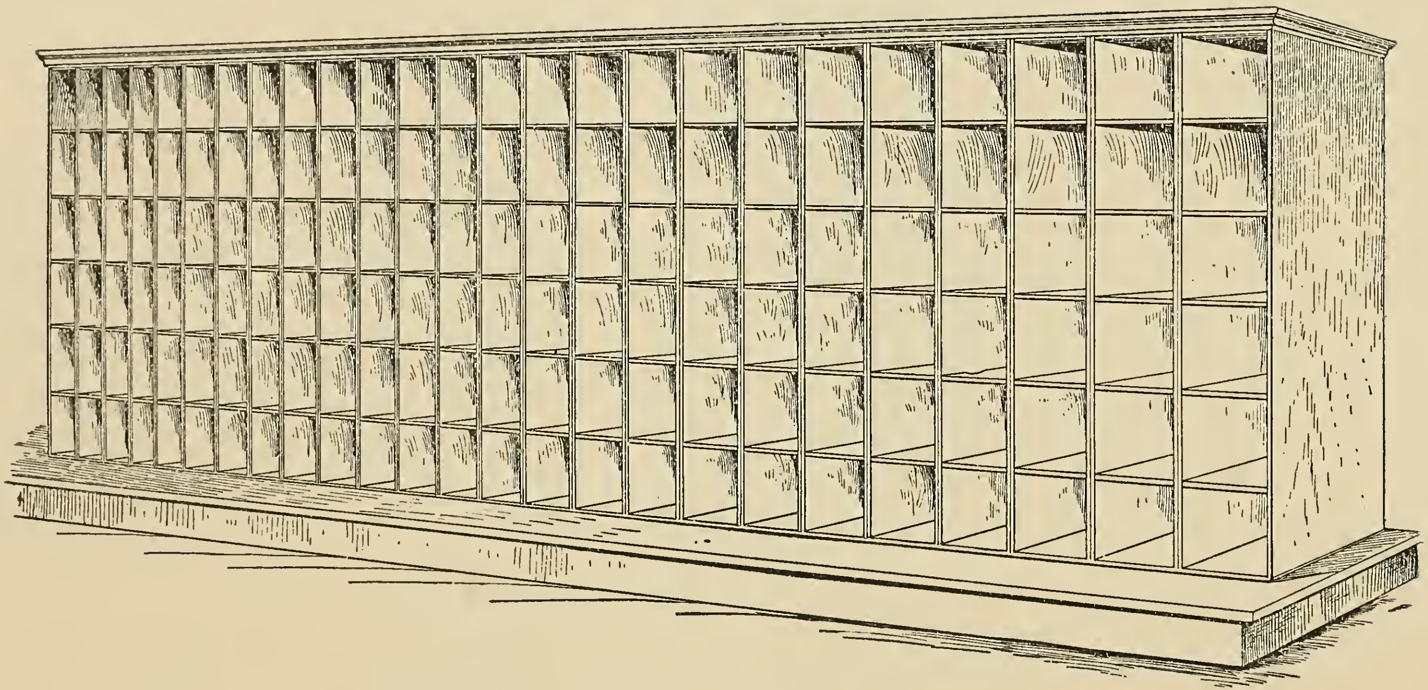
They should be set on a platform about 6 or 8 inches from the floor, in order to keep the sweeping dust out, and a curtain hung before them, which can be instantly raised or lowered, by attaching a number of cords to the same, about six feet apart, and about one-third its height from the bottom, running the cords through screw eyes or small pulleys attached to the ceiling, and bringing the cords down together at one end of the curtain; same as an awning is raised and lowered. This will be found convenient and very advantageous in also keeping out the dust.

The tier when complete can be fastened together simply and substantially by putting a narrow strip along the top and a screw or small nail through the strip, into each section.

A finish of any degree desired can be put in a molding along the front and ends, making the whole a very neat piece of furniture, and in cases where the sorting boxes are in view of the office, the same can be painted, grained, or if desired, made of hardwood, which finished in oil, would make a very fine piece of cabinet work at a moderate expense.

EXAMINING ENGINEERS.

Put twenty engineers of equal ability in a room and submit a list of questions relating to the practical part of their business, to them; out of the twenty there will be, say six, who will return categorically correct answers to all the questions; four who will not answer some of them correctly, the others will not answer them at all, or, if they do in part, will answer them incorrectly. Why is



DETACHABLE SORTING BOXES.

See article on page 209.

this? The answer is very simple. Few men can put their knowledge of a business into the form of words, much less explain orally why they do certain things, and when they do them.

They understand their business thoroughly, but are unable to put their knowledge in either a written or colloquial form. Put such a man in charge of a steam plant and he will demonstrate his capacity in a short time; and it is his misfortune that he cannot explain it to others.

This disability is a very serious one when men have to be examined for licenses, and grave injustice can be done unless the inspector is a good judge of human nature, or has been there himself.

We make bold to say that a man may be safe and thoroughly capable, and yet be wholly unable to obtain a certificate from the authorities, for the reason that in some states the examinations are so exacting, that if he could answer all the questions correctly he certainly would not need to run an engine for a livelihood; he would be well qualified for a consulting engineer. The very first requisite for capacity in a man who has charge of a steam plant is proper personal habits and intelligence. If he is dissipated and careless, no matter how expert he may be, he is not reliable.—Exchange.

ECONOMY AND WASTE.

Very few people who use steam power in laundries are sufficiently careful to economize fuel as much as they might do, says a writer in London Laundry Record. Boilers and steam pipes should all be covered with some non-conducting material, of which there are many in the market.

In some laundries one sees the steam and water pipes running all over the place until they form quite a network, whereas, by a proper arrangement, half the number might be discarded. This is waste, especially in the case of steam pipes, as the steam has so much further to travel, and more time to lose its heat.

All steam cocks, water taps and pipe joints must be kept tight; a little leak in these matters causes a good deal of waste if not attended to.

All exhaust steam should be made use of, either to heat the water for the wash house, or boiler feed, or for heating the drying rooms.

All live steam outlets should be trapped; not only does this increase the heat or decrease the quantity of steam required for the same heat, but the water condensed by these traps is invaluable for blanket and flannel washing, and if the lifting traps are used may be thrown into a tank, to be drawn off as required.

Cold water should never be fed to the boiler; it is not only expensive, but wrong in principle. It should be passed through a feed water-heater first. The feed also should be regularly fed in small quantities, so as to maintain the water at an even height, rather than pumped in in large quantities when the water in the gauge is almost out of sight.

Ironing machines should be fitted with reducing and safety valves, so that there is no possibility of the iron undergoing a greater pressure than the makers guarantee it will stand.

Oil cups should be used wherever possible. Simple oil holes are liable to fill with dirt and become useless, and even at the best of times, the engineer wastes more oil round the hole than he puts into it. Tins should be placed under overhead bearings where there might be possibility of drip on the linen.

Leather belts will last double the usual time if thoroughly rubbed with castor oil occasionally, and left for 24 hours to allow the oil to penetrate. They will remain flexible and will not crack.

Metal pulleys covered with leather will give 50 per cent more power than the naked pulley.

Balata belting and split wood pulleys are very suitable for use in laundries and give good results.

If you are engaging an engineer do not try to get the cheapest man you can; he may do you hundreds of dollars' worth of damage by his incapacity, and his ignorance may make it necessary to call in outside help for pipe-fitting, etc., which could easily have been done by your own man if he had the knowledge.

A poor fireman may waste a great deal of your money in coal, will get you into trouble for making a smoke, and still not give you as good steam as the man you declined because his wages were too high. The choice of an engineer requires great judgment, and when you get the right man keep him, even if you are paying him high wages.

Many laundrymen pump their rinse water from the washing machines into a tank, to be used over again for washing the next load. It is almost perfectly clean, slightly softened, and requires less soap than if it came straight from the main. Whether the saving is worth the expense of pumping depends largely on the hardness and the price of water in the particular district.

If you notice that your washing machines are foaming over with suds, you may feel sure your man is wasting soap, and should inquire into it.

Overflowing washing machines with water is a great source of waste, as also is overboiling a waste of steam. To run the washers or the hydro-extractors longer than is necessary to satisfactorily complete the work they are doing, is a waste of power and therefore waste of fuel. These may be self-evident facts, but they are often overlooked.

It is not economy to purchase poor quality materials because they are low priced. Your reputation for good work will never be established if you use poor or injurious materials.

Carelessness in removing ironing machine felts and calicoes, or in washing them, may cause them to be so damaged as to be unfit for use again.

Bad work resulting in "turn-backs" is a great waste of time and material.

Unless there is some well understood arrangement to govern work done for employes, it will be found they are smuggling in quantities which you are doing free.

A great deal of time is wasted in the course of a year by the unpunctuality of hands, and a further waste occurs because the irons or ironing machines are not hot when the workers arrive. This might be saved if the engineer or some other person engaged for that particular work, was instructed to have everything heated up and ready for use by the time work should begin.

Patching up, instead of replacing, worn-out machinery often results in a greater expenditure than the cost of a new machine, to say nothing of the dissatisfaction that is given by the patchwork. In the laundry business "a stitch in time saves nine" is as true as in other occupations, especially in the care of machinery.

ENGINEERS' LICENSE.

An engineer's license is an implied guarantee from the inspectors to the public, that the holder of it is a suitable and safe man to be in charge of a steam plant, and inspectors should be careful to satisfy themselves that the facts in the case of every man are as set forth.

Suppose that in the event of a disastrous explosion with a loss of life, where a licensed engineer was in charge, it transpired that he was a man of notoriously bad habits, that he had been repeatedly cautioned and reproved for remissness, but that he had been suffered to retain his license and position; upon whom would the responsibility for the disaster rest? Would not the public prosecutor have a good case against the inspectors who allowed the careless man to hold his license? This is a question for the courts, but an able lawyer would have little difficulty in presenting a strong claim upon this ground.

In arguing in favor of personal character and habits, as of the first importance, in considering the claims of candidates for licenses, we are not blind to the importance of a thorough knowledge of the business of engineering in its practical aspects, but we question whether the methods for examining candidates in general discover the abilities of all of them.—The Engineer.

RULES FOR ENGINEERS.

CONDITION OF WATER.

The first duty of an engineer when he enters his boiler room, is to ascertain how many gauges of water there are in his boilers; never unbank or replenish the fires until this is done. Accidents have occurred and many boilers have been entirely ruined from neglect of this precaution.

LOW WATER.

In case of low water, immediately cover the fire with ashes, or, if no ashes are at hand, use fresh coal; don't turn on the feed under any circumstances, nor tamper with or open the safety valve; let the steam outlets remain as they are. In case of

FOAMING.

Close throttle, and keep closed long enough to show true level of water. If this level is sufficiently high, feeding and blowing will usually suffice to correct the evil. In case of violent foaming caused by dirty water, or change from salt to fresh, or vice versa, in addition to the action above stated, check draft and cover the fires with fresh coal.

LEAKS.

When leaks are discovered they should be repaired as soon as possible.

BLOWING OFF.

Blow down under a pressure not exceeding 20 lbs., at least once in two weeks; every Saturday night would be better. In case the feed becomes mouldy, blow out six or eight inches every day. Where surface blow cocks are used, they should be often opened for a few minutes at a time. After blowing down, allow the boiler to become cool before filling again; cold water pumped into hot boilers is very injurious from sudden contraction.

REMOVING DEPOSIT AND SEDIMENT.

In tubular boilers, the hand hole should be often opened, and all collections removed from over the fire; also when boilers are fed in front and blown off through the same pipe, the collection of mud or sediment in the rear end should be often removed.

SAFETY VALVES.

Raise the safety valves cautiously and frequently, as they are liable to become fast in their seats and useless for the purpose intended. Should the gauge at any time indicate the limit of pressure allowed, see that the safety valves are blowing off. Keep gauge cocks clear and in constant use. Glass gauges should not be relied upon altogether.

BLISTERS.

When a blister appears there must be no delay in having it carefully examined and trimmed or patched, as the case may require. Particular care should be taken to keep sheets and parts of boilers exposed to the fire perfectly clean, also all tubes, flues, and connections well swept; this is particularly necessary where wood or soft coal is used for fuel.

A WATER PURIFIER.

Within the past few years, economy in the use of steam has been very great. Since 1840 the fastest ocean steamers have increased their speed from 8-3 to 15-5 knots per hour, and the consumption of fuel, per indicated horse power, has been reduced from 4-7 hundred weight, to 1-9 hundred weight, a wonderful increase in speed and economy in fuel.

This result is not due to any improvement in the nature of steam or fuel, but to improved machinery, and one of the best and greatest improvements is a water purifier placed between boiler and engine, to feed water heated (with exhaust steam) to 212° Fahrenheit, the highest point to which water can be heated in this manner, and if it did nothing more than to save fuel by increasing the temperature of the feed water, this alone would make it very desirable.

The indirect benefits derived from the use of this are even greater, because, with few exceptions, the water used for making steam contains more or less animal and less vegetable matter, which can be separated only by bringing the water to the boiling point. If water is used without being purified, the impurities are separated in the boiler and deposited on the shell and flues in hard scales, which are non-conductors of heat between boiler and water. In the purifier the water is boiled and purified, and the impurities thus separated do not again unite with the water, but are deposited in the purifying pans and inside the tubes of the purifier. Without a good purifier these results cannot be obtained. The presence of scale or sediment results in burning and cracking the boiler, causing explosions, extensive repairs and waste of fuel. Scale one-half inch thick is not uncommon in districts where water contains much matter, the accumulation in a boiler often amounts to 1-16 inch in four months. After one month's use the boiler will require 3¼ per cent more fuel, after two months 7½ per cent more, an increase of 20 per cent in the consumption of coal the first year.

The Railway Master Mechanics' Association of the United States estimates that the loss of fuel, and extra repairs incident to incrustation and sediment, amounts to an average of $750.00 per annum, for every locomotive in the middle and western states, and it must be nearly the same for the same power in stationary boilers.

The question of economy in fuel is one of great importance. That occurrence is not rare where mills and factories, it they could have been run with a trifle less expense, have been obliged to suspend, because their fuel bills were such serious drains on their resources, and as the expense of fuel is likely to increase with coming years such purifiers, will prove a boon to steam users.

When a boiler becomes incrusted and filled with sediment, it must be cleaned, as the risk of an explosion is incurred, so the machinery must be shut down, pressing orders delayed, and a force of hands, whose pay, perhaps continues, must remain idle while the boilers are being cleaned. With the water purifier attached to your boilers, you will not meet with any inconveniences. Place a cut-off valve in the exhaust pipe, shut the steam off the purifier, and clean the same while running—a saving in time and expense.

In many cities it is almost impossible to find water that is suitable for laundry work without using chemicals for softening the water suitable for washing, which is very injurious to linen. With the water purifier in your laundry these difficulties are dispensed with; also the saving in fuel is a very important feature. It can save you from 20 to 30 per cent in utilizing the exhaust steam for boiling and purifying your water, doing away with drawing the live steam direct from the boiler for this purpose.

ECONOMY OF WASTE BOILER HEAT AND EXHAUST STEAM.

BY USING FOR DRY ROOM—FOR HEATING WASH WATER.

The question is often asked by laundrymen, says one of our correspondents; can the exhaust steam from the engines be used, by letting it go direct into the tank, without bad results from the oil in washing; and can the heat from the boilers and stacks be used in the dry room, without dust from the boiler room doing harm to the clothes while drying? After years of experience, in both cases I can answer yes.

By way of introduction I will give some idea of our laundry. The building is 50 feet front by 100 feet deep, two stories high.

Steam is made by two 25 horse power steel boilers, and the power driven by one 25 horse power automatic steam engine; the exhaust steam from the engine is passed through a three-inch pipe, into a 50-barrel steel water tank on the second floor, the engine being on the first floor.

To stop the noise made by steam discharge into water through an open pipe, I run the three-inch exhaust pipe over the top of the tank, and from this pipe, seven three-inch pipes running down into the water to within six inches of the bottom, with elbows and a short nipple, so as to shoot the steam and water outward and not against the bottom. The object in having so many down spouts is to give plenty of space for the steam to cushion against the water and condense—the more room the less noise.

Now, as to engine oil in the water, I will say I have a three-inch overflow pipe running up through the centre of the bottom of the tank, coming up to about four inches of the top of it, and any oil coming into the water with the steam, passes to the top and runs off to the sewer with the overflow when the tank is full, or floats on the top of the water until it does overflow. During the past six years that I have used exhaust steam for heating water for washing, I have not seen any indication of oil in the clothes or any bad results, and I am of the opinion it is the best way exhaust steam can be used and saves money.

Now as to boiler and stack heat for the dry room. If your plant is conveniently arranged, it is practical and economical. I use two dry rooms, one on the first floor for underwear and woolen goods, including blankets and bath towels, and placed alongside of the boiler room, with steam from the boiler to the engine, mangles, washers, etc., passing through the top of it; also the usual bottom coils, with some 200 feet of inch pipe around the three sides. The dry room is lined with galvanized iron to reflect the heat, and does good work in every way.

Now for the boiler and stack dry room. As I said before, I have two 25 horse power boilers, each boiler having a separate 24-inch stack made of steel, the boilers being so arranged, with separate water feed, steam gauges and connections, that we can use either or both boilers at one time, according to the work or steam required. Over the boilers is the starch goods or upstairs dry room, with the stacks running through it. Part of the floor is taken out over the boilers so that the heat can rise to the dry room. This stack heat being of a dry nature, assists materially in drying, and galvanized iron is used for lining, with an exhaust steam coil of some 400 feet of inch pipe arranged around the sides. It is the best dry room I ever saw for fast work, and there is no dust or dirt of any kind. I have not had a throw-back this year from that cause, as the boilers are what is known as the fuel front, and the space over the fronts is filled in with galvanized iron, so that no dust from the handling of coal or wood can get to the dry room. The steam goes direct from the boiler to the dry room above it, then through the dry room on the first floor, and exhaust through a two-inch pipe to a washer that stands near the feed pump to the boilers. The boilers are located in the southwest corner of the building, also the dry rooms, and the exhaust runs north along the west end of the building to the washers and pump, and the feed water to the boiler, from the pump, runs through a three-quarter-inch pipe inside of the two-inch pipe that carries the exhaust from the dry rooms to the washer, heating up the water going into boilers, to near the boiling point, after leaving the pump, before entering the boilers, without any elbows to pump against.

Perhaps this may be of interest to your readers; it has been very satisfactory to us.

C. T. GILMORE.

CLEANING BOILERS.

When laying off a boiler for cleaning, the best practice is to let the steam die away and the water cool down a little before emptying. If, however, there is no time for this, the steam should be blown off through the safety valve, and the water afterwards run off. It is not a good practice to use cold water to cool a boiler, but in case of urgency cold water should be mixed with the hot in the boiler, and so cool down gradually.

To empty a boiler while hot and then fill up with cold water is to run a great risk of leakage or fracture at the seams. Be sure all steam is gone before removing the manhole cover; there have been many firemen scalded to death through not attending to this. It often happens there is pressure in the boiler when the steam gauge stands at zero, and some tap open to the atmosphere should be opened to make certain all steam is gone.

In case of two or more boilers working together, another point requiring attention is that the connections to the boiler at rest, blow-off tap included, are all closed and secured in some way against being opened inadvertently. Many have been severely scalded through this precaution having been neglected, while they were at work inside the boiler.

When setting a boiler to work, which is connected with others, be sure the steam pipes are not full of water. Many steam pipes are so arranged that this occurs each time a boiler is laid off, and the difficulty is got over by having a drain tap at lowest point of each steam pipe. This tap should be opened slightly as soon as the boilers are disconnected, so that the condensed steam may drain away as quickly as formed, and so keep the pipes clear. Should this be forgotten and the pipes get full of water, it is imperative that the steam valves of all boilers at work should be closed before the drain tap of the boiler at rest is opened. If not, the steam will condense so rapidly in contact with the cool water that the valves or pipes may explode.—Exchange.

PREVENTION OF BOILER INCRUSTATION.

A method for the prevention or removal of boiler incrustation is recommended by Rubricius, an Austrian chemist, and is said to have furnished remarkably good results during the period of one year or so that it has been in use in Anina and other localities in Austria-Hungary.

To the feed there is added a mixture consisting of 90 per cent. of soluble chromates and 10 per cent. of soda; these salts transform the more or less soluble carbonates contained in the water, into insoluble matter, which settles in the shape of slime without adhering to the walls of the boiler, and the latter can easily be cleaned by washing.

The beneficial effect of such a process will, it is claimed, be felt even in the case of boilers which are already lined with thick layers of incrustation, for these will be gradually reduced and transformed into slime.

In practice Rubricius states, it is required that one-tenth of an ounce of the mixture should, on average, be added to thirty-five cubic feet of water—for an ordinary boiler three or four ounces a day will be found sufficient for the purpose. Again, in the case of water, with very high lime contents being employed, the dose should be increased in quantity somewhat; whatever the occasion in hand may be, the exact quantity requisite can be easily determined by a previous test.—Exchange.

CLEANING OF FLUES.

AND OTHER POINTS FOR CARE AND ECONOMY.

When flues are cleaned, see that the plates are swept clean, as a great deal more heat is lost in passing through the soot than through the plates themselves. This also applies to scale inside the boiler, and it will be found economical to keep the plates as clean as possible, both inside and out. Don't shake ashes on the floor plates, as it often causes corrosion of the end plates of the boiler, and repairs are frequently necessary from this cause.

A little attention should be given to keeping the fittings clean and in good working order. The top of the boiler should be swept down occasionally and not be used as a lumber room for old stores, as is the case with many at present. Should an explosion occur, an inquiry as to its cause would be held by the city officials, who would fix the blame on someone, often the unlucky owner, who has often had a heavy fine to pay, in addition to having his boiler destroyed and the place wrecked.

COAL AND STEAM.

Eighteen pounds of air are required for the combustion of one pound of coal, and this air should be supplied in uniform quantity. Unfortunately, this cannot always be done, owing to the fact that firemen are not careful enough to always keep a uniform amount of fire on the grates.

With six inches of fire on the grates, we will assume that the proper amount of air will be supplied to make good combustion. Now if we increase the depth of this fire to ten inches, we do not get air enough through it to support good combustion, and the carbonic acid gas which rises up from the green coal on top of the fire, becomes converted into carbonic oxide, and at the same time steals carbon from the coal in excessive quantities, and it goes up the chimney as black smoke, after depositing a coating on all the surfaces of the flues, etc., with which it comes in contact, rendering them more impervious to the transmission of heat than before.

Soot, or the deposit of carbonic oxide from coal, is nearly as good an insulator against heat, as glass or rubber is to electricity. If an engineer wants to get a good connection to an electric wire from his dynamo, we hardly think he would wind the binding post with rubber paste, and yet that is exactly what he does with his boiler when he carries too heavy a fire and winds the surface of his flues with a dirty black coating that thoroughly insulates them from the fire, and prevents the heat from getting through into the water inside the boiler.

The greatest trouble noticed inside the fire room is that the disposition seems to be to fill the furnaces up so that they will not have to be attended to again for so long a period as possible, leaving the fireman a longer period in which to smoke, or tell "Pat" another new story. This is one reason why a mechanical stoker may eventually drive all the firemen out of the boiler room.

A good, intelligent fireman can produce just as good and economical results as a mechanical stoker; but he won't; the only advantage that a mechanical stoker has is, that it puts a little coal on the fire at a time, and does it often. We never used to put on more than one scoop full of coal at a time without shutting the fire box door, and a man who puts in more than two scoops full at a firing was considered a poor fireman.

Another feature in the transmission of heat, which has been seldom alluded to, is what we would term heat impact, for want of a better term. What is meant by this, is, that if the flames and heat from a fire are impelled directly against a surface they will heat it hotter, and convey more heat through it to a liquid or gas beyond it, than if the same heat and flame is only allowed to pass alongside and "rub up against" the same surface. Why this is so the writer candidly confesses "he does not know." That it is a fact he thoroughly believes, and has seen many examples of its proof and talked with many men who believed the same thing.

Perhaps one illustration which would be comprehended by the average engineer would be this: In the fireplace, we all know, that blowing a fire makes it much hotter than "sucking" it would; in other words, than an artificial draft produced by an exhaust fan.

Perhaps a little better illustration yet, is the fact that may be noticed in an ordinary wood-burning stove having two elbows in the stove, one near the stove and the other near the ceiling of the room where the pipe enters the chimney. A hot fire of shavings built in the stove will make the pipe red at both elbows, while between them the pipe will remain black.

This feature of impact of heat is why we think that a shell of the boiler does more steam-making than the flues, and why such good results are obtained from some of the internally fired boilers, although the combustion cannot be nearly so perfect, owing to the lowering of the temperature of the fire, by the close proximity of water on the water side of the fire box sheets, when the chemical decomposition of the coal, called burning, first takes place. After it has taken place, and the proper amount of air has been mixed with the hydro-carbons to make perfect combustion, the cooling influence of the adjacent water does not seem to make much difference.

In other words, keep out of the furnace of your boiler, all circulating pipes, water legs, etc., with fire light enough to allow of all the air necessary passing up through the grates, or else admit through the damper in the fire box—which is generally not large enough but can usually be successfully supplemented by pushing back the fire directly in front of the door so as to admit some air through the grates at this point. The air will unite with the flames and be burnt up before it gets to the flues and will make a much hotter fire.

Close your ash pit doors somewhat, after your fire has burned off its first effects, and you will be surprised how much fire you can save, or, in other words, how many tons of coal a day you can avoid shoveling, and also that by doing this you are making less ashes, which you must rake out and shovel up and wheel off at night. If five tons of coal, well burned, are enough, you ought to have 600 pounds of ashes, or three wheelbarrows; while if you use seven tons of coal for the same work, you will surely have 1,800 pounds of ashes and have to shovel out nine barrow loads. This is no fancy statement.—W. O. Webber in Machinery.

THE USE OF CONDENSERS.

The question often arises in power practice, When is it advisable to use a condenser? It may be broadly answered, When there are ample cooling materials, fluids or mediums of any kind in sufficient quantities to be applied to a ready and economical withdrawal of the final heat from the steam, after final use, to change it back to water at greater or less temperature. Under such circumstances there, of course, arises the question of obtaining, handling, and operating the cooling medium without too great a cost. Although water at ordinary temperatures is the prevailing cooling material, any fluid capable of being brought into direct or indirect contact with the steam or vapor as discharged, may be employed.

If, in engine practice, this heat could be withdrawn during, and by actual work, within the cylinder, no hinderance being experienced through the pressure of the resulting water, the most economical condition and use of steam in engines could be reached. Such not being the case, the condenser is connected for the purpose.

Although an expensive assistant, the fact that it developes a liberal or even a medium profit on the investment, is a sufficient cause and positive recommendation for its use. There may, however, be additional uses to which it may be applied with ready economy—the heating of buildings, for example, of drying rooms, of water for special uses, and similar objects. These may take up a portion of the surplus heat and thus reduce the pressure of the steam; but, except by the use of the condenser, or some equivalent, no vacuum can be established.

The nature and latitude of the locality of the plant has considerable influence in the condenser problem. Equatorial waters at comparatively high temperatures are not as efficient as those of more northerly or southerly locations. The chemical nature, too, and the cleanly condition of the water to be used, both becoming a governing element in the mechanical branch of the problem. The use of the surface condenser, in preference to the jet condenser, is at all times advisable, and in fact necessary, where the waters to be used for cooling purposes, contain elements and ingredients detrimental to economical operation.—Wm. H. Weightman, in Cassier's Magazine for September.

OIL FROM CONDENSED STEAM.

There has been so much trouble caused by oil pumped into boilers with the feed, from surface condensers, that anything bearing upon the subject will be read with interest, especially when it relates a solution of the difficulty, as does the following extract from a paper presented to the New York Street Railway Association by H. S. Newton.

The character of the water around Syracuse made it very desirable that the condensed steam should be utilized, if possible, and after what promised to be some very disastrous experiences, a condensing apparatus is running very successfully, and over 90 per cent of feed is obtained from this source.

The immediate result on starting this process, was oil in the boilers, or a mixture of oil and dark brown sediment, which caked over the bottom seams. This was removed and another trial made, it being thought the deposit might be shop grease and dirt, but with the same result. Examination of the filter showed nothing out of order, and consultation with the engine builders evolved nothing new. After endless experimenting, resulting in a leaky boiler or two, and the consumption of a vast amount of chemicals, the trouble was satisfactorily located and remedied.

The accumulation noticed seems to have been the result of three causes (1) the use of too much cylinder oil; (2) the use of the wrong kind of cylinder oil; (3) insufficient filtration of the oil from the feed-water before going to the boiler. The first of these causes was, of course, soon remedied, and the old-fashioned notions of engineers were shocked with the order to use only three drops a minute for each engine. The remedy for the second cause was longer in being discovered.

Various expedients were tried for cutting up the grease in the boilers, such as carbonate of soda, soda ash, trisodium phosphate, and lastly, kerosene oil. None of these expedients proved effective, however, and it was not until the cylinder oil was changed that the problem was solved. Some oil of purely mineral stock was purchased, and has worked so well as to lead to the conclusion that it must have been the animal fat in the other oil which was doing the mischief.

This oil is now being used with remarkably good results, never more than a slight film being apparent in the boilers at the time of the weekly cleaning, and this readily succumbing to a half pailfull of soda ash pumped in with the feed-water before cooling off. The third cause of the trouble was recently largely overcome by introducing a number of partitions in the oil filter, by means of which the water is caused to flow alternately over the top of one end and under the text, in this way allowing the oil to settle from its water emulsion, and be collected in the excelsior filling.

SMOKE PREVENTION.

(Extract from lecture by Prof. C. H. Benjamin, before the Cleveland Engineers' Club.)

Quite a number of experiments were made several years ago on a very black, dense smoke. It was all collected, and the amount of solid matter was determined by weight. It was found to be in all one-third of one per cent, or one three-hundredth of the coal burned at that time. Probably one-half of this solid matter was carbon, showing that the amount of coal which is actually wasted, is one six-hundredth part of the coal. This shows that there is no economy in burning smoke, so far as the manufacturer is concerned. It is his neighbor that would profit by the change.

In preventing smoke the principal requirements seem to be:

1. That the coal should be evenly heated.

2. That there should be a free supply of hot air heated to the temperature of combustion.

3. That the volatile matters distilled from the coal shall pass through gases of such temperature that they

shall be burned, so it shall be impossible for the gases which distill from the coal to escape by the chimney or to become cooled after once having been ignited.

The great mistake that many manufacturers have made in trying to invent a smoke-preventing device by the introduction of air about the fuel or at the bridge wall is, that they have not made their air hot enough. The introduction of cold air is a disadvantage rather than an advantage, as far as preventing smoke is concerned. It will produce smoke where none existed before.

There are a number of stokers on the market which, under ordinary conditions, with uniform firing by a careful fireman, will operate to prevent smoke successfully and with good economy. These different styles of stokers all have a common principle, that of maintaining the thickness of the fire uniform, and of supplying the air either by means of steam jets or otherwise, at a high temperature above the coal, and insuring that all the volatile matter should pass through a hot place on the way to the chimney.

The great difficulty with all mechanical stokers is the fact that in many establishments there are many sudden demands for steam pressure, and there is a possibility of its being necessary to double the amount of steam used within fifteen minutes or half an hour. Many stokers are not adapted to that kind of treatment. This is one reason why they have failed of adoption. A stoker cannot respond so readily to a sudden demand for more steam.

I will mention what seems to me to be the requirements of a good smoke-preventing device. In the first place, variable feed. It is necessary that it should be possible to vary the feed of the stoker quickly and conveniently. In the second place, it is necessary that the spacing of the grate bars should be variable; that the air spaces between the bars may be varied, and the coarseness and fineness of the grate may be quickly adapted to the peculiar kind of coal used. Third, it is necessary that the grate bars should be of the automatic shaking type, so as to prevent the formation of clinkers and facilitate the dropping of the ash. Some form of air control is quite important.

Almost any form of stoker or grate, under hard service needs a high chimney. The great difficulty in many of our establishments is that the chimney is not high enough, and the draft not powerful enough. There should be a margin, and the fireman should have the means of controling it. If there is not enough draft, the fireman cannot do anything; if there is too much, he can easily reduce it. It is impossible to get good results with a small grate, which is large enough under ordinary conditions, but not large enough under sudden emergencies. In order that a stoker may commend itself to a purchaser, it should be easily accessible for cleaning and repairing, and it should be so located that it can be taken out and replaced without tearing out the whole front of the boiler.

It has been claimed by opponents to mechanical stokers, or to any form of furnace which is intended to prevent the formation of smoke, that it is impossible to realize the full duty of a boiler when equipped with such a device. I know from my own experience that is not true. I have made experiments with one form of stoker, and continued them for several years. I found it entirely feasible to double the rated capacity of the ordinary return tubular boiler without the formation of smoke. Of course, when the fire is being cleaned there is a little smoke.

THE LAWS OF FRICTION

AND LUBRICATING OILS.

The lubricants for machinery in most common use are animal and mineral oils, and these are graded to meet all requirements.

It is a pretty generally accepted proposition that the quality of an oil usually improves as the price increases; but it would be a positive error to use an oil whose increased useful effect would be insufficient to justify the greater cost. On the other hand, it would be just as false economy to use an oil of half the cost, if it required more than twice the quantity to produce the same effect. But the price of an oil is not always a measure of its quality, because while one dealer may succeed in selling a prime grade of, say cylinder oil, at four shillings per gallon, another dealer, satisfied with a closer margin of profit, may offer an oil equally as good at three and nine per gallon.

It is safe to assert that not one consumer in fifty is a competent judge of the quality of the oil he buys; much less does he know about its component parts; for, with the exception of sperm and lard oils, all other lubricating oils are compounded.

For example, mineral cylinder oil is usually composed of cylinder stock and paraffine oil, while a cheaper grade includes also neutral oil and mineral gelatine. A "heavy body," so called, is not always indicative of the best lubricant, because a body may be given to neutral oil, for example, by simply mixing it with mineral or with animal gelatine. Now, the gelatine in this compound has very little of lubricating qualities in itself, while the neutral oil has none whatever; but mixed together, they produce an oil with a heavy body, so tempting and alluring to the average buyer of lubricating oils.

It is a fact also, and it is well to bear it in mind, that the oil possessing all the essentials and characteristics of a good lubricant may have too much body for the bearing to which it is to be applied, so much indeed, as to cause a resistance to the power driving the shaft. If we examine, under a microscope, a shaft journal which is perfectly cylindrical and smooth we will find the surface apparently quite rough and covered with indentations, grooves, and ruts. These afford lodging places for the oil, for otherwise the bearing could not be kept cool through the agency of the oil, since a film of oil must always be present and intervene between the journal and its bearing. Thus we see that only sufficient body in an oil is required to keep it from running off the journal, as pure water would, whether the journal was revolving or at rest. Any more body than this would be a positive detriment, in so far as causing a resistance to the power driving the shaft.—Ex.

ENGINE CONSTRUCTION.

One of the greatest trials at the present day to an engineer handling large horizontal engines is the continual wear in the cylinders, caused by the weight of the pistons. Of course considerable of the friction is obliterated by the free use of good cylinder oil, but, as most of the large plants are equipped with surface condensers, the free use of oil destroys the water of condensation as a boiler feed, so to get at the bottom of the trouble, we will see if we cannot improve on the engine during construction.

In the first place could we not have pistons made of other metal than cast iron, whereby we could reduce the weight say 5 per cent. and have the same or greater strength? Malleable steel, for instance, formed to lines which would offer the greatest resistance for the least amount of metal, and not of the now old-fashioned flat disc form.

Why do not builders recognize the value of building an engine with the piston light and strong, supported by the rod alone, or one end by the cross-head proper, and at the other by one much lighter but still adjustable, working on a slide back of the engine, by that means avoiding all internal lubrication, except such as the valves require.

In the first place we would save the amount of labor necessary to examine and wedge piston up to center from time to time. Second, we would have the rod running always in a parallel line, making it easy on packing. The greatest saving of all would be in the value of our water, which would be something astonishing, considering the first cost of building an engine with some forethought. It is also safe to say that the cylinder oil used would be decreased to 10 per cent. of the original quantity, as the lubricating of the outside valves would be all that would be required.

There is also a great tendency among engine builders to try and make one set of patterns for valve gear and lighter parts cover a variety of sizes of engines, and as a result the larger engines must suffer by being too light in parts. All this means lost labor, for if at the beginning the results were fully appreciated by the builder, having a full knowledge of how his parts would operate, he would never send out (unless compelled by close competition) some engines which are now on the market.

LEAST POSSIBLE LOSS IN POWER TRANSMISSION.

A SUBJECT OF IMPORTANCE TO LAUNDRYMEN. THERE IS ROOM FOR IMPROVEMENT IN MOST SYSTEMS AT PRESENT IN USE.

Power in the laundry is usually by belting, which has defects which are from time to time prominently brought into disagreeable notice. The necessary loss of power through the employment of belting, no matter how well put up, is a seemingly inevitable evil, but there are other sources of trouble consequent on its use which cause much greater annoyance to the laundryman. What can be more annoying than the breaking of a belt when the plant is working on time bundles to its utmost capacity, and the consequent loss of time in fixing it, of from fifteen minutes to half an hour and at times much more. It is not only the time of the engineer or foreman that is lost in repairing the belt that makes it a serious matter, but the fact that the laundry loses the time of a dozen or more employes who are compelled to stand around and look idly on.

In a valuable paper read by Mr. Haas at the last annual convention of the Kentucky State Laundrymen's Association, that gentleman recommended the use of a certain kind of hooks for repairing belting in the laundry. He stated that by their aid a vast amount of time could be saved over the old system of lacing. There is a minor objection to overhead belting which Mr. Haas forgot to state, and that is its liability to collect and distribute dirt, which is anything but desirable in the ironing room. This is avoided in a good many laundries by having the power transmitted from below.

The transmission of power by rawhide is advocated on the ground that there is an absence of trouble from breaking which gives it a decided advantage over ordinary belting. Moreover it is not affected by heat, steam or moisture to the same degree that ordinary belting is.

Then, again, one of the most ancient forms of the transmission of power, namely, by means of ropes, has been gaining ground quite rapidly recently. It is claimed for this method, that not only is the danger from breaking eliminated, but that the loss of power in the use of ordinary belting is reduced to a minimum.

The utilization of power in the laundry is a matter which has not received quite as much attention at the hands of laundrymen as it deserves. There are, however, a number of laundrymen who have studied it practically, and we would be pleased to have their views on the subject, the discussion of which cannot but prove of practical value to the trade.

BELTS AND GEARING.

(Read before the English Northern Counties Association by Mr. R. Smugden.)

For laundry work the common system of transmitting power is by belts, although where long distances can be arranged between the pulleys, ropes are more favorable for large or moderate power, as they run much sweeter than belts, and with care will last almost as long as leather. But for small laundry plants the rope system is not advisable, although the cost of ropes is very much in their favor, being only about one-third that of leather, and if the ropes are kept small in diameter and the pulleys large, there would be economy, although the pulleys cost more than flat or belt pulleys.

The loss by journal friction is less with ropes than belts, and this is the most important consideration of all, as the putting in of the plant, if properly done, being paid for once, is then done with, whereas if we have to pay for fuel, etc., to overcome the friction, we are paying every day we run the plant. I have a case in hand where the proprietor found that his engine would not turn the load for which it was designed, and after indicating the engine, I found that the power required to drive the shafting was 16 horse power, and the power for machinery, an extra 4 horse power. This is due to bad arrangement and workmanship, and multiplication of countershafts.

In good practice, it is usual to allow about 30 per cent. of power for belt driving plants; so you will see how necessary it is to keep down complication of countershafts.

There are four ways in which power may be transmitted, as follows:

1. By direct driving—that is, the machine coupled direct to the engine. This is slightly the most economical; the engine must be driven at a good speed, and must have a flexible coupling between itself and the machine it drives.

2. Driving by cog wheels is slightly more economical than the last, but is noisy.

3. The third variety is driving by ropes, which is the next economical to cog driving.

4. And the last and most commonly used is belt driving.

The frictional efficiency of direct driving is 15 per cent of the total power; of cog wheel driving, 20 to 22 per cent of the total power; rope driving, 26 to 28 per cent of the total power, and belts, 30 to 35 per cent.

The common practice, when a belt begins to slip, is to apply powdered resin, and some people mix resin and oil together, and apply the mixture, which is most destructive. A belt which has had this applied soon goes to pieces, and if examined will be seen to have every appearance of being burnt, Leather belts should be cleaned with soap and water three or four times a year. They should then receive a dressing of castor oil, or better still, cod liver oil, such as is used by dubbing makers. We take care of our hats and coats, and neglect our belts.

If a belt is required to do more work than was originally intended for it, and the pulleys fit the belt, a very good plan is to place another one over it, not connected with it in any way, and it will be found that the power capacity has been more than doubled. I once got 90 h. p. from three 6 inch belts applied this way as a temporary drive. On another occasion, from a 20 inch belt 8 feet centers on driving pulleys, by adding a 6 inch on top, I got 120 h. p.

One of the most important things to insure good running of the belts, is the accurate lining of the pulleys and shafts, which should be perfectly parallel with each other; otherwise the belt, with its natural tendency to climb to the highest point, will rise until it slips off. To prevent this, guides are frequently used, and the belt is then continually running against them, thus receiving damage and causing friction.

All belt pulleys should be rounded to the center of the face, except those driven on to fast and loose pulleys; the amount of the rounding should be about one-eighth of an inch to twelve inches of width, more for very high speeds.

An experienced person is very apt to pay too little attention to belting.

We often find belts punched for lacing with a row of holes parallel across the belt. They should be punched at equal distances across the belt in a zig-zag, but so arranged that no two holes occur in the same transverse section of the belt. A better plan where possible (and there are few places where it is not possible) is to join with a metallic link fastener. This is the strongest possible moveable jointing, presents an unbroken face to the pulley, and will pass over the smallest pulley without undue strain and without jarring. All the holes should be properly marked out before punching, and an oval punch used with the major axis in the line of the belt.

Hair and cotton belting have to a large extent superseded leather; they are much lighter, cheaper, and what is more important in a laundry, not affected by damp or moisture. I had a pair, open and crossed, running on a washing machine for over five years without any attention whatever, and this is a severe trial for belts, as they are continually running between forks. All shafting should be hung in swivel bearings, four diameters long, carefully adjusted when put up.

I will pass now from the belt driving, and take a glance at the most modern of all, electric driving. Probably, if we were to see the estimates for shaft and belt driving, as against electric plants, we should be staggered; but the advantages and disadvantages of either are not seen in the estimates. We will first look at the disadvantages of shaft driving. If you drive by this means you must run all the shafts and belts, although you have only one machine running, and often it is necessary to run engine and shafting for the sake of one machine for a whole day per week, and remembering what was said about friction, we will be able to form an idea of the cost of thus running. This, coupled to wear and tear, will amount to a considerable sum in twelve months. Another disadvantage is that you are obliged to fix your machine in a position to suit your shafting, whether the position of the machine is the most suitable for it or not.

Electric driving is being largely adopted, for its advantages other than that of position are, that you can, by simply leading a small piece of wire, put a machine down in the most suitable situation for it.

TRANSMISSION OF POWER BY ROPE.

ITS SYSTEM EXPLAINED.

The transmission of power by means of a manilla rope has during the past few years been very generally introduced in mills and manufacturing establishments, and the many advantages it possesses over other forms of transmission, make it in many instances very desirable.

Among these advantages may be mentioned:

1. The ability to transmit large amounts of power at a minimum first cost and maintenance.

2. The ease with which the ropes may be turned any angle to clear obstructions.

3. The ability to deliver power at intermediate points between the main driving and extreme driven sheave.

4. Almost entire absence of noise in operation.

5. Positiveness of motion owing to the lack of slippage.

6. The small loss of power by journal friction, which is reduced to a minimum by use of the tension carriage.

7. The ability to transmit power from one shaft to

another when the distance between them is so small that it would be impossible to use a leather or rubber belt.

In fact, the range of possibilities in this system is so great that it is impossible to go into all the details, but information may be given regarding the same which will probably be of interest to the reader.

In general a rope transmission consists of a driving and driven sheave with an idler of deflecting sheave wherever necessary, together with the rope, tension carriage, pull back sheaves and weights.

The sheaves should be made of castiron with one or more grooves in their rims, depending upon the amount of power to be transmitted. These grooves must be finished perfectly smooth to prevent wear on the fibres of the rope, and as the driving power depends upon the friction resistance, these grooves are made with tapering sides, in order that the ropes may have a tendency to wedge, thus securing greater friction and less liability to slippage than would occur if the rope rested on the bottom.

The angle or taper of the groove must be such that the rope will readily free itself in leaving the sheave, and experience and practice has demonstrated the angle of 45° to be correct. In idler sheaves which are used in supporting the rope, where the distance between the centers is great, or for deflecting the rope to clear obstructions, the groove may be cut in a rounded or cup form, as no power is to be transmitted by them.

The diameter of a sheave is always measured at the pitch line, which is the center of the rope as it lies in the groove, and the pitch of the ropes is the distance between the centers of the grooves. To secure satisfactory results the diameter of the sheave should be not less than thirty times the diameter of the rope for ropes up to one inch in diameter, and not less than forty times for ropes above that size. This rule applies to all sheaves where the rope encircles one-quarter or more of the circumference.

The tension carriage, which may be either of the vertical or horizontal type, according to the position in which it is to be placed, is used, as its name suggests, to keep a proper tension on the ropes under varying circumstances of load and conditions of the atmosphere. The horizontal carriage consists of a single grooved sheave secured to a shaft which is mounted in a frame having wheels or rollers so constructed that it may readily move back and forth on tracks provided for the purpose, and may also be tilted at an angle to allow the rope to pass to and from the driving pulley. To the rear end of this carriage is attached a rope which passes over one or more pull-back sheaves and sustains the weight which operates the carriage. With a rope drive properly constructed and applied the carriage is very sensitive in its action and with the weights properly adjusted will care for sudden variations in the load without undue stress on the journals, and when applied on correct principles there is no better means of transmitting power, and to the lack of sufficient experience may be attributed the failure which in some instances attends this method and has caused a prejudice entirely unwarranted regarding its efficiency.

It is not to be understood that a manilla rope transmission is to be used wherever power is to be transmitted, for there are many instances where leather, rubber or even canvas belts are far preferable not only in efficiency, but in cheapness. It is not especially adapted to transmitting power from a line shaft to individual machines, but for transmitting power from one line shaft to another, either vertically, horizontally, or at an angle, in wet or dry places, whether indoors or out, it has no equal.

CLEANING DIRTY BELTS.

A correspondent of the Centralblatt fur die Textil Iudustrie, who complains that several belts are dirty from drop oil and dust, and desires to know how to clean them, is told by that journal to first wash the belt with warm water and soap, using a sharp stiff brush, and while still moist, to rub them with a solution of sal-ammoniac, which saponifies the oil in them. Immediately thereafter, the belts must be rinsed well with lukewarm water, and then dried with sufficient tension. While they are still moist, the belts are to be rubbed well on the inside, and less on the outside, with the following: Two lb. ¾ oz. of India rubber heated to 122° F., and mixed with 2 lb. ¾ oz. of rectified turpentine oil. After the solution is complete, 27 oz. of bright resin are added, and when it is dissolved, 26½ oz. of yellow wax are added. This mixture, by diligent stirring, is mixed with 6 lb. 10 oz. of fish oil and 2 lb. 11 oz. of tallow, previously dissolved in the former. In the further treatment of the belt, rub the inside only; and the outside only at the first time, as stated. The unguent also replaces the tannin extracted from the leather, prevents the dragging of the belt, and imparts elasticity to it.—Exchange.

BELT SLIPPING.

AN INSTRUCTIVE ANSWER.

ALLENTOWN, Pa., Oct. 25.

In answer to W. H. De Laney, about slipping of belts, I would say:

To overcome this difficulty the pulleys ought to be covered with some material. Keep the belt tight and well oiled with some belt oil or leather preserver, so that it will lie close to the pulley, and in case you don't get a chance to have it covered, hold a piece of beeswax from time to time to the belt while it is running, and there will be no slipping, but don't forget to have your belt in the condition described, and always kept so.

A. B. J. FRANTZ.

ELECTRICITY AS A MOTIVE POWER.

That electricity will be largely employed as the motive power in laundries in the future there can be but little doubt. At the present time a large number of laundries are lighted by both arc and incandescent lights, while in many the machinery is driven by the same agency.

The fine laundry of the Banner Waist Company of Chicago, has its extensive plant entirely driven by electricity in every department. The company generates from its own dynamo, a force equivalent to 40 horse power. Two boilers, each capable of generating 80 horse power, furnish steam to the engine which drives two dynamos. Part of the electricity from each of these dynamos is utilized in lighting the building in winter. One of these dynamos furnish electricity to 80 arc lights and the other has a capacity equal to 1,500 incandescent lights. The exclusive use of electricity in the laundry is a great factor in promoting absolute neatness in carrying on the work, but in its use considerable judgment is required.

Mr. W. M. Lawrence, of Minneapolis, Minn., was among the first of the laundrymen to introduce electricity in the laundry, and he gave some very interesting experiences in an address before the national convention held at Pittsburg in October, 1890. See "The Steam Laundry and its Methods" Page 213. Since then, methods have vastly improved, and electrical science has advanced with giant strides. It is interesting to note that Mr. Lawrence was well pleased with his experiment at the time, and were it not for the trouble caused by "burning out" (a technical term) would have continued to use the dynamo to run his plant. This defect has been overcome, but in the use of electricity, even for lighting, care must be exercised by the practical laundryman who would attain the best results.

In a valuable paper red before the Ohio State Laundrymen's Association on Electricity in the Laundry by Mr. E. B. Kelly, of Dayton, and reproduced in this work, further on, some points of interest will be found.

The matter of heating rolls by electricity is yet in a very experimental stage, but if it was successfully demonstrated that it could be done, the advantages it would offer in freedom from dirt and flame would at once commend it to every laundryman, provided the power could be generated at a cheap rate. Just here is the rub. Electricity is a costly source of power at present, and except where the engine has power to spare, and is of modern construction, with an automatic cut-off, the use of electricity, even for lighting purposes, is barred from the laundry.

ELECTRICITY IN THE LAUNDRY.

(A paper read before the Ohio convention at Dayton by E. B. Kelly, of Dayton.)

There have been so many new inventions in electrical appliance the past few years that it would seem strange if none of them were designed for use in the laundry, either for lighting, heating or for power in driving our shafting and machinery.

The dynamo has been improved until it is self-regulating and will adjust itself to any kind of a load it is designed to carry, but, of course, a Rheostat is always necessary in the circuit, to adjust the voltage and pressure that you expect to maintain. After the dynamo is once adjusted it requires but little attention.

We all know that some of our machines in the laundry are not intended to be in operation all the time, and others are constantly being reversed, so there is never a time when the power required is the same. There is also considerable variation in the load.

Now, if we consider the matter of putting in a dynamo for the purpose of lighting up our laundry as a great many have already done, we must first test our engine and see how much power we have to spare, and whether our engine is of modern construction, with automatic cut-off and sensitive governor that will insure close regulation. It will require one horse power for every thirteen lamps of sixteen candle power each; therefore, we must be very careful about the number of lamps we put on, so that we do not overload our engine, which would cause our lamps to waver and perhaps burn out if the voltage or pressure in the circuit is not constant.

If our lamps are 100 volt lamps, and we try to run them at less than that, we get a very unsatisfactory light. If our volt meter shows 120 volts, our lamps burn very bright, and give a splendid light at the same time, but will soon burn out if that pressure is maintained for any length of time. Renewals are cheap, but we don't want to waste them. We could put in a storage battery plant, charge that during the day, and draw from it during the evening, but the question of expense must be taken into consideration beforehand.

Incandescent lamps have been improved in cheapness and efficiency, and there seems to be nothing lacking as far as lamps are concerned.

The arc lamps have been perfected so that you can now use them on the same circuit with incandescent lamps, by connecting them up, two lamps in series, each lamp taking 45 volts and giving about 1,200 candle power each.

This makes a splendid light for the wash and starch room, and also for the mangle room, but there is a question in my mind whether it will do for the main ironing room, where shirts and collars are being ironed, as the light is very hard on the eyes, and there are also particles of carbon from the lamp that settle over the work that is being ironed, which does not improve it in the least.

In some of the larger factories there is a tendency to do away with line shafting, and substitute electric motors instead, as it does away with so many belt and pulleys, and also a lot of dirt that they usually carry, making it more convenient and cleanly in every way. Only recently, in one of our factories that make laundry machinery, I noticed a set of six or eight washing machines that were being connected up with electric motors, designed especially for this one plant, one motor to run two machines, the motors and the gear for reversing being placed on the same base near the ends of the two machines. They required but small space, and I am sure it will be a great improvement over the old way of cross belts.

Of course, the first cost is more than the shafting, pulleys and belts, but whether it would not be cheaper in the end is the question.

In heating there is certainly room for improvement. If we could induce our manufacturers to introduce electric heating devices in the ironing rolls it would be a great convenience to us all. There is a company that makes all sorts of heaters, for every purpose imaginable. Hand irons have been tested in some of the laundries in the northwest, but I cannot state with what success.

The incandescent lamp is a splendid heater in reality, and following up in the same line, if we take a coil of thin wire, having a great many turns, and separate the turns by embedding the coil in porcelain, which is a conductor, and then baking this to the proper degree, we have only to slip this device into the iron and attach the leading-in wires to our circuit. The current heats the wire, the wire in turn heats the porcelain, and this in turn heats the roll.

There would be no dirt from it; no flame to gush out and burn or scorch the goods, being ironed; and no danger from fire; as the current would be cut off as soon as the power was shut down in the evening.

We could do our bleaching by electricity if we had the proper apparatus constructed and set up in the laundry. The bleaching as done now in most of the laundries with chloride of lime solution, chlorinated fluid, or other patent bleachers, is done in great haste, with entirely too much of the solution in the washes. The usual time to run the bleach in the machines is ten minutes, when it should be thirty minutes, with about one-fourth the amount of bleaching fluid.

In former years in the bleaching of new linen or cotton, the Dutch had the reputation of doing high grade work, and had a monopoly of the business for years. The process consisted of pouring an alkaline solution over the goods in a boiling condition, and steeping them again for the same length of time in buttermilk. After this they were washed and exposed to the action of the air and sunlight by being spread out over the grass and sprinkled down with water for several weeks. By substituting sulphuric acid for the sour milk, to dissolve out the alkaline matters, the time for this part of the process was reduced to a few hours in place of a few months. One-twentieth to one-tenth of the weight was lost in the bleaching, and the strength of the goods considerably impaired.

Some facts regarding the use of electricity in the bleaching of paper pulp made from rags, may suggest something for the laundry. The old process of bleaching pulp employed chloride of lime in a solution of one-half pound to the gallon of water, its strength being determined by the nature of the pulp. This process is unpleasant to the workman, and while not very expensive, is costly enough to make them investigate thoroughly any process which seems to lower the cost. The electrical process claims to reduce the cost about one-half, and is being used quite extensively at present.

One method invented by Kare Kellner and patented in 1885 uses an eighth per cent. solution of common salt at a high temperature, through which a current of electricity is passed. In a vat adjacent to that containing the pulp are placed carbon plates which are the electrodes of an electrical current. The current passes through the salt solution, which flows from this tank, through the pulp in the other tank.

The solution is returned to the first vat where it is again rendered active by the electric current, and can be used over and over again. The chemical action of the current of electricity is to place in an unstable condition chlorine and oxygen which forms new compounds, and at the same time produces the bleaching effect on whatever material that may be placed in the solution. It is also claimed that there is no injury whatever to the fibre of the goods bleached in this manner.

THE USES OF ELECTRICITY FOR LIGHTING.

The space taken up by a complete equipment for electric lighting varies with the size of the plant. Under ordinary conditions, the floor space occupied by a plant, comprising gas engine and dynamo of six horse power, or equivalent to supplying eigthy sixteen candlepower lamps, would be roughly, about five feet by twelve feet, and this should allow of sufficient clearance at the side and ends. A smaller plant would obviously require a little less space.

There are many cases within the writer's knowledge, where a small lighting plant has been crowded into astonishingly small space, but it is never desirable to cramp the plant, because it makes it much more difficult to run, and prevents easy examination.

A model installation would consist practically of the following:

Gas engine and dynamo.
Small switchboard, containing measuring instruments.
Main switch.
Main wires.

Cut-outs or fuses.
Branch switches.
Branch wires.
Branch fuses.
Lamp lines.
Lamps.
Lamp switches.
Cut-outs.

Although this may appear to be a somewhat formidable array of apparatus, their functions and operations are comparatively simple. When the current is generated or produced by the dynamo, it traverses wires which lead from the dynamo to the switchboard, where it is regulated and controlled.

It is necessary to explain a very important fact in the generation and distribution of an electric current, and that is whenever an electric current exists or is called into existence there must be what is known as a complete circuit. When an electric current leaves the dynamo, it follows the path produced by the copper wire, but in order that it will flow along this wire there must be a means by which it can return to the dynamo.

In all cases, therefore, it will be seen that there are two wires on a dynamo machine, along one of which the current flows, and returns by the other. This principle of the two wires (or, as they are usually termed, the outgoing conductor and the return conductor) is carried right through a lighting system. Two wires are taken to a switchboard, and two wires or pairs of wires are taken to the various centers of distribution, and from thence two wires are taken to every lamp. Having now demonstrated the important fact that an electric current for lighting purposes must be provided with a complete metallic circuit, we will show how this important factor is utilized in the control of the electric light.

Put briefly, the extinction of electric lamps is due to the breaking of the circuit. Imagine for a moment a dynamo electric machine with a long loop of wire passing from one side of the machine to the other; if the machine is started, an electric current traverses this loop of wire so long as the loop remains unbroken, and if we were to cut the wire the dynamo might continue to run, but there would be no current flowing, simply because we have destroyed the continuity of the circuit. It will be seen, therefore, that the turning on and off of the electric lamps is due to alternately making and breaking the circuit in the neighborhood of the lamp. This making and breaking of the circuit is usually accomplished by means of a special device known as a "switch," and all switches whether they be known as main switches or lamp switches are designed with the object of severing the circuit.

Returning to the switchboard, there are usually provided on this, two kinds of measuring or recording instruments, known as the ampere-meter and a volt-meter, and these instruments show at once, the state of the electric current at the moment. Without going into a complicated discussion of electric units, it is sufficient to say that a current of electricity has two important characteristics, a certain strength and a certain pressure. The strength of the current is given in amperes, and its pressure in volts, therefore the two instruments referred to show the amperes and the volts of the dynamo. It may give a clearer idea of these units when we say that the output of a dynamo is reckoned in terms that result from multiplying volts by the amperes. The resulting term would be known as watts, and 746 watts is equivalent to 1 horse power.

When we say, therefore, that a dynamo machine has an output of 100 amperes at 100 volts, it will be equivalent to saying that its output is 10,000 volts, or about 14 horse power. A 16 candle power incandescent lamp is rendered fully incandescent by a little more than one-half an ampere of current of 100 volts, or it may be said to have a consumption of 60 watts; put in another way it requires one-twelfth of a horse power to keep it burning brightly.

It is very important that an incandescent lamp which is made to burn at 100 volts should not have a perceptibly higher voltage than that, or it will very soon break. By means of the volt-meter which is on the switchboard, it is possible to see what voltage the lamps are receiving at any given moment, and if it is higher than the prescribed limit, it is possible by means of a resistance to lower the voltage.

A resistance may take a variety of forms, but it consists usually, on small switchboards, of a series of iron wires which may be put into the electric circuit by means of a convenient handle on the switchboard. The effect of putting these iron wires into the circuit is to cut down the volts to any desirable extent.

There is also another piece of apparatus on the switchboard which fills a most important function in the economy of a lighting system, and that is the cut-outs, or fuses. One of the principal phenomena in which electricity exhibits itself is that of heat, and if an electric current is sent along a wire or conductor, there will be a tendency for the wire to become heated if the current exceeds a predetermined limit. It is to prevent the trouble that might arise from such a cause, that the cut-outs or fuses are provided. The switchboard and its contents, however, will be considered at greater length in the next article, and though this may be a slight departure from the programme, the writer feels that if the working of the switchboard is thoroughly grasped at the outset, the following articles will be more readily understood.—London, Eng., Laundry Record.

ELECTRICITY FOR LIGHTING LAUNDRIES.

ARC LIGHTING VERSUS INCANDESCENT.

It was pointed out that for a general illumination of rooms, arc lighting was incomparable, but if one wanted rather a concentration of light in different places, then, probably, the incandescent lamps, says the London Laundry Record, would be more suitable. Moreover, the advantages of the latter were said to be that one could readily turn one or two off without affecting the illumination of the other parts of the room.

As an example, suppose we had a large room of a given size, which would be well lighted by one arc lamp or by sixteen incandescent lamps; if an arc lamp, it would be necessary to burn it, whether there was a large amount of work being done, or whether there was little, whereas if one had incandescent lamps, one might, in the event of little work being done, turn half of them out, and thus make considerable economy. At the same time, while the ability to turn incandescent lights out, when not wanted for immediate use, may be of great advantage, it must be pointed out that the arc lamp, considering its candle power, is much more economical than the incandescent lamp, and on this account it would, under many conditions, be worth using, although one might not occasionally want the full candle power which it gives.

To show the comparative economy of the two systems, we will see how far 1 horse power will go when utilized for arc lamps and for incandescent. It may be taken as a fairly approximate figure that 1 horse power is necessary to keep an arc lamp alight, and 1 horse power will keep twelve 16 candle power lamps alight, or twenty-four 8 candle power lamps alight. But the arc lamp would give practically 1,200 candle power, and the combined candle power of the incandescent lamps will be only 192. So that 1 horse power used for arc lighting gives 1,200 c. p., and 1 horse power incandescent lighting gives 192 c. p.

On the ground of consumption of energy, therefore, the arc lamp is vastly superior to the incandescent lamp, but notwithstanding this great disparity, it is only the prevailing conditions that can alone decide which is the most suitable system to employ.

GAS AND OIL ENGINES FOR ELECTRIC LIGHTING.

AS APPLIED TO LAUNDRIES.

Sufficient has been said to demonstrate that a gas engine plant was, for most practical purposes better adapted for laundry work than any other prime mover.

It perhaps ought to be explained that the writer has included under the generic term of the gas engine plant, the oil engine, the internal action of which is almost identical with the gas engine. In order that the action of the gas engine may be to some extent understood by those that are likely to use it, the principle which underlies its working should be dwelt on to some extent. This does not necessarily mean that the writer is going to weary those readers who are interested in the application of electricity to laundry work, with an elaborate treatise on the construction and mechanism of gas or internal combustion engines. But there are certain points about these prime movers which if thoroughly appreciated will make the task of keeping them in good order a much lighter one than if there is a complete ignorance as to their peculiarity of working; and a few hints as to the best means of working them will be all the more valuable, because it is not usually necessary to employ a man of any special knowledge to keep gas engines in running order.

The principle of the gas engine may be said to consist in the admission of a certain mixture of gas and air into an engine cylinder, which, after being compressed, is exploded, the effect of the explosion being to thrust the piston forward and to turn the driving wheels of the engine. It will be seen, that if the operation of exploding a mixture of gas and air were made continuous the engine would be constantly kept running. The admission of the explosive mixture into the cylinder must be made at certain definite periods, and the method of doing this constitutes the difference in the principles of gas engines.

One of the best known gas engines, and the one most commonly used, is one that works on what is known as the Otto cycle. The operation may be said to be as follows: During the first forward stroke of the piston, a mixture of gas and air is drawn into the cylinder, then as the piston returns, a mixture of gas and air is forced back and compressed into a clearance space; at the moment the piston turns for a forward stroke, the mixture of gas and air is fired and exploded, the piston being accelerated on its second forward journey by the heated products of combustion; on its return backward stroke the piston forces the exploded products into the atmosphere, which concludes the cycle of operation. Gas and air are drawn into the cylinder again, and the operations already described are gone through again. The firing of the gases is usually done by what is known as an ignition tube, which is kept red hot by means of a flame, which plays on the outside surface. At the moment when the explosion should take place, a valve opens and permits some of the explosive mixture to come in contact with the ignition tube, and the explosion occurs. It will be seen by the foregoing arrangement that the explosion of gases only takes place at every second forward movement of the piston, and it is this which gives to the gas engine that slight irregularity of running which, unless counteracted, proves a serious drawback in electric lighting. Practically the only effective way of overcoming the difficulty is to have somewhat heavy flywheels on the gas engine, and, moreover, to have a heavy driving pulley on the dynamo. If this point is carefully insisted on, there will be none of that flickering in the lamps, which is a common trouble when there is not sufficient flywheel effect.

There is a certain amount of regulation of speed permissible in a gas engine, and this is usually performed by a centifrugal governor, which is so arranged that if the speed of the engine becomes greater than a predetermined limit, it cuts off the supply of gas and causes the engine to miss one or more explosions.

What has been said of the gas engine applies almost equally to an oil engine. As an engine it is slightly more complicated than the one in which gas is used, and is therefore more expensive. Although it may be a little more complicated in its operation, the oil engine needs no more attention than the gas engine, and in its most modern form probably needs less looking after. In probably one of the most efficient and economical gas engines made at the present time, the oil is rendered into a gaseous condition in a small hot chamber, which practically forms part of the cylinder. In order to start the engine a lamp is used to heat the external vaporizer, which can be readily done in from three to five minutes, with the help of a small rotary fan attached to the engine, the oil in the hot chamber becomes vaporized, and as soon as air is admitted, which is done at a certain position of the piston rod, the explosion takes place. After this explosion the lamp becomes unnecessary, for the vaporizing chamber reaches a heat which will give a continuous series of explosions as soon as the proper mixture is obtained. A pump attached to the engine gives a constant supply of oil, the supply being controlled by the action of engine governor. The consumption of oil in this engine is probably about one pint per brake horse power, or, in other words, the cost of working will not, in an average size engine, be more than ½d. per brake horse power per hour.

There is very little doubt that the most modern form of oil engine is admirably suited to small power purposes, but for purposes demanding more than 15 horse power the writer would be disposed to recommend gas engines, and in many circumstances even smaller sizes.

Sufficient has been said to show the principles on which the action of the gas and oil engines depend, and though it may be necessary to say something more about them when they are considered in conjunction with an actual installation, it is necessary to leave them for a moment to speak of the two systems of lighting.

By the two systems of lighting is meant arc lighting and incandescent lighting, and though there is no difficulty in combining the two, they are quite distinct both in their uses and in the way they are obtained.

The main features of the incandescent lamp were briefly alluded to in the first article of this series. It was said that this lamp depended for its action upon the heating of a carbon filament in a globe from which the air has been exhausted. This form of a lamp from its great use is well known, but the fact is not so well known that the efficiency, and in a great measure the life, of the lamp depends upon the air being kept away from the filament. If by any means the glass is broken, and vacuum becomes at once destroyed and the light goes out. It is this distinguishing property in the incandescent lamp that renders it of great utility in places where the risk of fire is great. To show how true is this action of the incandescent lamp, it may be mentioned that a lamp has been broken in gunpowder without igniting the explosive mixture. The great importance of this lamp from a hygienic point has been pointed out, and is, in fact; recognized by most people.

Judging from an illuminating point of view, a great feature of the incandescent lamp is that it may be placed in any position; by means of suitable devices it may be raised or lowered; and by the use of special plug switches, connections can be made by flexible cords to the wires running in the casing along the walls, and the lamp can be carried about according to the length of the cord. A very important point to remember in the use of incandescent lamps, or glow-lamps as they are preferably termed, is to have an abundance of switches, indeed in many cases it is desirable to have one switch for each lamp. It is also of great importance to use lamps according to the amount of light that is required; for instance, it is much more economical to use 8-candle power lamps in passages and other places requiring a small but continuous light, than to employ larger candle power lamps.

For general illumination, the arc lamp is quite incomparable, and where work is general and shadows are not likely to be cast by machinery, it is a highly satisfactory method of lighting. The one great drawback, however, is that the lamps require a certain amount of attention, it being necessary to renew periodically the carbons of the lamps, upon which the lighting depends. There is a modern form of lamp, however, in which the renewal of carbons is reduced to a minimum, but it will be necessary to refer to this when describing the principal forms of lamps. For most purposes a mixed system of incandescent and arc lamps would be probably most suitable.—London Laundry Record.

TAKE CARE OF YOUR OWN WAGON TRADE.

Kindly allow me to advise laundrymen to take care of their own wagons and the trade thereof, before they cater to the commission men. Well do we know that he is inclined to sacrifice and sidetrack his own trade, and see that the commission work is out on time for fear he will loose the work.

Now, that does not pay. I will try to explain why. A laundry has three teams ot its own coming in loaded every day, and paying well; then the laundryman thinks he can take on two commission teams and make more money. Here he begins to cut his own throat, for he gives his best time and attention to the commission team, and his own work in consequence begins to fall off. I have heard drivers say they would not work for any more trade, because they could not get their work out on time.

Now, when the drivers stop hustling for work, the wagons stop paying; but the expense of running them goes on just the same. Pretty soon the commission driver will take the work away, where he can get a greater percentage; then the proprietor wonders why his own teams do not bring in more work, forgetting the fact that he has taken the courage all out of his drivers by neglecting his own work and nursing and catering to the commission team.

The laundryman who makes the most money is the one who takes care of his own teams first, most, and all the time.

"A DRIVER AND OWNER."

When a laundryman's driver leaves him to go to a rival concern, he should show his "get up" and mount the seat of one of his wagons, drive round himself to every customer whose name is on his books, explain the situation, and ask them to give their business to the laundry that has been doing it so well and promptly, and he will find that 90 per cent. of them will stay with him.

WATERING YOUR HORSES.

The time of giving water should be carefully studied. At rest the horse should receive water at least three times a day; when at work, more frequently. The rule here should be to give in small quantities and often. There is a popular fallacy that if a horse is warm he should not be allowed to drink, many claiming that the first swallow of water founders the animal or produces colic. This is erroneous. No matter how warm a horse may be, it is always entirely safe to allow him from six to ten swallows of water. If this is given on going into the stable he should be given at once a pound or two of hay and allowed to rest about an hour before feeding. If water be now offered him it will in many cases be refused, or at least he will drink but sparingly. The danger then, is not in the first swallow of water, but is due to the excessive quantity that the animal will take when warm if not restrained.

Water should not be given to horses when it is ice cold. It may not be necessary to add hot water, but we should be careful in placing water troughs about our barns to have them in such a position that the sun may shine upon them during winter mornings. Water, even though it be thus cold seldom produces serious trouble if the horse has been deprived for too great a length of time.

Don't give your horse a water that has any impurities, —a water that you would not under any circumstances drink yourself.—Ex.

FEEDING HORSES.

Many horse owners might take a valuable hint from the methods in vogue in the street car stables in our great cities in regard to the feeding of the horses.

The food consists of hay, slightly moistened, with ground feed (corn and oats) added, given in small quantities at short intervals. A small quantity of loose hay is thrown to the horses when they are brought in from work; then, when the regular feeding hour arrives (which is never soon after or just before a trip) six or eight quarts of the ground food, with five pounds of cut hay, are given. The horses are always fed by the same feeder, when possible, and the feeder gives close attention to each particular horse, to know how much food is eaten and how much is left, so that the quantity given can be gauged exactly.

After each feed the mangers are thoroughly cleaned out and for this purpose castiron hollow bowls or enameled kettles, of sufficient size, are used, in which no food left over can gather in the corners and get sour. These troughs must be rust proof, and are cleaned out with a wet sponge by the stablemen twice a day. The result is that food is eaten cleanly, and none is wasted by reason of offensive troughs. Moreover, since these feed troughs were introduced into the stables, colic and other forms of indigestion have practically disappeared.—Exchange.

FOR OUR DRIVERS.

The question how to keep the horse so as to obtain the best results is one of vital interest to every laundry driver and to every laundryman, and must remain so until the era of the horseless wagon is upon us.

To obtain the best results there are a number of elements to be considered, such as stabling, food and its proper porportions, climate, of which we have such a variety in the United States, and the modification in the treatment of the horse thereby rendered necessary.

There are so many excellent plans for stables adapted to different localities that it is not necessary to describe them, so much depends on the extent of the trade and its requirements. Whatever plan has been adopted there are certain matters, however, to be considered, necessary to the health and comfort of the animal. Most important is location. The horse cannot be kept in health in a damp situation. Coughs, colds and other ailments are the results of damp stables. These interfere with the use of the horse and entail pecuniary loss directly or indirectly.

The constant services of the horse may be secured in most cases by thorough drainage of the stable. Every stable should be kept free from dampness. Hardly less important is it to provide means for keeping up a tolerably even temperature winter and summer and to have good ventilation.

The horse requires a constant supply of pure air. Pure air is the source of pure blood and pure blood is the source of health. Too many in their desire to keep their horses comfortable in cold weather neglect this important matter. Neither man nor horse can enjoy health while inhaling corruption with every breath, yet many stables are built with very little regard to ventilation. The air in the stable should be constantly changed without creating a draught upon the horse and the stable should be well lighted.

Light is as necessary to animal as to vegetable life. The air cannot retain its power if deprived of sufficient light and many diseases become more virulent.

The stable for the horse should be of good size. The narrow dimensions of many stalls are a positive cruelty to horses. They are built too narrow to allow the horse to stretch his limbs. He is compelled when in a recumbent position to double his limbs up under him and his legs are thus kept cramped when they should be perfectly at rest. Box stalls permit the animal to choose his position and to change it at pleasure. Comfort is essential to health, and it is evident that the animal cannot be comfortable when closely tied in a narrow stall.

The stalls should be kept clean and the floors daily sprinkled with some good absorbent, as gypsum, to absorb the foul odors continually arising. Absorbents are not generally used freely enough about the stalls.

Besides having pure air for the animal to breath, a stable that is stored full of hay and grain ought to be kept well ventilated and clean that the impurities may not penetrate them. All food should be kept as pure as possible. Cleanliness about the stable is as essential to the health of the horse as cleanliness about the house is to that of the family.

ECONOMY AND SUCCESS.

Emerson relates the following anecdote:

An opulent merchant in Boston was called upon by a friend in behalf of a charity. At that time he was admonishing his clerk for using whole wafers instead of halves; his friend thought the circumstance unpropitious; but to his surprise, on listening to his appeal the merchant subscribed five hundred dollars.

The applicant expressed his surprise that any person who was so particular about half a wafer should present five hundred dollars to a charity, but the merchant said:

"It is by saving half wafers and attending to such little things that I now have something to give."

"How did you acquire your great fortune?" asked a friend of Lampis, the shipowner.

"My great fortune, easily," was the reply; "my small one, by dint of exertion."

Four years from the time Marshall Field left the rocky New England farm to seek his fortune in Chicago, he was admitted as a partner in the firm of Coaley, Farwell & Co. The only reason the modest young man gave to explain his promotion, when he had neither backing, wealth nor influence, was that he saved his money.

If a man will begin at the age of twenty and lay by twenty-six cents every working day, investing at seven per cent compound interest, he will have thirty-two thousand dollars when he is seventy years old. Twenty cents a day is no unusal expenditure for beer or cigars, yet in fifty years it would easily amount to twenty thousand dollars. Even a saving of one dollar a week would give him one thousand dollars for each of the last ten years of the allotted years of his life. "What maintains one vice would bring up two children."

Such rigid economy, such high courage, enables one to surprise the world with gifts, even if he is poor. In fact, the poor and middle classes give most in the aggregate to missions and hospitals and to the poor. Only frugality enables them to outdo the rich on their own ground.

But miserliness or avariciousness is a different thing from economy. The miserly is the miserable man, who hoards money from the love of it. A miser who spends a cent upon himself where another would spend a quarter does it from parsimony, which is a subordinate characteristic of avarice. Of this the following is an illustration:

"True, I should like some soup, but I have no appetite for the meat," said the dying Ostervalde; "what is to become of that? It will be a sad waste."

And so the rich Paris banker would not let his servant buy meat for broth.

A writer on political economy tells of the mishaps resulting from a broken latch on a farmyard gate. Everyone going through would shut the gate, but as the latch would not hold it, it would swing open with every breeze. One day a pig run into the woods. Everyone on the farm went to help get him back. A gardener jumped over a ditch to stop the pig, and sprained his ankle so badly as to be confined to his bed for two weeks. When the cook returned, she found that her linen, left to dry at the fire, had been badly scorched. The dairymaid, in her excitement, left the cows untied, and one of them broke the leg of a colt. The gardener lost several hours of valuable time. Yet a new latch would not have cost five cents.

Guy, the London bookseller, and afterwards the founder of the great hospital, was a great miser, living in the back part of his shop, eating upon an old bench, and using his counter for a table, with a newspaper for a cloth. He did not marry. One day he was visited by "Vulture" Hopkins, another well-known miser.

"What is your business?" asked Guy, lighting a candle.

"To discuss your methods of saving money," was the reply, alluding to the niggardly economy for which Guy was famous.

On learning Hopkins' business, he blew out the light, saying:

"We can do that in the dark."

"Sir," you are my master in the art," said the Vulture; "I need ask no further. I see where your secret lies."

Yet the kind of economy which verges on the niggardly is better than the extravagance which laughs at it. Either, when carried to excess, is not only apt to cause misery, but to ruin the character.

"However easy it may be to make money," said Barnum, "it is the most difficult thing in the world to keep it."

Money often makes the mare—run away with you.

Very few men know how to use money properly. They can earn it, lavish it, hoard it, waste it, but to deal with it wisely, as a means to an end, is an education difficult of acquirement.—Architects of Fate.

PUSH VS. PULL.

Some genius in the literary firmament has divided mankind into two classes, hammers and anvils. A better division is one between those whose fetish is "pull" and the believers in "push," "Pull" looks for someone else to reach down and boost him up, forgetting that this is a selfish world. "Push" grabs a firm hold. Pull waits, like Micawber, for something to turn up. Push gets out and hustles. Pull talks. Push does. Pull leans. Push stands alone. Pull is passive. Push is active. Pull is servile. Push is independent. Pull looks for something soft. Push looks for work. Pull's idea is success without effort. Push's ideal is success as the logical sequence of keeping everlastingly at it.

The spirit of Push is infectious. Push is itself a contagion. While the believers in Pull carp against and belittle each other, the believers in Push are united in one grand free masonry. The merchant beams when he sees that his clerk is a tub that can stand on his own bottom. The pushing clerk sees in the Old Man an older exponent.

THE ACORNS OF BUSINESS.

In every line of business, no matter whether conducted on a large or small scale, it is the little things that count, and it is these things that need the closest attention. The larger, more important details of every business are carefully looked after; there is very little chance for neglect, carelessness or oversight.

The workman who spoils a costly piece of machinery, is held responsible, and is generally very careful in this respect, but in the little things he is not as prompt in exercising care and economy.

We have it asserted by a man who, beginning on barely nothing, succeeded in building up a large and profitable business, and retiring with a considerable fortune, when asked how he had managed, what was the secret of his success, he replied:

"By saving what other people wasted; looking after the small things and seeing that nothing was thrown away or cast aside as being too small or insignificant to be of any value. A few cents here and a few cents there made up quite a sum in the course of a year, and it is by paying careful attention to the little details, by looking after the cents, that I made my dollars."

There is a good deal more in this than most people would be willing to admit. They are in too much of a hurry to make dollars to look after cents.

In these times of close competition, when it becomes an absolute necessity that every possible item be turned to account, the exercise of economy in small things is being more rigidly cultivated. Profits at best are very small, and these are made considerably less by the wastefulness of careless and unthoughtful men.

Nor is it alone in the factory or workshop where the necessity of looking after these little things makes itself apparent. The workingman of to-day, with his wages scarcely sufficient to provide for the comforts and necessities of life, has the most need to practice economy in small things, and it is surprising to note what an amount of waste is made by those who have the most need to practice economy. A few cents here and there seem mere trifles, and are not regarded as of any particular consequence, or as having any material relation to the annual expenses, but if a careful account were kept for a single year the result would be astonishing; and just here is where the difference lies between individuals and corporations. The latter have learned by a comparison of the strict accounts which are an absolute necessity with them, the lesson of economy in small things. Everything is put down and can be looked over and studied, and its effect upon the total noted; and this is the lesson that should be learned by individuals, and workingmen especially. By them, as a rule, no account of daily expenses, or even any expenses, is kept. They receive their money and it is spent. At the end of the year not one of them can tell where his money has gone, or for what purpose; whether he has made a profit from the time and labor expended or not; and for this reason, as well as that he may economize and save something, even if only a small amount, the workingman should keep a strict and careful account of daily expenditures and receipts.

Such a course would not only result beneficially to him personally, but would make him a more careful, painstaking and valuable employe. Carelessness at home or of one's personal interests breeds carelessness of other's interests, and there is nothing which an employer notices more quickly and is more willing and ready to appreciate and reward than the display of interest and care in the little details by a workman.

It cannot be expected that a man who is careless of his own welfare and interest will exercise any more care than he is obliged to under the watchful eye of the foreman or proprietor, or care for those of his employer.

It is, then, all important that every individual exercise this watchfulness of the small things in business and private life. The employer must guard himself against loss by the carlessness of his employes. The employe should be equally vigilant of his own personal interests, and all should remember that it is the little things that count.—Manufacturers' Gazette.

LOYALTY ABOVE EVERYTHING.

A merchant's good will is just as necessary to his business as is his capital, but it is by no means as well protected. Employes, however, do not view this matter in the light they should, and therefore do not realize the importance of betraying trade secrets.

An employe frequently does, upon entering a new house, either in order to make himself appear smart, or from spitefulness or thoughtlessness impart business secrets which are of serious moment to a former employer, and which sometimes result in wrecking his business. Whatever the motive, no employe who is guilty of such a thing is worthy to be trusted. There is no more justification for doing this than there is for stealing money, and rest assured that an employer is pretty sure to size this sort of person up and drop him when there is nothing more to be acquired.—Facts.

THE TECHNICAL SIDE

OF A LUNDRYMAN'S WORK NECESSITATES SOME KNOWLEDGE OF CHEMISTRY AND A THOROUGH GRASP OF MANY DETAILS.

The idea that anyone can run a laundry is dying out. There never was a time when more experience was required by all who aspire to success in the trade. The modern laundryman has to have at his finger ends a number of things that never disturbed laundrymen of even a decade past. It never comes into the life of a laundryman of these end-of-the-century days that he can get along with a hand washer. Yet Munger, who started in the early sixties, had no washer at all, and all the delivering was done by boys who used to travel around upon street cars.

According to A.W. Cleaver, of Cleaver's laundry, there was very little machinery to be found all over the country at that time. In Chicago Munger had one washer, Jennings of the Oriental had another, and Cleaver had the third.

Up in the seventies the laundry supply man was virtually unknown. A laundryman in those days bought his soft soap from a wagon and starch was bought by the box.

The decade previous to this the ironing machine was unknown. When it did come into fashion it was used only for polishing, the ironing proper being done by hand.

What a change has come over the spirit of our dreams since the days that immediately followed the war! Machinery has shown everywhere its superiority over the old hand methods that are fast becoming memories of the past. However small the plant, it is a machine plant; however small the laundry supplies, they come from supply houses that make a business of supplying them of the best.

The improvement in laundry machinery and laundry methods has given rise to the employment of skilled labor to a degree never dreamed of in the old days. A laundry requires one good engineer, one good washer and one good ironer. The more practical knowledge the proprietor has, of course the better, but if his business be at all large he will require this amount of skilled labor if he desires to get along without friction.

In the matter of help, the foreman is the most important factor. He should be a man of ripe experience, who can see at a glance where things have gone wrong in any department. That such men command big salaries is simply a matter of course. The $25 to $30 per week paid to such men is money well invested. It will not do to have to run to the machinery firm every time something goes wrong with a machine. The good foreman is always able to correct machinery defects, and in that his main value consists.

The man who aspires to direct the operations of a large steam laundry in these days must be somewhat of a chemist. Of all the things that he will be called upon to deal with, there is not one that does not involve some chemical question. Commencing with the very water used, it goes through the whole gamut, until the goods are turned over for delivery.

There is nothing of more importance to the laundry than a good supply of water. There are several points to avoid in a laundry water. One of them, and the chief one, is hardness. A hard water is always a source of trouble and expense. It uses up soap and softening agents. How much loss it may cause in a laundry may be estimated from the fact that a single grain of sulphate of lime can convert a soft water into a hard water. Until the earthy salts are neutralized soap put into hard water only forms what is known to laundrymen as lime curd, and has no washing value whatever.

Many laundries have found by experience that in many cases throughout the country it is much more profitable to sink a well on their premises than to depend upon the city supply. The cost of well sinking has been estimated at from $1.50 to $2 per foot. Water has been found in our large cities, with but few exceptions, at depths of from 85 to 200 feet. The water has been nearly all the time of a good quality for laundry purposes, and many laundrymen have rejoiced in their freedom from city taxes. Indeed, the water bill has been in many towns the cause of ceaseless annoyance, and many have found that the first expense more than pays for itself, where the soil is favorable for well sinking at anything like moderate depths.

The laundryman, however, that determines on sinking a well should see to it that he is in the right formation to obtain the kind of water that he requires. There is no use in his sinking in a lime formation and expecting to obtain the kind of water that he requires. Water found in a lime formation is certain to be hard, while the softest water will be obtained from a sand or sand rock formation. Here again the technical knowledge of the laundryman comes into play.

A knowledge of the ordinary methods used for the testing of acids and alkalies, as to their strength, is of the utmost value to the laundryman, and will in the long run save him many dollars.

It is not necessary that the laundryman should be a thorough chemist, but every up-to-date laundryman in these days must have the technical chemical knowledge that pertains to his business. The old days of working by the rule of thumb have vanished from the laundry, as they have from every other field of human industry.

GOVERNING HELP.

It is a very common fault with laundrymen who are new to the business to do too much bossing. There is nothing annoys an operator more than to be forever stood over. Many a skilled hand that, if left alone, would have given good results, becomes under this system nervous, discouraged and unreliable. It should be the aim of the head of a steam laundry to secure skilled help, and having secured such help to trust it to the fullest extent consistent with the proper supervision of the plant and its operation.

This is an age of specialties. It may be fairly said that in the end-of-the-century days few men know more than one thing.

The sum of all our knowledge is the knowledge of our own ignorance. Though one may have a very definite idea of what results should be, in those days of specialists it is not always possible to know exactly how those results are to be attained.

The old adage that he governs best who governs least, holds good in this regard, and the manager loses time, who spends it airing his own peculiar views over each machine.

Careful examination of the goods before they go out will result, where faults exist, in placing them to the account of the careless, but the anticipation of a non-existant evil is often the cause that gives it birth. C. M. A.

Where an employer negligently provides his workman with improper and unsafe apparatus with which to perform the work, and the workman without any fault on his part, is injured, owing to the employer's neglect to provide suitable, safe and proper appliances, the employer is liable for the injury.

PAYING FOR BRAINS.

Those who determine the rate which shall be paid for labor in the great majority of shops do not seem to realize that brains are just as desirable in the management of the shop or drawing room as in the management of the finances of the company.

The treasurer who can guard his finances so as to save a half per cent. here, or a quarter there, in some shrewd business deal, is looked up to as a man to be retained at any cost, and no salary within reason is too high for him to receive. In the shop it is different. The right kind of a foreman is continually saving money for the firm, and in many cases actually saves many times the amount which the financial man boasts of, yet he only receives "shop pay," which seldom exceeds four dollars a day for a shop foreman, and which is considered good wages. It is the same in the drawing room. Mistakes here are costly, and the brainy man in charge of this department can save more in proportion than almost any other officer or employe, yet how seldom it is recognized in a substantial manner, and we find draftsmen about as poorly paid in proportion to their work as the men in the shop.

But, some will say, they cannot afford to pay a large salary, and if they cannot they should not expect a high grade of working or managing ability. The man who can save a thousand dollars a year is certainly worth more than the one who can save only a hundred, yet this is too seldom given sufficient consideration in determining the salary due.

While the demand and supply of labor largely regulates its rate of remuneration, none can deny the justice of giving each a fair share of the product of his or her labor, and if a man can save you money (which is equivalent to adding to your profits), he certainly deserves a fair share of the savings.

In other words, there is too little attention given to the proper remuneration of men with brains when they happen to be employed inside shop walls, and it is not an economical procedure either. Brains must be fairly paid for or you will be loser in the end, as a few concerns are learning and are holding good salaries as a tempting bait to lure away the men on whom so much of your prosperity depends.

Whether the brains are in the shop or in the office, they deserve substantial recognition in proportion to the service rendered, and many are beginning to realize that recognition does not consist entirely of praise or of patents, but of a share of that "root of all evil" which is so much talked of and so little understood.—Machinery.

SUGGESTIONS ON MANAGEMENT.

If you decide to engage a manageress to run your place, you must put full confidence in her. If you cannot do that, you had better be without one. There is a saying that "it is no use keeping a dog and barking yourself," and this applies to the laundry. The place must not have two heads to do the same work, and the proprietor who meddles and gives orders which should properly come from the manageress will soon destroy the latter's prestige and cause trouble in the place.

You should never find fault with the manageress before the workers. If you want anything altered, you should tell her so quietly, and send your orders through her. It takes away all her authority if you interfere with the workers.

A manageress should be a practical expert in the mechanical part of the work, and at the same time be acquainted with the theory and scientific principles involved in its successful performance. In these days of specialists she could not be expected to be able to perform every branch of the work better than anyone else in the place, but she should be able to demonstrate how a thing should be done, if necessary, and she must be able to say what is wrong in any method of work, if there is something wrong in it. At the same time a manageress should not have to do any manual work habitually—no washing, starching, packing or other work. She is paid to see that others do it, and you cannot afford to pay her to do what a girl at one-third of her wages can do as well.

The great requirements for the successful management of a laundry business are order and system, and a manageress must be systematic and quick to see where things are weak. She must also have the power of organization, and must strengthen her staff here or there as she sees such and such a department getting behind in the week's work. She should be endowed with tact, both in the treatment of workers and the customers. Some want more gentle handling than others, and many a complaining customer may be turned into a staunch supporter of the laundry by the exercise of a little diplomacy who would otherwise take every opportunity to run the place down. It should never be forgotten that a personal recommendation from one lady to another is better a hundred times than anything you say about yourself in your advertisements.

The manageress should not be feared by the workers, or they will try to hide faults from her; neither must she be familiar, or they will take liberties. She must rely on her own strength to see that her orders are carried out, and must be able to punish those who are disobedient without having to threaten, "I will tell Mr. So-and-So if you do that again."

She should try to keep the hands cheerful, even if things are going a little wrong, and must enforce obedience and punctuality. She should keep moving about the various rooms, so that she detects faults and weaknesses at once, and not sit in an office all day, hoping the place will carry on itself, and learning only of the defects when the goods are returned with letters of complaint from the customers.

"A place for everything, and everything in its place," is an old saying which will apply equally to people. As far as possible, each employe should have definite duties assigned, and should understand that they would be held responsible for the proper carrying out of these duties.

In some laundries the girls are allowed to sing at their work, as it is thought this helps to keep them cheerful; but this is not a good plan, especially if the favorite melody is the hymn. The slow time of this class of music will make slow work, as the ironer's hand will unconsciously keep time as she sings.—London Laundry Record.

UTILIZATION OF MEANS.

The best utilization of the means at a man's command is one of the most important things in his business life that can engage his attention. Whether his means be large or small it is much the same. A large fortune will soon dwindle away if injudiciously used, while a small one can be built up if only properly employed.

It is a well-known fact that one man can make a dollar go twice as far as another man, getting fully as good and often better results. It is not how much you spend, but how you spend it. While capital is very essential to do business, the most successful men—millionaires of today—had the least to begin on, but they knew how to use it to the best advantage.

These observations are applicable to the laundry trade in many instances. The man who starts a steam laundry needs to utilize his means to just as good advantage as the manufacturer or any other business man, and rather more so. His outlay at first must necessarily be large even if he only purchases the most essential machines, and if he is a wise man he will not saddle himself with too much of that which has brought ruin to many—the mortgage.

However, it is not so much the getting ready to start, and such judicious arrangements as may be made in a financial way to make a start possible, as it is the management after having once started.

If brains are exercised in the laundry, if observation is trained to "catch on" to what is recognized most generally in the trade as good methods and good articles, if the distinction is made between false and true economy—a point at which so many stumble—and if the income of the laundry is closely looked after, success is almost if not quite a foregone conclusion.

SYSTEM IN THE LAUNDRY.

AN INTERESTING CHAT WITH ONE OF THE MOST SUCCESSFUL OF LAUNDRYMEN WHO HAS A SYSTEM THAT WORKS WITH UNERRING ACCURACY.

It is the small things which count in making assured prosperity or the reverse.

On the subject of system in the laundry, the practical working of a thorough system in all its details and in all departments, there is probably none better qualified to speak from successful experience than C. I. Goodhart.

"System," said Mr. Goodhart, "should commence in the office and pervade the whole establishment. The first rule to observe in the office is courtesy to all who come there. In large cities it is the practice for customers to come to the office with their complaints and there every attention should be shown to them. Chairs should be provided for them, the office surroundings should be of a pleasant character, and everything of a disagreeable character should so far as possible be kept out of sight.

"Soiled linen should not be allowed to remain around the office, all bundles on being received should immediately be removed. Laundered bundles should be kept behind glass cases, and the bundles should be so far as possible neatly and uniformly done up so as to be pleasant to the eye where it may perchance rest upon them.

"Without being gaudy, the office cannot be too handsomely arranged. An angry customer about to do some vigorous kicking, on seeing himself in a plate-glass mirror is apt to subside.

"There cannot be a more important matter to have reduced to a thorough system," continued Mr. Goodhart, "than that of collection and delivery. In delivering and collecting, an exact system is absolutely necessary if mistakes are corrected. It should always be remembered that a customer neglected is likely to be a customer lost. The customer thinks he is slighted and you lose his trade.

"We have a regular call book for our drivers, giving the customer's name and address arranged systematically, according to street and number, with the day and time a. m. and p. m. to call. If the driver does not get the bundle he returns the list to the office with the reason marked. The city is so mapped out that one wagon cannot cross the territory of another. We also arrange so that the wagon will call upon the customer every time, as nearly as possible, about the same hour.

"As to marking. Well, it is a subject to which we have given a great deal of attention. It is hardly possible to devise a perfect system, but I am now working out one which, I believe, will be a vast improvement on any in use at present. Its main features are designed to give to every customer an individual mark which will belong to him alone, and never can to anyone else, so that the customer who once brings a bundle, should he go away and not come back for years, will have the same mark. No two customers, under this system, can ever have the same mark. If a collar or so be over, we can tell at once where it belongs.

"This system of marking," continued Mr. Goodhart, "without going into details, consists of taking a few letters of each customer's name, and is much after the vowel system used in the directory. The importance of a correct system of marking in the modern laundry cannot be overestimated. It avoids trouble everywhere, and it is a point that cannot be too carefully looked after if the best results are to be obtained.

"As to sorting, we sort in boxes alphabetically.

"In washing there should be no guess work. With us each load is timed. When it is put in, a dial marks for the operator when the suds is to be let off in each operation. First suds started at 1 o'clock the dial marks to run off at 1.30 o'clock, and so on. This insures accuracy and uniformity.

"In dampening we use an hour glass to measure the time. We have glasses graduated for the hour and subdivisions of the hour. Of course, the length of time dampening if continued does not matter so long as it is long enough—the longer the better—but you see that it prevents the common habit of girls from the ironing room carrying away shirts before they are properly dampened. By using this the foreman can keep watch over them and render it well nigh impossible.

"We weigh all our materials, time our processes, and use the same procedure in every case. I will give you an idea of the value of this system in practical laundry work.

"In cooking starch we weigh the starch, cook it exactly the same time, and use just exactly the same quantity of water always.

"You know that all the old-time laundrymen have what they call an 'off day?'—the day in which everything in the laundry seems to go wrong, troubles accumulate, and come as it were to a climax. To my mind, there should not be such a thing known in any laundry as an 'off day.' Where hour-glasses and sub-divisions of hour-glasses are used, where every machine is timed, all material weighed, and a perfect system in every department prevails, an 'off day' becomes an impossibility.

"Year by year," concluded Mr. Goodhart, "the laundry business has come to the front as an important industry, demanding quite as much care and attention to minute details—if success is to be assured—as any other industrial pursuit."

ECONOMY IN THE LAUNDRY.

THE USE OF MATERIALS.

One of the greatest leaks in the laundry is the extravagant use of materials. Many times I have seen the washer running over with suds, and the floor around the washer covered with them. Now, this not only causes a loss of soap, but it also causes bad washing, as the goods do not have the proper fall when floated in a machine full of suds, and consequently are not thoroughly washed. It is a common practice among washermen to use the chip soap without thoroughly dissolving it, and as a result more soap is necessary to make a suds at first, then when the soap becomes thoroughly dissolved it produces an excessive amount of suds.

It is economy to have a galvanized iron tank and boil the chip soap with a proportionate amount of water, till the chips become dissolved, and the whole mass thoroughly combined. Then use of this soft soap just a sufficient amount to make a free suds in the washer. After the machine is run for a while and the suds go down, add a little more of the soft soap to bring it up again to the proper degree of washing. Under these conditions the goods have sufficient soap to saponify the oily substance in the material and remove the dirt, and are free to move in contact with themselves, and against the sides of the machine, and are also free to drop as the cylinder revolves, thus producing the pounding principle. Thus is produced the best result at a greater saving of soap. If too much water is used, then the goods are floated and not washed; more soap is required to make suds, and more water has to be paid for. So we have three losses from the use of too much water in sudsing—first, water; second, soap; third, good effect in washing.

In rinsing, bleaching, souring or bluing, a greater amount of water is absolutely necessary to insure the best results. For if you do not have a free amount of water you cannot remove all the soap, as the goods will become compressed together and the soap remain in them, and so it will be when applying the chemicals. If there is not a sufficient amount of water to allow of the goods moving freely in the machine, the chemicals will not become so thoroughly worked into the goods, and the final results will be a poor color in the goods when finished.

In many laundries there is a great loss of steam in washing. There should always be a tank of hot water, placed in a position where the water can gravitate into the washers. This can be economically heated by the exhaust steam from the engine. The hot water can be used for washing, and save heating by direct steam. There should be a ball valve on the water supply pipe, so arranged as to shut off the water in this tank when it has filled the tank, and as the water is drawn out of the tank the valve will open and refill it again. Large pipes should be run into the washer in order to supply them quickly, and thus save time in that way. It is also economy in time to have large outlets to washers, so that they may be emptied quickly.

Cold water should never be let into a machine on hot goods. All waters should be let in at the same temperature as the water was which was previously in the machine. That is, if the suds is 180° the rinsing water should be 180°, and so in making the change of any water in the whole process. In this way two things are accomplished—a saving of heat by not having to heat the whole mass—water, goods, and machine every time the machine is filled with cold water, and better results in washing.

It is radically wrong to let cold water onto hot goods, for in such cases every fiber of the goods contracts. If there is any loose dirt yet in the goods, or held in solution in the water, the goods will contract, as before stated, and so hold the dirt, while if warm water has been used the goods would have remained in the same condition as they were, and any loose matter would be rinsed out. This is the cause of grimy work which is so commonly seen after goods are finished, especially in collars, cuffs and shirts.

It is not economy to try to use too cheap materials in the laundry. In order to produce the best results, it is necessary to have the best materials, although I would not advise going to extremes in this matter; as, for instance, I would not advise exclusive use of a high-priced wheat starch, as a saving can be made in starch to quite an extent by having a proper knowledge of the way of cooking starch, and what proportion of wheat and corn starch to use.

Some laundrymen are using all wheat starch. They think it is economy, because it is more easily gotten into the goods, but if they would try cooking the starch and using it according to my suggestions, they would find it would be as easy to handle as all wheat starch, and a surprising amount of money is saved by the use of corn starch.

I have noticed in some laundries an excessive use of chemicals. I saw especially in one laundry, where they did a "flourishing business," the help taking the goods out of the washer from a bath of oxalic acid, and every few seconds they would have to stop and rinse their hands as the acid water was so strong that it made their hands smart. Now, this was injurious to the goods and also a great waste of materials. Only a sufficient amount of oxalic acid, or any other acid, is required to neutralize the soap or combine with the chlorine. Aniline dyes always require an acid to develop them properly, but it is surprising to know how small a quantity of acid will develop the color, and a surplus of this is surely not economy.

"Unome."

INVITE INSPECTION.

Whenever I am in a laundry town I always make it a point to call on the laundries. I was in a neighboring city a short time ago and called on some of the boys there, and to my request to be allowed to look through their plant, was met in some cases with a "No, sir, we do not allow visitors in our work rooms during working hours," and in others with a polite "Certainly; come this way." Now, to which of the two places would you send your soiled linen? I think I should choose the latter place, as I should not care to send my linen to a laundry where they would not let me in to see what they do to, or with it, and I think this is the cause of a great deal of the prejudice against steam laundries.

People think laundrymen have something in their laundries, or do something with the goods, that they do not care to let anyone see, which, of course, is an entirely erroneous impression. I think that if laundrymen would all, as has been mentioned before in your columns, invite their customers to visit their respective laundries, say one day in the week or month, and never refuse to allow any respectable person to look through the plant, it would do away with a good deal of this aforesaid prejudice and would be a great help to the business in general. People would see not what they expected, but they would in nine cases out of ten be more than surprised at the improvements over the washtub, board and hand irons; and I think a laundry which invites inspection will be pretty sure to get their visitors' linen, and if they should happen to be lady visitors (excuse me, please, for what I am going to say), they could not help telling their friends, if not their neighbors, of the grand things they saw on that day; for what is nicer or more interesting in the machinery line at this present day than the latest laundry machines, especially when in a handsome and well-regulated plant, working at full capacity washers, starchers, ironers, etc., etc., and turning out nice white work.

I always make it a point of explaining to visitors the workings of the different machines and answer all of their questions as accurately as possible, and when they leave you at the office door it is invariably with "Thank you very much. You can have your driver call at No. —— the forepart of next week for a bundle," which, by the way, is what we are all after, or you can write me down a

"QUEERCUS."

SOME BUSINESS ADVICE.

Let the business of everybody else alone, and attend earnestly to your own. Don't buy what you don't need, or feel certain you cannot create a demand for. Use every hour to advantage, and study even to make leisure hours useful. Think twice before foolishly spending a shilling; remember you will have another to make for it, and should you spend as much as you make, you need only hope for a treadmill existence. Look after your business largely in the spirit of light-heartedness. Buy judiciously, sell fairly and keep a close eye to the profits. Look after your accounts closely and regularly; if you find an error trace it out and keep stirring slow accounts.

Should a stroke of misfortune come upon you, retrench, work harder, but never fly the track. Confront difficulties with unflinching perseverance and good humor, and they will disappear like fog before sunshine.—Trade Magazine.

KEEPING UP WITH THE TIMES.

AN ESSAY BY W. C. SHAW, OF ERIE, PA., AT CHICAGO CONVENTION, SEPT. 14-16, 1897.

It is necessary to success in any business that the proprietor or manager should be careful, and conservative in the expenditure of money.

It is also necessary that you should know the necessities of the business.

The saying, "Penny wise, and pound foolish" will apply to many in business, and I think I am safe in saying that when you can show me a man of that disposition you will always find that he has a competitor who is doing a larger amount of business, is thought more of in the community in which he lives, is more entitled to credit, is considered energetic and is possessed of a greater amount of intellect.

Selfish men do not look far enough ahead. Many a laundryman says, "I know of many machines that would improve my work and benefit my business, but I do not feel that I can afford to purchase them."

In a way, I have not the least doubt but what that statement is true, but can any man afford to get behind and allow his competitor to take business away from him simply because a small expenditure of money would put his business in such a shape that he could do as good work, and be better able to increase his business as well as retain the customers he already has?

It is a fact that nine-tenths of the American people in this country patronize the man who "keeps up with the times." To do a large business you must have that reputation. It is like capital well invested. You are known as the leader, you are looked upon as a man who thoroughly understands the business in which you are engaged, and your patrons feel safe in sending their work to you.

It is absolutely necessary that you should have the confidence of the people, and nothing will give them more confidence in you than to see that you are ever striving to improve their work. It is one way of informing your patrons that you are pleased with their patronage, and I believe that everyone of your patrons have an interest in your affairs, more, perhaps, than you are aware.

How often do you hear the remark, "I have been a customer of your laundry for years," yet how much better it would be if they would also say that your work continually improves.

A few walking advertisements of that kind is better than all the money you could expend in telling the public directly that you do good work.

I do not wish to give the impression that to insure success in a business of this kind the only thing necessary for one to do is to "keep up with the times." There are many other things necessary, and I shall leave that to the others who read essays at this convention. But no matter how well you may know your business, no matter how many friends you may have in the city in which you are doing business, you must be enterprising, you must improve your business and you must not allow any competitor to get ahead of you.

Give your business your personal attention, study it well from the office to the bundling room. If you find your work is not what it ought to be, look up the remedy and do not give up until you find it.

It may be that a machine is in fault on account of being a back number—one of those you see advertised "For sale cheap; as good as new."

You must not only do as good work as your competitor, but better, if possible.

If you purchase all your machines from one machinery house you are only using the ideas of that house, and running in a rut. A hint to the wise is sufficient. Read the laundry journals carefully and always attend the conventions.

Those in attendance at this convention who wish success can have it, can be prosperous, can retain their old trade, can get new trade and retain the confidence of the public by steadily adhering to the one motto, "Keep up with the times."

THE LAUNDRY BUSINESS.

AN ESSAY BY W. Q. LLOYD, OF WILLIAMSPORT, PA. READ AT CHICAGO CONVENTION OF L. N. A., SEPT. 14-16, '96.

The needle in the compass of the laundry world, since the 16th day of October last, has been pointing towards Chicago. The attraction of magnetism has been irresistable, proof of which we have before us. To-day in this beautiful city, in convention assembled, are the nation's laundrymen or the nation's noblemen, if you please. Tell me where, in all this land and glorious union, can be found a class of tradesmen who have done more toward correcting the morals and advancing the cause of Christianity, cleansing humanity, not only externally but spiritually.

We stand to-day on a par with the church. The church is instrumental in cleansing souls, while the steam laundry not only does soul cleaning, but robes the soul and body in spotless linen, the emblem of purity.

The church in its folds may have the uncleansed. The steam laundry advances on the wave of popular favor, scoops the dirty individuals in and washes them whiter than snow. Cleanliness and godliness must go hand in hand as long as the wheels of the washers go round and round.

We are here, gentlemen, in the interest of one of the grandest trades, or professions, if you please, known to civilization, of which every member here is justly proud; and we propose to make seventy millions of people proud of us.

Why, fellow craftsmen, I would not exchange my little laundry and shirt factory, located in the grand old keystone state, for the presidency of these United States; and I dare say there are many others here who feel just as I do. There is no mistake, gentlemen, we are the people. Yet, like all of Adam's sons, we are born to trouble. Many things arise in our business that perplex and worry us, which is perfectly natural. Some of us have had hard sailing and are the better for it. Heavy storms and high seas make good sailors. Show me the laundryman who, with energy and other qualifications, starting in at the beginning at the bottom of the ladder, and I will show you the man who will climb the golden stairs of prosperity.

If there are any among us to-day who have just launched their crafts on soapy seas, though that craft may have the shape and size only of a washtub, properly and courageously managed, will in due time assume the magnitude of the iron-clad "liners" that plow the mighty deep, and bring to their owners big returns of wealth and prosperity.

One more thought and I am done. Let me caution you to steer clear of shallow water; the rocks of disaster (cut rates) are hidden beneath its deceptive surface. It is a delusion and a fallacy to believe that by cutting rates and thereby increasing the volume of business, that the profits are increased to a corresponding degree. The mushroom laundry will meet you every time and, in many instances, "go you one better" just for luck. They have nothing to lose and everything to gain. But rather conduct your business on dignified and business-like principles; advertise it by doing good work; in the newspaper and through every legitimate channel. Keep pegging away, and success will crown your efforts as sure as the sun rises and sets.

"THE LOOKS OF THE PLACE."

A BUSINESS IS KNOWN BY THE HOUSE IT KEEPS.

Rich men have lived in dugouts.

Poor men have lived in mansions.

By the house we live in so may we not be judged, but so will we almost always be reckoned.

Men of genius may wear frayed pantaloons and go with unkempt hair, but wornout trousers and scraggy hair are not marks of genius, for those things the tramps have also.

Many a clerk on little pay is dressed better than his employer, but he is no less a valuable clerk for that.

There are branches from even the straightest beaten track of safety, but the law of averages accepted by the majority is less dangerous to follow than even the successful rules of exception.

The well-dressed man is more likely to be a prosperous man than the man of shabby overcoat, and the poorly dressed man the more likely to be an unsuccessful man than the man with tailor-made clothes.

The beautiful office may be a den of swindlers, but it is more likely to be the business home of profitable business.

So long as comfort, convenience, and eye-pleasing luxury appear to accompany successful business, just so long will these things count in profit-building.

Shoes, or overcoats, or anything else may be sold in the store of darkness and dust, but more shoes and more overcoats and more of everything else is sold in cheerful places, well furnished and conveniently arranged.

The most successful factories are well kept, roomy, with the best of sanitary arrangement, and each girl or man has a locker, a cake of soap, and a wash-basin.

The most successful retail stores are those of good location, plenty of room, every convenience, and artistic arrangement.

There may not be necessity for solid mahogany desks and leather cushioned chairs, but there is every reason why the office and the store should have some of the comforts of home, and the appearance of painstaking arrangement.

Cleanliness is the most economical, the most healthful and the most appreciated business essential.

Plenty of light is necessary to plenty of business.

Plenty of comfort means more work and more profit.

Neatness of store, neatness of office, neatness of clerk, neatness everywhere, are absolutely necessary to the successful conduct of any trade.

Even the dirtiest lines of business need not be all dirt, for dirt where dirt should be is not dirtiness. Dirt where dirt should not be is dirty business.

Keep the dust out of the way. Let the sunlight in. Make the clerks wear clean collars and clean cuffs. Supply blacking and brushes. Have plenty of clothes brushes.

The most careless clerk is not careless in the office and store of carefulness.—Nath'l C. Fowler, jr.

QUICK TIME WORK.

Fred M. Peet, of the Eureka Laundry Co., said:

"Quick and good work is all O. K., and can be done if you watch out. It is necessary to have a perfect system, and everything must go like clockwork. The slightest hitch throws you out, because it is impossible to correct errors. Everything has to go. With other work it is different; if the goods are not turned out properly from any department there is time to make the defect good, but where everything has to be done within a few hours, both the customer and the laundry have to take chances.

"We have quite a quantity of hotel work which has to be done on the same day that the bundles are received. We do it all right, but we have no time to go over anything, and the goods have to take their chances." * * *

Mr. Chas. I. Goodhart, the senior member of the firm of Goodhart Bros., said:

"We do quite a quantity of work which has to be got out on short notice. Often in the evenings our drivers bring us in bundles which are delivered to customers after dinner the next day, and often we have bundles brought in at dinner time to be finished the same night.

"There is no trouble doing this where your work is systematized. For example, we have a recognized method with these goods. The lot is always given a quick wash, and then it is passed rapidly through every other department.

"These time bundles take precedence of the others in every department. Other work is stopped that they may be put through. Hotel work is generally of the hurry character. The man who is traveling wants to get out just as soon as he can. The up-to-date laundry must therefore be prepared to do goods not only well but quickly. We find no difficulty whatever in handling this class of goods. In the dry room separate bars are devoted to this special work. It gives us no trouble whatever."

Julius Aagaard, vice-president of the South Chicago Laundrymen's Association expressed similar opinions, as did Mr. Williams, of the West Lake Laundry. The former gentleman said:

"Quick work can be done within the twenty-four hours in every well-appointed laundry. It cannot be done in cheap laundries, for their methods do not permit of their doing it."

The large hotel laundries in Chicago have got bundle work down as fine as the other big laundries. Six hours is the regular time to which they have reduced laundering, the bundles received in the laundry in the forenoon being returned to the guest's room in the evening.

A true man adds dignity to his occupation; his occupation can never demean him.

A GAME OF BUSINESS.

Prof. Huxley uses this figure: "Suppose it were perfectly certain that the life and fortune of every one of us would one day or another depend upon his winning or losing a game of chess, don't you think that we would all consider it to be a primary duty to learn at least the names and moves of the pieces, to have a notion of a gambit, and a keen eye for all the means of giving and getting out of check? Do you not think we should look with disapprobation amounting to scorn upon those who had no interest in knowing a pawn from a knight?'' But it is a very plain truth that the fortune and well-being of those engaged in business, depend on knowing something of the rules of a game infinitely more difficult and complicated than chess.—Exchange.

KNOW YOUR BUSINESS.

It is in the nature of a man to feel that he should adopt some other business. If they had, they reason, success would have crowned their efforts. The carpenter wishes that in his early youth his parents had placed him with the machinist. The laundryman reasons that if he had put his money and his time, his intellect and his hard work into the coal business, we will say, he would not now be bothered with the agency problem, and harrassed by the man who sends back a pair of ten cent cuffs with a note saying they are irrevocably damaged and requesting forty cents in lieu of his lacerated linen—and feelings.

But the fact remains that he is in it, and in a large percentage of cases in it to stay. Having recognized this fact then it is a matter of vital interest to him to perfect himself in his business. He wants to know all about it. He must not be content to rest on his oars and be satisfied with the methods of ten years ago. The business of laundering is not creeping along but is bounding along with all the activity of youth, and if he hopes for success he must keep up with the times.

GET UP AND WORK.

There are some people who expect business to come to them, who sit down and wait for fortune to come their way, and complain of hard times because they do not prosper. Such people do not deserve to succeed. Of course, there are periods of business depression. We all must admit that, but the man with any energy, the man who eventually succeeds, does not lose courage because calamity howlers tell him that the times are out of joint. He buckles on his armor and makes a more vigorous fight for success than he would in more prosperous times. He uses every effort possible and every means that suggest themselves to push his business.

The man who waits for business to come to him is out of place as a business man. The sooner he steps down and out, and allows some enterprising man to take his place in the commercial world, the better it will be for all who have any business dealings with him, for he is sure to fail sooner or later.

To work strenuously is the only secret of success in these days of fierce competition. It is no use lamenting the fact that we have competitors. They do us good. They stir us up and make us put forth our best efforts—i. e., if we are alive.—Exchange.

BRIGHTEN UP YOUR LAUNDRY.

Your work is generally judged by the condition of your office and work room. It is a fair criterion and life is too short to attempt to convince most people otherwise. Your office needn't be large so as to try to create the impression that there is plenty of work therein, or that it is good work either, but it should be made as attractive as possible. People generally like an up-to-date place of business, and they like to patronize the laundry that puts on the best appearance, both in front and in the work rooms. There may be exceptions to this rule, but those are not what we set out to write about. We know of some men in the business that let things go to decay before they will take the trouble of making the necessary repairs; if you will watch the career of such men you will find they never succeed in the long run.

You can afford a little soap and paint, at least, if not a little paper on your office walls. A small amount expended in this manner will bring the best results. If you cannot afford to throw aside some old machine you have perhaps been using for years, and get a new one, you can afford to have the old one overhauled and put in more serviceable order.

YOUR WORKERS.

BY NATH'L C. FOWLER, JR.

I know a man of money and unremitting success, who respects himself, and who tries to high-grade himself by low-grading his employes.

He believes he is the top, middle, and bottom of his business, and that his representatives are but dummy mirrors of himself.

He considers himself a gentleman, and the source and discharge of business, but he isn't.

This man is a fool, and is now being buried under an avalanche of a competing sense.

He has money, but even that is leaving him.

His success was like the flash in the pan, a big blaze, and one that you see a long ways, but the flame rose from surface oil, and there was no oil at the bottom.

You step aboard the lightning express, and the brakeman insults you.

The brakeman is the only representative of the railroad that you come in direct contact with for this trip, and by the action of that brakeman you judge the president, the vice-president, and the entire board of directors.

Because the humblest employe annoyed you, you and your friends and your freight, go by another road.

Your wife does not like the saleswoman, and with a woman's reason is opposed to the proprietor of the store, and her trade goes elsewhere.

You should not judge the railroad by the break the brakeman makes, nor should your wife reckon the proprietor a fool because a tired saleswoman was spleeny, but you do it, and so does she do it, and so long as you both do it, so long must the outer end of business properly represent the inside of it.

Don't talk to me of reason. What is, is, and what will be, and he who succeeds in business must balance every part of business, and must have just as perfect a boy for the office boy, as he has a perfect bookkeeper for the bookkeeping.

People do not see you, for they do their business with your salesmen and other representatives, and they expect courtesy and decency from every man they come in contact with. They will have these things from you, or you will not have their business.

Any fool can be a gentleman, and many a gentleman is a fool, but it takes a man, and a manly man too, to make his employes good copies of himself, and proper representatives of his business.

AGENTS.

AN ESSAY BY C. A. ROYCE, OF SPRINGFIELD, MASS., AT L. N. A. CONVENTION, BOSTON, SEPT., 1897.

I will begin at the beginning.

We are taught that when God created man He made him in His own image. This, I take it, means not only that in the beginning the seeds of immortality were implanted in man, but that the best in man, those attributes that distinguish man from the beast, in some measure at least, reflect the Divine. I need not linger upon the conditions that existed in the beginning, and have only to say that had these conditions continued down through the ages to the present time, very few of us would today be engaged in the important industry of cleansing the dress of humanity. If this statement is doubted, I will ask the doubter to reflect how, according to the best authority, Adam and Eve were clothed. In those happy days there were no kodaks, and we have no snap shots of our bucolic parents as they rambled among the limitless beauties of Eden, so we must take the common story, in faith. But there are other considerations. The primitive man, that paragon of virtue, would have made a very poor laundryman. Imagine him, if you are able, practicing the little infelicities so necessary to the successful conduct of a laundry. But, my friends, the primary condition did not long continue. The woman—God bless her—and the serpent appeared before the curtain had fairly risen upon the human drama, and the poor man at once began to shoot the chute. We need not follow the dizzy downward flight. You will remember the clergyman who announced as his text those words of scripture reading: "The world, the flesh and the Devil." He began his discourse as follows: "Dear brethren and sisters, I will not pause to say anything about the world, I will pass lightly over the flesh and go at once to the Devil." This is typical of what man has been doing from the days of Adam to those of McKinley. Yet, strange as it may seem, there are good men in the world, descendants of Adam if you please, and on the contrary no argument is needed to prove that there are men who are not good. It is the latter class with which we have to do today, and it is the former class to which I wish to address my remarks.

There are degrees of badness; many a man who seems to be bad in the superlative may have some good in him somewhere. And, somehow, sometime, the good may take root and grow, until, in place of the brute, we have one of God's noblemen. It is well to believe this and to govern ourselves accordingly, but I am sure I reflect your sentiments when I say there are those to whom this article of belief will not apply. Some who in badness have reached totality, some who are so desperately wicked, that there is no hope—humanly speaking—that rays of life-giving light from the Son of righteousness will ever penetrate to the abyss of their darkened souls. They must for a time trouble the world with their blasting presence, and then pass on to "outer darkness." In this category let us place the laundry agent. Is this position too strong, think you? Go read the laundry papers, or talk with the agent-ridden laundryman.

Lest I dig a pit and tumble myself into it, let me remark that these statements of mine are inspired, they are caught by reflection from the facts before me. Speaking for myself I think the agent no better and no worse than other men, and much of the abuse that is heaped upon him is uncalled for, unjust and unwise. The agency is legitimate and the agent, under proper conditions, is a proper and useful servant of the laundry. It is said that a man in good health may consume a certain amount of pure alcoholic liquor each day with benefit rather than ill; personally I cannot speak advisedly upon this point. No doubt there are some within the hearing of my voice who can. Whether these have discovered this exact beneficial amount and are governing themselves accordingly, or whether they are taking their chances, I cannot say. Be that as it may, alcohol has its fit and proper place in human economy, and cannot well be spared. The evil that comes from it lies not in its use, primarily, but in its abuse. So it is with the agency business. It is not my purpose to claim that this branch of our industry is analagous to the rum habit; it is not so, except in its sometime effect. The miserable sot who has wasted his substance in riotous living, and who at last drops into a dishonored grave, may possibly be held up as a fearful example of the effect of wrong doing, as a suitable warning to the misguided laundryman who allows the leach-like agent to drain him of his life's blood.

A vast amount of the business of the world is done through and by agents. Stop the agent and you hush the wheels of industry. The newspaper, heraiding the bargains of the merchant, is but an agent of the merchant. The clerk behind the counter; the irrepressible "drummer" with his "grip" and his inexhaustible fund of rib-tickling stories; the man in the office on the tenth floor lolling at the costly desk; the driver on the team, all are agents. But these agents are subject to a law as unchangeable as the laws of the Medes and Persians—the law of profit. The merchant must be very sure that the newspaper agent pays him a profit or else he ceases to employ him; so with the clerk, the "drummer," the office man and the driver. The employer says: "It is my capital that keeps you employed; make additions to it, or I shall have no use for you.'' It has been left for the laundryman to build up an agency system not founded upon the law of profit, or upon any law whatever, unless it be the law of grab. Many considerations have operated to produce this condition of things, but two stand out preeminent.

First. There often comes a time when offered trade must be declined, not because it cannot be taken care of, but because there is no profit in it.

It is hard to turn one's back upon available business, and we dislike to do it. This is the age of business, and we desire to make a showing in bulk. This is natural, and in the main praiseworthy; but if this desire shall rule in spite of all other considerations, it may be the height of folly, yet it does so rule.

If the man who employs one hundred hands inquires of the one who employs fifty, ''How many people do you employ?'' A paltry fifty seems small, and the chances are that the truth will be stretched from ten to fifty per cent. Not only that, but I know of cases where men have employed more people than they needed, not for charitable reasons, but to create a big impression in the minds of their competitors. ''How many shirts do you do per week,'' says A. to B. ''Two thousand,'' replies B. ''Why, bless your heart,'' says A, ''my town is no bigger than yours, competition red hot, and I do five thousand shirts.''

Both the questions of this amiable windbag are silly, but they create in the mind of the smaller laundryman, a feeling of unrest, and quite likely induce him to reach out after business in anything but a legitimate manner. The fundamental questions here are, what is the per cent. of your labor cost? or are you able to increase the number of shirts at a profitable rate?

Second. The second strong consideration or influence is the desire to overreach one's competitor. Do not object to this proposition, for you know it is true.

No matter how many associations you and your competitors are fellow members of, no matter if you meet in friendly chat upon the street, no matter if you rub elbows in the lodge room, or sit in adjoining pews on Sunday, a customer filched from a competitor is worth three gotten in any other way. Does anyone wish to deny it? In these matters I speak from the standpoint of experience. If you will pardon personal remarks, I will say if I had not learned to refuse trade, I would to-day be doing much more work and would be employing many more people. Men come to me who are getting fifty per cent. discount, and yet wish to change because they say they are getting "rotten" work. In the name of heaven, what can they expect? A discount of fifty per cent. is not uncommon. At that rate there are no chromos, but frequently there is a horse and wagon. Is it not time for laundrymen to cry out in agony of spirit, "where am I at?" As for me, work for half price has no charms. In the words of Shakespeare, "I would rather be a toad and feed upon the vile vapors of the dungeon" than to keep a laundry and delve among the dirty linen of humanity, for the mere sake of being able to brag of my big business.

We know that the agency business is legitimate, we know that it is often unprofitable, and that the conditions show no signs of improvement. It is possible that there never will be any improvement, but we may suggest certain lines along which improvement must come, if it comes at all.

The laundryman should know the cost of laundering everything he handles. Until he has this knowledge he is not competent to make a price list or fix a discount. It will not do to figure in this way: The cost of ironing a shirt is, say, 2 cents; the cost of starching, say 1 cent; the rest we estimate at 2 cents, making the total cost 5 cents. It is quite likely that a shirt may be washed, starched and ironed for very much less than these figures, counting labor alone. Putting the list price at 10 cents, we have a large and safe margin upon which to figure a discount. I am willing to confess that after twenty years in the business, I don't know the actual cost of laundering a shirt, and I have never found anyone who did, but I am sure it is much above the usual estimates.

If actual cost cannot be arrived at, it is evident that the only safe plan is to be sure that the estimate is large enough. This estimate must, of course, vary in different establishments, for reasons which are obvious; when, however, the estimate is properly made, and not before, the discount may be fixed, and once fixed, it should be changed only as one is able to reduce cost. The retail merchant selling $50,000 per annum can hardly hope to compete at all points with one whose sales run into the millions, and yet there is room for him and quite likely he will succeed, if he does not ape the manners of the millionaire. Let us apply this same rule to the laundry business. So much for cost and discount.

The agency should be a matter of selection. The fact that one is acting as agent for another, does not prove that he will be a good agent for me. The proper considerations are something like this: Is he good and prompt pay? Is he one who works for the interest of the laundry, or, on the contrary, will he consider what he deems to be the interest of himself and of his customer? Understand, these several interests are identical, in a measure, but some agents take the position that the laundry has no rights which they are bound to respect. To illustrate: In case of a claim of any kind, the agent may, and usually does, at once decide the matter against the laundry, without giving it the benefit of a doubt. This is judgment without due process of law, or without justice, equity or common sense. This is what we call considering the agent's or customer's interests alone. Again, is the discount he demands greater than my margin of profit will allow me to pay! Is he the best man obtainable in his particular locality? Were such rules as these carefully applied in all cases much of the trouble connected with the agency business would be eliminated.

The agency business should be done under contract. It sounds plausible to say that the agent is a buyer of laundry work, and that it is his privilege to buy where he can do so cheapest and to the best advantage; but this is not a fair statement of the case, for reasons which I need not enumerate. Suffice it to say, when you put your work into the hands of one as an agent, you and he enter into an arrangement of mutual interest; by working through him, you can control the trade in his locality better than in any other way. You protect him in his territory, guarantee him satisfactory service and secure him against loss. He accepts employment as an agent from you, his remuneration being based upon general results. If he succeeds, he does so not wholly because he is a good manager, nor wholly because of his location, but partially at least because he has a good laundry behind him, with all that this implies. In that success, both the laundry and the agent share; and if there are any proprietary rights, the laundry at least has its share. The agent would consider it unfair for the laundry to open another agency "under his nose," and it would be equally unfair for him to transfer the agency business to another laundry.

Should either party fail along contract lines, then the contract becomes null and void; but until this happens, both should be legally bound. The contract should plainly define the agent as an agent. The reasons for this are too obvious to need mention. It is usually necessary to render the agent a weekly statement. This should not be done upon an ordinary billhead, but a special form should be used for this purpose. The contract should specify just how and when returns are to be made.

Covering this point, the following is suggested: "The party of the second part (the agent) shall turn over to the party of the first part (the laundryman) upon Monday of each week, all moneys due the party of the first part, as shown by the statement rendered in accordance with this contract. The said party of the second part may however, retain of such money a sum equal to 10 per cent., this per cent. to constitute full remuneration to the party of the second part for his services as agent."

The agent should not be allowed to fix the price. The furnisher must get 25 cents each for Earl and Wilson collars, or his supply will be cut off. The same rule applies in other standard makes of goods, like the Dunlap hat, etc.

It may be urged that, while such a method is possible to Earl and Wilson and to Dunlap, it is impossible for the laundryman. A sufficient answer to this is the question, Why not? And the fact that it is done by one widely known laundry, if by no more. This brings us to the consideration of the inducements the laundryman must offer before he can reduce the agent to a real agency basis. The whole may be summed up in two words—good service. I use these terms because they mean more than 'good work.' It would be very hard to find a laundryman who does not do good work; in fact, such a claim is far too modest for most of us, but it may be possible to find one who cannot claim good service. There are a few honest men left, as we found at the start; but until the laundryman reaches the point when he can honestly claim good service, it will be useless for him to attempt to put his agents upon the contract basis.

I might easily argue at considerable length upon the subject of good service. An essay upon this subject could not fail to be enlightening, but I must hasten on, only pausing to remark: Good service, in brief, means that perfection in work and methods which of itself creates a reliable and increasing demand—a demand which enables one to say just what he will or will not do. This grand attainment, which brings trade on the "wings of the morning," may be beyond the power of most of us, but along that way lies salvation.

The subject upon which I have spoken is, indeed, threadbare; it has been cussed and discussed until we are all weary of it. I cannot hope to have added much to the value of the discussion, and have given you no assistance in the matter of cussing. To sum up and conclude I claim the agency to be not only legitimate, but one of the avenues for business which not only may be, but should be, worked. That the prevailing conditions in the agency business are not satisfactory is not the fault of the agent or of the system, but of those who have had the management of it.

Mr. President and gentlemen, I thank you for your kind attention.

The President: The paper is now before you for discussion, gentlemen.

Mr. Lloyd: In order to start the discussion I will ask what is the prevailing price paid to agents.

The President: I have heard the agency commissions quoted all the way from 15 to 65 per cent.

Mr. Klein: I would like to ask Mr. Royce if he thinks it advisable to place an agent under bond to fulfill his contract.

Mr. Royce: A bond would not be necessary except in a case where the agent would not be reliable. For a violation of contract the remedy would be a suit at law for damages.

The President: We might hear the experience of someone who has tried the bond system.

Mr. McKeen: We handle our agents all in that way, and we have had no trouble in getting the agent to sign a bond nor in getting our pay. We are not paying over about 28 per cent. on a 10, 2 and 4 list. We make the agent give a bond for $50 and do not allow him to go over that. If we think he is liable to go over that in a month we ask him for a settlement prior to the first of the next month, and he usually settles.

Mr. Godfrey: As a general thing I would like to ask whether it is the agent that is looking for laundries or it is the laundries that is looking for the agent.

Voices: Both.

Mr. Metcalf: At first I think it is the agent that is looking for the laundries, but afterwards we have to look after them. (Laughter.)

Mr. Godfrey: I would think that if the laundry was looking after the agent and wanted to put him under bond that the agent would say, "I don't want the agency bad enough to give a bond."

The President: When you go out to look for an agent and find one that is not willing to give a bond you had better let him alone.

Mr. Creamer: If we should say to our agents here in Boston that we would like a bond for whatever you owe us the other fellow who didn't say anything about the bonds would get the business.

Mr. Godfrey: That is what I wanted to get at.

The President: You could succeed if you got your laundrymen into an organization.

Mr. Royce: The difficulty that occurs in the mind of the gentleman from Danbury (Mr. Godfrey) seems to be something like this: If you ask a man for business you are not in a position to call upon him to do business in a businesslike way. I think that is a wrong impression. It is necessary nowadays to solicit business in all lines. The man who sits quietly in his establishment and does not look for business will "get left," as we say. It is necessary to be on the alert. It all goes back to the point —we must stand on good business ground.

Mr. Burdick: We have another kind of an agent out our way who goes around and solicits. He gets five or ten dollars' worth of work, and he comes to a laundry and wants to know what commission he can get. If he comes to me I tell him I don't pay over 25 per cent. every week. He goes to another laundry, and finally may find one which will give him forty or fifty per cent. When he gets all the credit he can get, then he goes to another laundry. I do not solicit any agents. I have always found the laundries which had the most agencies were generally the ones that cannot pay their bills.

Mr. Dorsey: In Atlanta, our association controls the agency business. If an agent wants to take his work to another laundry, no one will take his work if he owes any other laundry any money. He must pay his bills.

Mr. Evers: The most I pay agents is 30 per cent., and I have agencies in the little towns all around the little town of Munice, and some over in Ohio. When the second basket comes to me, it is to be accompanied by the first basket and a remittance, and if it is not, the third basket goes C. O. D.

Mr. Stoer: If any man in the laundry business is thinking of starting agencies he better come to Cleveland and find out that he better not do it. There are large laundries there in which two-thirds of the work comes through agents. We have a good association there, but we haven't been able yet to extinguish the agents. We do not solicit agents, do not pay them more than 20 per cent. and do not take one from another. I do not think an agency a legitimate adjunct to the laundry business. We are doing a business of about 3,500 to 4,000 shirts a week. Out of that we maintain 226 agents in the city. The Garlock-Frazee Co. probably do three times the business that we do, and I think I am safe in saying that they have over 500 agents in the city. We pay agents 30 per cent., and the commissions that we paid one week in July amounted to $140.

Mr. Cooper: We adopted the rule in our association of allowing no laundry to have over 20 agents and paying no agent a commission unless the work amounted to over $2 a week. From $2 to $5 a week we adopted a commission of 20 per cent., and from $5 up it was 25 per cent. It had the effect of reducing the number of agents and it swelled the amount we got from the agent.

Mr. Stoer: We tried that. That is a very good thing to do. But where there are a whole lot of laundries that have no agents where you drop them they are the laundries that will get them, we would like to abolish the agency system entirely.

Mr. Butler: It seems to me that team agents and store agents are very different, and that a laundry can afford to pay more to the team agent.

Mr. Stoer: In Cleveland we pay a commission of 40 per cent. more to those wagons, but we do not believe in encouraging that kind of business. If your regular drivers find that any of those men are making four or five dollars a week more than they are making, they will want to do the same thing, and you may lose your driver.

Mr. Butler: I do not have any more store agents, and I am making more money on the team agents than on the store agents.

Mr. Hagen: It seems to me that the complaints that we hear come from the fact that laundrymen do not manage that part of the business as well as they do some other parts. They know how to take care of the wash and to get a good color better than how to manage their delivery system. It is a very important feature of the business, and if laundrymen would give it the same attention that they do other parts of the business we would not hear any such complaints as we have here. If you will map out a certain policy, a certain way of doing, and live up to it your drivers cannot own your business. (Applause.)

Mr. Stoer: What Mr. Hagen says is true. We are trying now to get better control of our business, and we are succeeding.

Mr. Doremus: The agency business is a curse to the laundry. To encourage it is to lose money. Your agents and your drivers will own your business, and you will have to submit to their dictation if you run your plant at all.

One of the greatest evils in the laundry business is its use by large dry goods houses to advertise their business. I think it would be better to give the consumer the benefit of the profit we give to the agent or middleman, and eventually the class of laundries which seek agencies would be run out.

Mr. Eastwood: I have been in the laundry business only a little over twelve months. My competitors were giving credit, but I made up my mind that not a single name should go onto my books, and that I would be entirely independent of outside agents; that if I hired a driver that driver should be my own, and the customer should be my own. I had postals printed, and if a driver misses a customer a postal is sent inquiring the reason the laundry did not come. Today I have five wagons running. I have not a single account on my books. I defy every driver in my employ. I treat them as business men. I have no complaints from them. They do their work right. My agents in Fall River last week received only $4.20. (Applause.) I think the whole secret is this, the whole trouble is in two words—timidity and avarice. I believe if we would set our minds on conducting our business in our own way, on business principles, we would have little occasion to complain. When people come to me and want to drive their own teams, I tell them I have my own drivers. I employ good men and pay them fair money, but if a driver threatens me, which one or two have done in the beginning, I never let them threaten me twice. I take a new driver the next week and put him on the route. (Applause.)

THE LIGHT OF THE BUSINESS.

A trade paper is a window through which the man of business looks out upon the world of business, of style, of price, and of methods of doing business. Without a trade paper a business man is shut up in a small space, wherein he sees naught but his own errors, and knows naught but what the traveling man sees fit to tell him. —Shoe Trade Journal.

TRADE JOURNAL CRITICISM.

The trade journal deals wholly with business facts—when it criticises, it does so invariably in the interest of its readers, which is the public. A business man knows that a trade paper which would attack any man or corporation maliciously would hang itself—would destroy the confidence of its readers and advertisers. Its own interests compel a journal to be honest in adverse criticism. Furthermore, a trade journal cannot afford to make frequent errors in statement of fact, as its strength and value lie in its correctness. Every interest warns it against being malicious or reckless in its reading columns. Yet the legitimate trade press is fearless in its criticism. It unearths every fraud, every deception and every questionable act within or inimical to the interests of its constituency. That is its legal right.—Trade Press.

BUSINESS MEN'S PAPERS.

For years there existed a great prejudice against trade journals. All kinds of arguments were used against them, particularly that of limited circulation.

But, clever men, specialists in the various trades and manufactures, were not slow to perceive that business men could save much money by making their wants known through journals representing their special line of manufacture.

"Why should we," they said, "wade through columns of matter to find a little corner devoted to our business. Far better to start journals which would give us all the news at a glance, and also keep us posted on what the trade is doing round about us."

And the legitimate trade journal came as the answer to the demand.

It is a nineteenth century necessity—and the wisest and most successful business men are the ones who have derived benefit from it.

There are trade journals to-day in the United States which rank as high in the reading matter and general information concerning the trades they represent as the magazines which cover the field of science, literature and art.

They go as special messengers to busy business men. Business men want the latest market reports, condensed news items, and reports of everything which is happening in their line of trade.

A business house without a good trade journal is like a house without a clock, a ship without a compass or a man without a friend.

Does it pay to advertise in trade journals? is often asked. It does—in the right ones. For there are degrees of value in trade journals as in daily papers. Business men have answered that question in the affirmative, and are not slow to give credit to the trade papers which bring returns.

THE BUSINESS PAPER.

ITS TRUE POSITION AND INTRINSIC VALUE IN BUSINESS MAKING.

BY NATHANIEL C. FOWLER, JR.

The trade paper is a trade necessity.

Business may be run without it.

The merchant can write his letters on a barrel head—but he doesn't.

Merchandise can be sent across the continent by mule power, but nobody uses that motor.

The fact that every trade has from one to a dozen representative papers devoted exclusively to the trade they represent is prima facie, as well as circumstantial, evidence that the trade paper is a part of the economy of business.

I don't own a trade paper; never did, never expect to, and have no trade paper interest.

I simply know trade papers, and am writing what I know.

A bank president in Boston can't write more than his name, but his ignorance didn't make him a bank president.

There are men who don't read the trade papers and succeed, but so long as the ninety-and-nine read the trade papers and are successful there is no need of discussing the peculiar composition of the man who makes money and reads nothing.

The trade paper is a commercial clearing house, with members entirely confined to its particular trade: Into its arena is thrown the thought of trade.

It is a printed show room, where everything new and interesting is placed before the reader for the reader's interest.

The good trade paper civilizes trade—spreads trade—increases trade—tends to raise cold-blooded business up to the fraternity of social decency.

The man who reads a trade paper may not be wise, but I never knew a fool to read a trade paper.

The trade paper reaches into general trade and absorbs that which the tradesman wants—it is a sort of sieve through which only should pass words of business interest.

The first-class trade paper has just as much right to devote a part of its pages to advertising as has the magazine or story publication.

The advertising in a trade paper is as interesting as the reading matter, for the advertising pages present the names and addresses and other business information concerning the most enterprising men in the trade represented.

A man can do business without advertising in the trade paper, but the fact that comparatively few men of enterprise do not advertise, indicates that the advertisement in the trade paper has money-bringing and trade-increasing value.

The progressive manufacturer or wholesaler realizes that while the circulation of the trade paper may be small, every copy goes into the hands of a probable customer.

A paper with a circulation among the thousand probable customers is worth more than the circulation of a paper with one hundred thousand among possible customers unless the one thousand probable customers are included in the one hundred thousand possible customers.

The people who read a laundry trade paper are people who earn their living in that particular line.

The advertisement in the trade paper may not bring more than one answer a month, perhaps not more than one a year, but one answer may be the beginning of a trade which will pay for the advertisement ten times over.

There are a thousand reasons why a general magazine may not be read by business men, but the sun never shone upon a reason why the man who sells goods should not read systematically and carefully the paper which represents the trade of his living.

He reads the trade paper and as he isn't a fool he reads the advertising pages as carefully as he reads the reading matter, for the business man knows that the advertising pages will present to him ways and means of increasing his business and of making more money.

The man who does not believe that people read trade paper advertisements is advised to print at the bottom of his advertisement, in the smallest possible type, the statement that he will present a yellow dog, or a rosewood piano, to any reader of the paper who sends for it.

The best advertising in the world is the advertising that strikes business men squarely between the business eyes.

The trade paper contains nothing but business—it is the one great business bringer of wholesale publicity.

There is something the matter with the business man who can't build business better with the business assistance of business papers.—Exchange.

TRADE PAPER ADVERTISING.

In a recent number of a paper devoted to advertising we note the last half of a discussion on "Some Trade Paper Advertising Faults," by those very esteemed promoters of publicity, Messrs. Charles Austin Bates and Nathaniel C. Fowler, Jr.

Both of these gentlemen know all about trade paper advertising and trade papers, not that they have ever owned or attempted to run one, but because they have thought the thing all out for themselves, and have made up their minds as to the limitations and possibilities of trade papers. This probably required about twenty minutes, and then out comes one of those glib, easy-going articles which are so easy to read, pleasant to ponder over, impossible to criticise, but very hard to reconcile with true conditions as found by the trade publisher himself, who is honestly striving to make a paper which will pay the publisher, and incidentally the advertiser. That statement might just as well have been written to read "pay the advertiser and incidentally the publisher," but this particular publisher is modest.

As a general proposition, it is fair to say that a paper which is not meritorious enough to win readers will not pay advertisers. The paper itself must have merit; after that, there is no question about the returns from the advertising, if it is in the right place.

We presume we might advertise some device for cooperage work to the extent of $10,000 in the New York World without getting any returns to speak of—in fact, we would willingly forfeit the space if $50 spent in the Journal would not bring fifty inquiries to one that would come from the World investment, and yet we presume that to take the total issues of the World for a month as against the circulation of the Journal for a month, it would print and circulate 3,000 to our 1. It would not go into the right place.

With the trade paper and trade advertising, as with all other advertising, there are many things to be thought of in order to get in the line of success, but the chiefest of all these is the proper medium. It must be a paper that has a friendly and interested constituency. It must be a paper whose publisher has the interest of the advertiser at heart. It must be a paper that seeks to be an unbiased advocate of the trade or industry represented, and it must be a paper alert and anxious to keep abreast of the time.

When you find these conditions in a trade paper, then success is sure if your part of it is all right. Your offerings must be up to your representations. Your offering must be a necessity where your seek to place it, and your business methods must be square and upright.

When that is the situation, no advertising that can be done will yield a more prompt and rich return than that which is intelligently done in the trade paper.—National Cooper's Journal.

VALUE OF ADVERTISING COLUMNS.

It is doubtful whether the average lay mind ever stops to consider the proper balance of a trade paper; that is to say, the proportion in which pure reading matter should be mixed with advertising. The conscientious editor does not care to send out to his subscribers a paper composed of nothing else but advertisements. On the other hand, too much reading matter with few advertisements is not apt to help him much in getting out his paper at all. Fortunate the paper, where the advertising columns are of as much interest to readers and subscribers as the happenings and stories chronicled in the reading matter. This should be so with every good trade paper. It is safe to say that readers take about as much interest in trade journal advertising columns as they do in those devoted to news items and matters pertaining to the general changes going on in the trade.

Where do they hear about the latest in the way of appliances?

Where do they learn of the best and most economical machines?

How do they know where to get good wagons, good baskets, good boilers?

How do they know they are dealing with responsible houses?

All these things they learn and know by reading over the columns of the trade journal which are devoted to advertising. Advertising pages then are of the greatest importance to readers, and with them goes a fair proportion of pages filled with instructive articles, news items, trade happenings and changes by which to keep the balance true.

THE SILENT TRAVELER.

The greatest commercial traveler of the present age is the rightly placed advertisement. It never tires, has no hotel expenses, needs no railway ticket, and finds its way everywhere, says the Confectioners' Union. A slight charge pays for its transmission from city to city, and from ocean to ocean. It travels to the outposts of civilization for the merest trifle of cost. It is a veritable globe trotter. An ad. printed in Chicago can be read, thumbed and noted all over Great Britain, in Cape Town, Calcutta, Melbourne, Tokio, Hong Kong, and everywhere else. The carrier pigeon fails to travel so far, the navigator cannot overtake it, and even the ubiquitous telegraph wire has its terminal behind the footprints of an ad. Nor is this a useless race with distance, or a mere experiment in testing postal facilities. There is money in it. It has commercial value. It is the living seed of the future business crop. The most successful business men of to-day recognize this fact, and keep the silent traveler in perpetual motion. Those who neglect this means of soliciting trade are the losers thereby. Advertising is not a fad, nor can it be a failure, if due prudence is taken in putting the right thing in the right place.

A common error in advertising is to stop if you don't get immediate returns, or because "business is dull." In the first case you are disappointed without reason, for you have not given your ads. sufficient time to yield results. Those who look for prompt returns must think that the public is just waiting breathlessly for their ads. to appear, and then will make a headlong rush for their goods to snap up every article in it as soon as it has read the announcements. Stopping advertising in dull times is equally sensible. You don't seem to reflect that everybody who stops increases the dullness, and that if each one kept right on it would make trade brisker.—Printers' Ink.

ALWAYS REMEMBER.

That the only way to know the power of an ad. is to publish it.

That too many arguments in a single ad. will weaken confidence.

That there is a wide span between the purse and the pocket; takes a healthy ad. to make the trip right away.

That a little postal-card talk will often make more direct sales than a clumsy catalogue.

That a good ad., run right along in one good paper gets more business than a few semi-occasional scattered shots all over creation.

RESULTS.

Have you ever noticed that constant advertisers in trade journals are frequently moving to more prominent localities or seeking increased quarters, and those who do not advertise, while they may be doing a fairly successful business, usually give very little indication of business growth, remarks Facts. The benefits derived from advertising, while undoubtedly great, are so diversified that it takes a liberal-minded man to recognize and appreciate them.

Two adjoining firms may apparently move along without one gaining any perceptible advantage over the other, even in the estimation of the proprietors, although one makes liberal expenditures for printers' ink, while the other saves this item. Time moves on, however, and after two or three years the firm which persistently and judiciously keeps its name before the trade—in the minds of those upon whom it must depend for success—forges ahead, and soon either completely distances its rival, or at least gains a distinct advantage over it. Many will be ready to attribute its success to a superior line of goods or better management, and few, even among the proprietors of houses pushed ahead by advertising, will give that efficacious medium, printers' ink, the credit due it.

Quitting advertising in dull times is like tearing out a dam because the water is low.—Ex.

OF MUTUAL INTEREST.

It is a most singular and seemingly unnatural circumstance, yet a fact nevertheless, that so very many laundrymen are blind to their own interest in not coming together, and by united action endeavoring to adjust those difficulties which, without adjustment, leaves their business to so great extent in an unprofitable condition. It is the more surprising in that there are now so many evidences of what this united action will do. Verily, there are those that have eyes that see not and ears that hear not. Some day they may awake to find that opportunity has passed them by, and that the progressive laundrymen has far outdistanced them in the business. Still it is the duty of every laundryman interested in the promotion of association work and its mutual benefits to consider himself a committee of one, a missionary to bring just such men into line.

FUTURE OF ASSOCIATIONS.

GREATER PERMANENCY NECESSARY FOR THE ACCOMPLISHMENT OF LASTING GOOD.

Laundrymen's associations, like everything else in the form of a club or society, depend a very great deal on the men who first start them and continue to stay with them. They seem to be somewhat the creatures of the hour, or day and week, and appear, disappear, and reappear, as the case may be, with remarkable regularity, seemingly depending entirely on some few energetic spirits for their intermittent existence.

Now, while this is bound to be the case to a great degree, yet as there is constant need for some permanent local organization, in a trade where changes are so frequent, it would seem to be the time for a good campaign in behalf of association work.

In Chicago, Cleveland, Detroit and other points, there are always associations of some kind or another, and the spirit of comradeship among laundrymen is great; but there are other places where it ought to be equally so, and where associations ought to be formed and permanently flourishing.

Laundrymen probably know their own business best, and it has often been said before in these columns that the Journal's province is not to offer uncalled for advice, but to "voice sentiments and further interests;" still occasionally it is well to do a little criticising, or point out the weak spots of associations as at present conducted.

Too much is left to two or three men.

The practical value of association is sometimes neglected for the social feature.

Meetings are called and then not attended—if you are a member at all, you should at least be a member in action.

Men in the business in a moderate way are too prone to think it's only the big fellows who want associations, so they can be the whole thing and run the trade to suit themselves. Other drawbacks will suggest themselves.

On the other hand, an energetic and bright contemporary paper devoted to the outfitting trade, has just been drawing the attention of its readers to the number of associations in existence among laundrymen, the seemingly endless chronicle of their meetings and celebrations published in the National Laundry Journal, and then proceeds to ask its own circle whether the outfitters' trade should not be up and doing and have associations and meetings and reports, as it was clear they must have a great deal of value; otherwise "those bright, energetic business men known as laundrymen would not keep the thing going so persistently."

Well, that is a good way in which to strike the outsider, and the only thing to do is to keep the thing going on a practical, sensible, moderate basis.

STATE ASSOCIATIONS.

BY MAJOR TAYLOR, OF INDIANAPOLIS, AT CONVENTION OF L. N. A., CHICAGO, SEPT. 14-16, 1896.

I would much rather combat an idea than advance one, because that is my temperament. If anyone should see fit to take exceptions to anything I may say I will be in my element. You ask me to say something about state organizations. I haven't thought much about the subject, but I believe they are a good thing; but it seems to me that state associations should be more or less subordinate to the national association, and local associations should be subordinate to state associations.

As we are now doing the business it seems to me it is a kind of catch as you can way of doing. State organizations are under no particular obligation to the national organization, not even to pay dues to it to help carry it along. The same is true of local organizations. They have nothing in common with the state organizations.

It seems to me the right thing to do would be to re-organize the national association on these lines. Let the national association charter state organizations, and they in turn charter local organizations and control them absolutely in such manner as they may elect to do. There are a great many people who would like to be represented in our national organization and state organization who can har ly afford the time or the money to attend them. If they had their representations by delegations, not only to the national organization, but state organization, much good could be accomplished. I think every one will agree that eighteen or twenty men will accomplish more, if they get their heads together, for a definite purpose, than a hundred men will accomplish. I think that has been demonstrated pretty satisfactorily during the life of this organization.

I doubt much if the national organization has done a great deal to advance the interests of the laundrymen of the United States, although I have not attended a meeting for six years. Of course, we have become better acquainted, and that is something; but as for advancing the material interests of laundrymen to any considerable extent, I doubt it. It is true we have had essays, and very good ones, essays that have meat in them, and, of course, if we are smart enough we can extract it.

Before we had our local organization in Indianapolis it was a common thing for laundrymen to meet each other on the opposite side of the street.

Now since we have had a local organization in Indianapolis we often meet and compare notes, and we have established a rate which is almost universally lived up to. We have cut rates, for like the poor, we always have them with us; but in Indianapolis the establishments which may cut rates have no credit.

Mr. Dustin: I beg leave to disagree with Mr. Taylor in saying the association has not helped the laundry business. He partly explained the statement, perhaps, when he said he had not attended one for six years. As for myself, I never attended one meeting—and I have been in the business for twenty-five years—in which I was not benefited more than enough to pay all my expenses, besides having the pleasure of meeting with the members every year.

In regard to having state organizations subject to the national organization, and local organizations subject to state organizations, I would think we have trouble enough to get up organizations as it is at present, without going through so much red tape.

Major Taylor: I did not mean to say there was no benefit derived from a national organization. I mean no substantial benefit—that is, no financial benefit.

As to red tape, we know large organizations have just such red tape, and they are particularly successful.

Mr. Barnes: I agree with Major Taylor in regard to the plan of the national organization. Its meetings should be representative, and I would admit all visitors in the laundry business, but the business should be done by the representative members.

PROGRESS OF STATE ASSOCIATIONS.

C. D. CLARKSON, PEORIA, ILL., CHICAGO CONVENTION OF L. N. A., SEPT., 14-16, '97.

Mr. President, Gentlemen of the Convention: When requested to address the thirteenth annual convention of the Laundrymen's National Association on the subject of "Progress of State Associations in '96," there arose in my mind a very grave doubt whether I would be able to place the conditions and position of this grand and good cause in the proper light before you.

There is no question but that association work is the paramount duty of every wideawake laundryman at the present time. Our national association has weathered the storms of fourteen years, and to-day is in the most flourishing condition since its organization. State associations are in their infancy, but with proper care and support they will develop into one of the most potent factors in our business. Then, gentlemen, recognizing this fact, let us put our shoulder to the wheel and push this work forward to success.

We, as state associations, feeling the great need of help, look to this, the "mother association," for advice and aid so far as she can give. With the permission of the President and the convention assembled, after I have given you statistics of the different associations, showing the progress made in 1896, I would like to depart from my subject indirectly and talk for a few minutes on the need and worth of state associations to each individual laundryman.

The Secretaries of the different associations have kindly furnished me with the figures I give you. March 28, 1895, saw the inaugural step towards organizing a state association.

This movement was started in the state of Ohio and 15 completed the roll of membership. From what appeared to be a light beginning, there has grown a strong, live association composed of some of the best men in our business. Their increase in 1896 was 66, making a total of 81, the largest membership of any state association now in existence. This association is reported to be in a very prosperous condition and the outlook very encouraging.

Following close on to the meeting of Ohio in March of 1895, was the call issued in the state of Kentucky for May 27th. This association started with a membership of 17 from that date and gained in 1896 5, making a total of 22. The prospects of success are uncertain, depending solely on the action taken by the Interstate Committee, which is to meet here this week.

The next state to fall in line was Illinois, meeting in October, 1895, and completing an organization with 11 members. In 1896 this association has gained 29, making a total of 40 members. Like Kentucky, this state is in a doubtful state of success owing to competition in adjoining states. Still we have every reason to think that after the meeting of the Interstate Committee and receiving the rules laid down by them, we will be able to push forward with greater success.

With the beginning of 1896, Iowa joined the ranks, meeting January 9th and perfecting an organization with a membership of 25. From January to April this association gained 24, making a total membership of 49, which is a most creditable showing. This association also is awaiting the action of the Interstate Committee for help to enlarge and strengthen its organization.

March 9th Indiana followed the example set her and organized with a membership of 31, the best start made by any state up to this time. Their semi-annual meeting will occur shortly after this convention and a decided increase is looked for, as the future looks very bright for them.

From these facts you can see the advance made in the several states the past year, and please note that each state has made a better start than the preceding one.

Whether or not it is proper for me to talk on the need and value of state association at this time I do not know, but to my mind we never have had the opportunity of having so many laundrymen, representing the different states, as at this time. Then what is good to us as individuals is also of interest to us as a national association.

The stumbling stone of state associations is the agency business, and without a fixed rate of commission and prices, lived up to by the laundrymen, we can never make a success of this movement. We are practically in the power of the men we call agents. These agents are sucking the very life blood out of the business, and instead of acting as agents for us they are really acting for their customers in trying to give them anything and everything at our expense. Are we to continue allowing these people to run our business or will we put a stop to it, thereby insuring prosperity to our business and profits to our purses?

The membership in several of the associations is small because a great many men will not come in until they are assured there is something to be gained, and that something the few have not been able to show them as yet; but by holding close to the resolutions laid down for us and being firm on the rate of commission to be given to agents, we can convince the laundrymen on the outside where they are not only injuring themselves, but destroying all chances of doing agency business.

When talking to some about joining the association we are met with something like this: "Why, I don't see any benefit in it for me because I have only a few agents." Well, that man is just the one that is in actual need of the state association and its benefits. As in my own case, I have only ten agents where I used to have fifty. It isn't because I don't want that work or—I don't think—because of the grade of work I turn out, but simply for the reason that I can't figure out anywhere from 40 to 55 per cent. profit in the business. I want the state association so that I can do this business and at prices which will give me a profit. I think there are a good many that are in the same position that I am in this matter. Without the state association just such laundrymen are barred from the agency business.

By allowing such large commissions to these agents every small town of from 1,000 to 3,000 people will get a laundry of its own, and in a few years the agency business will be a thing of the past. We have had at least a dozen laundries started in small villages in Illinois in the past year, the reason for which I believe can be traced to exorbitant commissions to agents, which gives the people the idea that there is such an enormous profit in the business.

To my mind the question should be quality of work to agents, and not how much we can give them for nothing. When this is done then the man who has given his business study and attention, and who justly deserves the reward, will win.

Another great need upon which depends the success of the state association, is confidence among the members. If a member is accused of violating a resolution, let us believe him innocent until he is proven guilty.

If we find that a man deliberately violates the resolutions set down for him, let us drop that man from the roll, for that old maxim serves well here, "The whole cannot be different from its parts."

In this short paper I have tried to touch upon the vital points in association work, and to show you the need of your support. I trust I may have accomplished this end. I thank you all very much for your attention.

LOCAL, STATE AND NATIONAL ASSOCIATIONS.

If a proper understanding is arrived at in the matter of a relationship between local, state and national membership, there should be a great increase in the number of members of the National Association.

At present a good many laundrymen are not members of the National Association, simply because they feel that there is no proper understanding as to the position of that body, and while they are members of a local association they prefer to keep out of the National.

On the other hand, many members of the National are not members of their local association—a mistake, as, properly speaking, a man should be a member of his local and state associations, if their are any, and then of the National Association. The horse should come before the cart.

CONVENTIONS AND LAUNDRYMEN.

VALUE OF ASSOCIATIONS AS VIEWED BY OTHERS.

That excellent representative of a most useful trade, the National Laundry Journal, devotes a great deal of space to notices and reports of the many local and national conventions of laundrymen, says the Men's Outfitter.

Now, we find fault with the laundrymen sometimes in detail, but, as a whole they are bright, alert and level-headed sort of fellows, and if these gatherings in which they indulge did not pay, we do not believe they would keep them going. Isn't it possible for the men's outfitters to get a useful hint from the laundrymen's example?

There is scarcely a trade that is so individually separated as the manufacturers, wholesalers and retailers of goods for men to wear. There is no shadow of a general understanding between all classes of the trade, either wholesale or retail.

It is certain that much good would be gained by the retail outfitters were they to get together. Every man of them is beset by questions and problems, and these are ciphered out in many ways by different merchants. Discussions would sharpen the wits of all, and be productive of great benefit to all.

WHAT IS ADVERTISING?

Ask a hundred men, "What is advertising?" and ninety-nine of them will say that advertising—is advertising.

Advertising, as I see it, is the announcement of anything by any medium of presentation.

Advertising is a commodity—so much so as dry goods, shoes or flour.

The advertising that does not pay is almost always the advertising that has not been given a chance to pay.

The average user of advertising writes the advertisement with a blunt pencil upon a pad of paper upon his knee, or quickly scribbles off his name and address—and something else—upon a pad on his desk.

He pays good money for advertising space.

He fills that expensive space with the careless thought of a minute.

It is estimated that the world spends two thousand millions of dollars a year on advertising.

An intelligent estimate has not been able to assume that this same business world pays out more than one two thousandth part of this total expenditure for the preparation of its advertising matter.

If advertising is worth anything—and every successful business man says that it is—then some care should be given to its preparation, just as much as to the management of any other part of business.

Advertising, being a commodity, must be considered a commodity.

There are altogether too many typewriters, too many stenographers, too many lawyers, too many doctors, too many clerks of every station, but there are not, by thousands, too many men and women who understand the writing of advertising and the direction of advertising.

The best advertisement writer for a business is someone interested in that business.

It may be the business man himself; it may be the business man's brightest clerk or cleverest daughter; but it is certainly someone who has the time and ability—and interest.

Better do it yourself, or have it done by someone connected with you, than to trust it to the small army of adsmiths who have untried originality to sell.—Nathaniel C. Fowler, Jr.

ADVERTISING EXPERIENCE.

Success depends not so much upon what you are as upon what you make people think you are.

The advertising idea is creeping in everywhere. Free advertising is what is wanted, however, in most cases.

A look through the magazines will show that the best ads—those first read—are the ones which are illustrated. Yet some advertisers seem to think space is wasted if not filled to the brim with reading matter.

It takes more ability to get the goods on market than it does to manufacture the goods. Yet some men never think about their advertising, nor even employ anybody else to think for them.

The "picture habit" is as strong in the adult as in the child. The successful advertiser cannot ignore this. The picture may be a type picture, of course. But the picture that draws attention must be artistic.

Every business firm should educate one of its younger members to be a thoroughly good advertising man. He need not be born with the advertising spoon in his mouth, but he must bring with him the power to understand human nature.

The artist, engraver, type man, paper man and printer have the advertiser at their mercy, as it were. They sometimes play havoc with him, too. It is always well to be on good terms with these gentlemen in order to get the best they have. The best is not too good for the advertiser.—Exchange.

LIVE ADVERTISEMENTS.

A man does not have to get his head very far above the sea of mediocrity to command attention. Nine cases out of ten, when a man says that advertising does not pay, he has arrived at this conclusion because he has expected the newspapers to do it all. If he were to neglect his show window and his store front as he neglects his advertising space he would have still other complaints to make about business in general. If the windows were never washed and the display of goods never changed he would not expect many people to stop and lose themselves in an ecstacy of admiration; and yet he does seem to expect just this sort of thing from an old moss-covered advertisement.—C. A. Bates in Printers' Ink.

BEST SERVICE PAYS BEST.

Advertising, as a science, is making rapid strides in these days of ceaseless effort and keen competition.

There is no such thing as success in business without advertising. It is the power which creates, keeps alive and makes it possible to keep the wheels of trade whirling at a merry pace to the end of business prosperity.

To attempt to advertise without a pretty complete knowledge of this power to be set in motion is worse almost than not to advertise at all. Just when, where and how to spend money judiciously for newspaper space requires particular knowledge of all the inside workings of the advertising world, special wisdom in the choice of mediums, expert skill in planning and preparing advertising matter, and all the facilities for carefully looking after the business when once it is started on its mission of publicity.

There may have been a time, when business life and its workings were simpler and competition less active, that the advertiser could personally look out for this department of his business fairly well. That time, however, has gone. To-day the man who would win the greatest financial success must employ methods which are based upon scientific principles. He must live in an up-to-date atmosphere. He must employ skilled labor—skilled brain force—to assist him in securing the publicity which he desires, and which he must have in order to reach the top round of the ladder of fortune.

Comparatively few business men are able successfully to meet the demands and requirements of advertising manager of a large concern. The duties involved are too complicated, there are too many bright minds at work in this particular field for the manufacturer, merchant or dealer in any line of goods to run the risk of failure through employing a "cheap" man—one who has neither inborn tact nor acquired knowledge of the subject. It is false economy to pinch the advertising appropriation in order to show liberality in other departments of one's business.

Advertising has well been called the life-blood of business, and where any attempt is made to prevent or disarrange the healthful, natural circulation of this life-giving element in its relation to the business system of a concern, there is sure to follow serious financial disaster.

Nowadays, the shrewd, level-headed, successful advertiser has in his employ a man of experience to manage his advertising, or he employs a reliable advertising agency who have expert men to guard the ad-writing and to look after all these matters.—Profitable Advertising.

LEGITIMATE ADVERTISING.

I think it is conceded by most business men that for a steady diet, newspapers and trade journals are by far the best. Schemes, that is, some schemes, are in a way all right enough, but even the best of them don't wear well. If such be the fact, it is easy enough to guess what the worst ones amount to.

I honestly believe that it proves a boomerang to the man who patronizes a hocus-pocus scheme, and for this reason those who see the ad. realize that the business (?) man who paid out good money for such a thing would be an unreliable party to trade with, for if he was a "soft mark" in patronizing a fly-by-night scheme, he might be easily as gullible in having inferior goods shoved on him in place of the genuine articles; and though he might be honest enough, customers would get spurious goods, and have to pay the price for real or unadulterated ones.

On general principles, a person who can be easily fooled with his eyes open, is not very brilliant in any direction. A merchant or manufacturer after a while becomes known by the advertising company he keeps, as well as by the class of advertising mediums he helps to support.—E. A. Corbett, in Brains.

TESTING ADVERTISEMENTS.

The proof of the value of advertising is given by a member of a London firm: We recently hit upon a novel expedient for ascertaining over what area our advertisments were read.

We published a couple of half-column ads., in which we purposely misstated half a dozen historical facts, In less than a week we received between 300 and 400 letters from all parts of the country, from people wishing to know why on earth we kept such a consummate idiot, who knew so little about English history. The letters kept pouring in for three or four weeks.

Our letters came from school boys, girls, professors, clergymen, school teachers, and in two instances from eminent men who have a world-wide reputation. I was more impressed with the value of advertising from those two advertisements than I should have been by volumes of theories.

It was one of the best paying ads. we ever printed; but we did not repeat our experiment, because the one I refer to served its purpose.—Business.

HEART IN ADVERTISING.

There is no success in any walk in life without earnestness. The few chance exceptions merely prove the rule. Determined perseverance can move mountains. A weak spirit accomplishes nothing. The best business in the world can fail from lack of energy in its managers. And if there is any one branch of business that needs all the sincere enthusiasm that can be infused into it, it is advertising.

There is no use starting any advertising campaign in a half-hearted manner. Better leave it alone than begin weakly or without the proper equipment of faith, hope and a good heart for advertising. Enthusiasm must be aroused in yourself first before you can expect to infuse it into the public. If you have a good thing to sell you ought to know it best. In communicating that knowledge to others impart your faith at the same time. Be enthusiastic in the praise of your goods, but let sincerity dictate the enthusiasm. Show your own belief in heart by advertising.

But no matter how good your ads. may be in wording and display, no matter how skillful your methods, unless the merits of your goods and faith in advertising them are parts of your business creed, you need not look for successful results. If you believe in your advertising, put all your heart in it. If you don't believe in it you are foolish to throw away your money in a speculation concerning which you have doubts.—John C. Graham in Printers' Ink.

MIGHT JUST AS WELL.

The man who does not advertise simply because his grandfather did not, ought to wear knee breeches and a queue.

The man who does not advertise simply because it costs money, should quit paying rent for the same reason.

The man who does not advertise, because he tried it once and failed, should throw away his cigar because the light went out.

The man who does not advertise because he does not know how himself, ought to stop eating because he can't cook.

The man who does not advertise because somebody said it did not pay, ought not to believe the world is round because the ancients said it was flat.—Exchange.

HINTS ON ADVERTISING.

Too little advertising is like sowing too little seed. A farmer in sowing grain puts a number of seeds into each hill and is satisfied if one healthy stalk comes from each planting.

Who reads advertisements? Everybody, even spiders. They read to find out those who do not advertise, so that they may with safety spin their webs across their doors.

MONEY MAKERS.

The wise advertiser is one who no longer trusts to luck.

Faith and facts are the things that make us strong in action.

Perpetual concentration produces subjective force.

Subjective force produces money and enables one to handle money.

There are some expressions, on business, that are always true at all times, in all places. Do you know one? If you do, please send it.

Crooked creeks bring rains. Money attracts money. The men who know most are least likely to smother the hints of the ignorant.

All who work do not win, but few win who do not work.

Can an employer who lacks industry have profitable employes?

Faith precedes reason. While we do things by reason that we used to do only by faith, we should now be doing greater things—by faith—things too great for our reason.

All fun that is not secondary to earnestness is a morbid product. Primary humor has an injurious reaction. Handling the serious things lightly, degenerates.

Trouble is certain to come, and it is better for fertilizer than to use the cause of it for targets.—Trade Press.

ILLUSTRATED ADVERTISING.

When the history of advertising is written—and literature on the subject will one day be abundant—the present will be known as the "picture period," a time at which a thriving trade was conducted in the production of illustrations to be used in the advertising columns of periodical literature, from the daily to the annual. History also will record the fact that no period can show so large a percentage of effective advertising as that in which the use of illustrations predominates.

The use of cuts to embellish business announcements is a distinct mark of progress; it indicates a wider knowledge of human nature. What forms of presenting information regarding which the reader is apathetic, will the more strongly impress themselves upon the senses and change curiosity into interest? If a general interest can be changed into self-interest, then the advertisement becomes effective—produces results. The value of the foregoing statement is in getting a more accurate knowledge of the proper importance of a cut in an advertisement.

There are classes of business in which an illustration tells the whole story, or accomplishes all that the advertiser expects to gain from his investment. These, however, are comparatively few.

The purpose of advertising is to sell something.

To sell goods the seller wants the attention of the person who is to-day or will be to-morrow a purchaser. To gain this attention he uses cuts.

Now, I repeat, that the use of cuts is the most judicious style of advertising. But the cuts must be judiciously chosen; must represent something related to the article advertised. Generally, the mission of the illustration is accomplished when it has fixed the attention of the reader upon that particular advertisement in which it appears. The seller then has the floor and must tell why the prospective purchaser should buy that particular article. This is a point which deserves the most careful study of advertisers.

The popularity of illustrations is carrying many an otherwise prudent investor in advertising space beyond the profit line. The danger is present in several forms. Perhaps the most prominent is that of too great reliance being placed upon the illustration. The cut provokes curiosity, many create general interest, but it is the type that, in straight, simple, terse terms, must convince the reader that self-interest will be promoted by purchasing that particular article. Be careful, therefore, of the size of the cut used, and its exact value as an assistant salesman. This is the error most common among otherwise shrewd business men and intelligent advertisers.

Another error is the use of illustrations solely for the style of the thing, regardless of any consideration of special connection existing between the cut and the text of the advertisement. Trading upon this scramble to be in vogue, now widely prevalent among all classes of advertisers, many concerns are furnishing cuts at nominal cost representing about everything on land, in the sea or air. Most of these find purchasers, which in every instance means an investment of decidedly doubtful value. Many have a positive effect contrary to that expected from them. No illustration can be appropriate for nearly everything. Even the face of a pretty woman, which comes nearest of all illustrations to being the universal picture in value as well as use, when "seen too oft" becomes a "chestnut," and loses its value to those business announcements to which it of right belongs.

Let us have a more intelligent use of illustrations; it will reduce the picturesqueness and artistic effect of the advertising pages of our periodicals but little and will save the merchant and manufacturer money. The retail drug trade has suffered comparatively little from devotion to this style as yet, though examples are not infrequent.

Do not use a cut merely because it is cheap and neat. As a picture it may be all right, but it must be remembered that the average reader is a fairly close observer and quickly detects anything bordering upon the ridiculous. To associate a business with ridicule is not likely to bring trade.—L. F. Matson in Trade Press.

ARE YOU IN EARNEST?

The merchant may deny that he is engaged in business "for his health." He would have you believe he is very much in earnest about everything that pertains to success; yet when he advertises—a matter which should be of the utmost importance—it is often, very often, done in a feeble, listless, insincere manner.

Ads. may be literary gems, examples of typographical skill; but if you're not in dead earnest about saying the right thing; if you fail to convince people that you sell better, nicer things, for less money, the ad. will not bring results.

How convince? Some people buy because of desire; others do so because of necessity. At any rate, they buy; and if you prove to them the superiority and choiceness of your goods, and make their advantage in getting such goods at your low prices, they will buy from you.

Write the ad. having the customer's mind in your mind; that is, as the seller, make strong every good feature; prove to the contrary every doubt which would be sought and looked at by the buyer.

Do not turn the ad. into a fairy tale, a love story, a poem, or a humorous sketch. And when I say the ad. should be convincing, don't think I advocate the free, injudicious use of superlatives.

Good advertising is, after all, only plain, unadorned common sense. Hence, use ordinary, every day language, which will be as easily understood by a Texas cowboy as a Boston preacher; for you do not always know what class of people will read it.

Tell the truth; that's the best way to be in earnest, the best means of securing people's confidence. If you're advertising all wool dress goods, say they are all wool. If the goods are cotton, say so; and don't forget to mention that it's nice clean cotton, and that the goods will not shrink in washing. And when you tell truth, make no flurry about it; let the goods prove it.

Be positive. It sounds very tame to say, "Good mucilage, five cents a bottle." Every dealer in mucilage will say that; and its no argument why people should buy your mucilage. Search out the superior features, and tell how it's better. "Mucilage that sticks, does not harden in bottle, free from dirt. Large size bottle, five cents." Tell that to the public and you'll get a hundred times as much trade as the fellow who advertises just "mucilage."

Avoid turning the reader's mind into a negative channel.

Bestow all the energy of the ad. on your goods, and let competitors alone. Make all arguments about your store, not somebody else's.—Harvey S. McMaster, in Profitable Advertising.

WHAT TO SAY AND HOW TO SAY IT.

Advertising is talking. That's all it is—talking through type. The vehicle may be the newspaper or the billboard. But an ad. is "talk." If it's a strong talk it's a strong ad. If it's a weak talk it is a weak ad. If it's a long talk it's a wrong ad., commonly, for people must be approached by a system which excludes time-killing methods, no matter how well worked up. The best ad. is a brief one, other necessary qualifications being present. It may occupy the same space, if you choose, as would the long ad. About the surest returns I see coming from all advertising is from the white space paid to set off announcements. It always does its work well, and if the balance of the ad. territory is as effectively filled there's a good investment there.

You've heard this statement before, no doubt, that to make a good ad. you should write as you talk. if you heed it the advice will be found good. In so far as you get away from the colloquial style you are in danger of spoiling the announcement.—Printer's Ink.

PLAINNESS IS STRENGTH.

No statement is safe that has any other meaning than appears on the surface. Don't expect people to probe for your meaning. If it is plain, well and good; if not, they skip it.

To illustrate how dull of perception people can be, this story is told of Ambassador Bayard. In an after-dinner talk in England he said, when illustrating the landing of the Pilgrims in America, that "they first fell upon their knees and then upon the Aborigines." Not a soul at the table saw the pun. And the newspaper version of it the next day was that "they first fell upon their knees and then upon the savages." So the eminent wit of our eloquent representative was lost in the company of the highest culture. To appreciate pretty figures of speech one must be imaginative. Practical people when reading advertisements are not giving run to their imagination, but on the contrary are inclined to keep a stiff curb on it. They are looking for bargains, not pretty speeches.—Dry Goods Chronicle.

SAYING SOMETHING.

So many advertisers labor under the delusion that it is only necessary to reach the eye of the public in an advertisement.

It is not the ad. which is merely seen, but that which is remembered, and tells a story tersely and forcibly, that brings profitable results.

It is not the ad. which amuses or merely attracts notice that sells the goods.

It is the ad. which argues itself into the convictions of the reader in a brief, courteous and dignified manner.

The ad. must, of course, be seen, first of all—and contrast to its surroundings is the most important feature in securing this effect.

We should excite the curiosity of the reader sufficiently in the first few lines to insure a perusal of the entire ad., but we must not disappoint him with a sequel which has no connection whatever with that catch-line or illustration.

Let us give him something worth remembering for the time he spent in reading the advertisement.

Give him real information, and impart a live interest in the matter, thus securing his attention for the next ad. of the series.—Business (Canada).

ADVERTISING ETHICS.

An ounce of fact is worth a ton of fiction in advertising.

Adding too much praise for your goods subtracts from your reputation.

A short ad. with a fact behind it will knock more persimmons than a column of claims that stands on falsehood.

Some advertisers have a great deal of faith in advertising, but do very little of it. The fellow who gets rich through advertising has lots of faith in it, and does lots of it to make sure of results. He has lots of faith in persistent advertising and persistently advertises.

ADVERTISING STICKING QUALITIES.

"It is not supposed that you should begin with full or even half-page ads., but start. Get a pneumatic tire on you and take a place in the great commercial handicap. You can't run unless you are fixed for the race. Josh Billings said: "A postage stamp is a mighty small thing, but it sticks to one thing until it gets there.' Advertise your business and be a stamp. Stick to it."—Exchange.

ADVERTISING ON WHEELS.

The article in last Sunday's Oregonian under the heading, "Wagons as Advertising Mediums," attracted widespread attention. The value of an advertising medium is estimated by its circulation, and what circulates more than a delivery wagon?

The world judges from appearances. When a merchant employs a ramshackle and antedeluvian vehicle to deliver his goods, the world naturally judges that his goods and business methods are as antique as his wagon.

If, on the other hand his business equipage is attractive, up-to-date and appropriate to the merchandise he handles, the man or woman who sees it on the street says, "That firm must keep abreast of the times and be a good concern to trade with."

This is just as true of the butcher's or grocer's or laundryman's wagon as it is of the largest dry goods emporium in town. This is an æsthetic age—and style counts.—Exchange.

POINTS ON ADVERTISING.

SOME SENSIBLE SUGGESTIONS.

Advertising has become a fine art. Business men are more and more realizing that they must give more time and attention to the proper selection of mediums and the preparation of copy.

Three things are necessary to the advertiser to insure success. First, he must have something valuable, meritorious, and useful to sell. Second, he must select the right kind of a publication in which to exploit it—and thirdly, the advertisement must be so written as to attract the widest amount of respectful and favorable attention.

Let us consider the first idea. The thing to be successfully advertised must be some article that will meet a want or demand.

The advertiser must not put too much faith in the statements of irresponsible advertising agents. These are sometimes men who have a faculty of living by their wits in dealing with the credulity of parties who think they have something "taking" to advertise, and will perhaps lead inexperienced advertisers into pitfalls and quagmires from which they can only be extricated with difficulty.

Every man who advertises comes in contact with this class of solicitors. They have maps with advertisements to be placed on the margin, directory space in directories that few, if any, people ever see; trade circulars to be sent out broadcast over the country, fans, novelties, chromos and innumerable trinkets and devices to be given away to the public, and there are countless advertisers who have spent millions of dollars in worthless and unprofitable schemes.

We believe newspapers, journals and magazines with a paid circulation to be the best and cheapest mediums, because they are continually advocating your interests, and are not intermittent in character, like circulars, posters and similar devices. They do not cost the advertiser anything for paper, postage or labor in folding and mailing. He gives his copy to the printer, and his advertisement is placed in a conspicuous place. The paper does not go into the waste basket on the first moment of its arrival.

It is laid on the desk of the business man. It goes into the home, or into its proper field, where it is carefully read, and many subscribers find the advertisements more profitable and entertaining than the editorial, news items, and literary matter. We wonder if advertisers give this idea the careful thought which it deserves.

Thirdly, and one of the most important things to be considered, is the brief, concise, and candid statement of a fact. Be simple in style, truthful and direct in your announcements. If you have special bargains to offer, show the reader in as few words as possible exactly what they are and how he can profit by patronizing you. Do not indulge in bombast or silly humor.

Never abuse a competitor, for it quickly shows your readers that his business is hurting yours; be courteous, and if you are describing the quality and character of food products, do it in such a way that it will make the public hunger and thirst after your goods, and feel that the prices are so moderate, they can afford to buy them. This style of advertising is a trade winner. Study the methods of great and successful advertisers, and you will be surprised to see how simple a thing the real art of advertising is.

DO YOU KNOW?

That to write an effective ad. you've got to get some point in it clear enough to clinch itself in the reader's mind.

That sometimes the ad. that holds the reader's mind and gets knotted in his memory is a dash of common sense, flavored with a flash of wit, a flash of fun, a quaint smile and ripple of poetic fancy—once in a while; not always.—Jed Scarboro, in Profitable Advertising.

ADVERTISING SUGGESTIONS.

Make every inch suggest a column.

A becalmed business needs a breezy ad.

As the sun to vegetation, so is an ad. to business.

Too many ads. merely catch the eye without holding it.

The perfumery dealer always gets good scents in his ads.

The great gulf of advertising space is fed by little streams of truth.

Brevity in the expression of many ideas is the soul of successful advertising.

An ad. is like a bear-trap. It should be judiciously baited and able to hold what it catches.

Many good ads. are like many able men. They have no influence because they are poorly clad.

Unless the captain of a business bark unfurls the sails of publicity, he will never catch the trade winds.

WELL PUT.

The business man and the writer of advertisements must both remember that a good advertisement sets forth the facts that the buyer needs to know, in an agreeable manner. So what the advertiser needs to think of is, "What are the facts that a buyer requires to know about my goods?" And what the advertisement writer needs to think of is, "How can I state these facts in a way to command respect, as well as attention?"

ADVERTISING A LAUNDRY.

THE METHODS OF IT. VALUE OF NEWSPAPERS, BILL-BOARDS, CIRCULARS. HOW MUCH TO SPEND AND WHERE TO SPEND IT.

Arthur B. Chivers is a student of advertising. He has studied the best work in all the large cities of the east and lots of the small ones. He is becoming known as a writer of advertising facts and experiences for some of the leading trade journals. He has, moreover, ideas of his own and has stored up many other people's ideas about advertising in various lines. He has prepared effective advertising for many businesses, and knows the secrets of advertising successes and failures of all sorts.

I found Mr. Chivers at the Auditorium Hotel the other evening, and asked him to tell me something about laundry advertising as he found it and as he believed it should be done.

"I believe in the efficacy of advertising," said he. "I believe advertising in some form is applicable to every line of business. There is no reason why it should not apply to the laundry business.

"There are lots of things that can be said in favor of an up-to-date laundry. Some people like one kind of finish, some another. If a laundry has facilities for suiting every taste, say so in an advertisement. If it makes a specialty of any particular finish, say that in your advertisement, and say it strong. If there is any special reason why a laundry is easy on the linen, give that reason.

"People may not believe your mere say so, but if you tell them why you say so, they'll believe it and act on it too. This is one of the great secrets of advertising anyway—answering the question 'Why?' If you cannot answer it reasonably, people are going to take your advertising with a grain of salt, and give your establishment the go-by.

"The other great secret of the force of advertising is honesty. If you say you do a thing, do it at any cost. If your advertising is not honest, no amount of persuasion is going to make people believe your business is honestly conducted either.

"Do you think of anything else a laundryman might advertise?"

"Why, yes. Quick, good work. Promptness. Easiness of access. Some laundries have special facilities for fine work—make a point of it. Some cater to hotel trade—let that be known."

"What do you mean by easiness of access?"

"I was thinking then of the bother it is in some places to get the clothes to the laundry in the first place. Mr. Walker of the Yale Laundry at Washington got around that very nicely by advertising, "Drop a postal and wagon will call." That is easy to do and the new customer appreciates it."

"What about prices?"

"Well, prices for laundry work are pretty much the same everywhere. I would never use them in an advertisement, except where for some reason they were below the average, and then give the reason."

"What do you regard as the best medium for laundry advertising?"

"The local newspapers. They are the only live medium I know of."

"Do you know of any special success made by newspaper advertising in the laundry business?"

"Yes, sir. The best example I know of is the Yale at Washington. Mr. Walker spent $1,200 one year in the Washington Star and got back $3,000 for it."

"How about circulars?"

"I have known of small towns where circulars brought some results, but I believe the same amount spent in the local papers would have been a better investment. A circular always reminds me of a bird trying to fly before it is fledged. It flutters a moment and then drops into the gutter—where most circulars land eventually, by the way. Not one in a hundred people notice the bird or try to put it in a place of safety. So with the circular. Not one in a hundred ever notice it, much less is influenced by it."

"What do you think of bill and sign boards?"

"Ordinarily, not much. I understand, however, that the Excelsior Laundry here in Chicago has been very successful in that line and with the street cars. I was talking with a friend only the other day about advertising and asked him if he was ever influenced by a laundry ad. One of the Excelsior's big 'Domestic Finish' boards brought up the subject.

" 'Yes, indeed,' he said, 'I came to Chicago about 18 months ago. I tried about 10 laundries in the first eight months and got all kinds of finishes, and sometimes no finish at all. One day I saw an Excelsior card in the street car about 'Domestic finish, fitting the neck,' etc. Well, that week I tried it. I got the real home finish I wanted and have been sending my laundry there ever since."

"That was the result of a street car card?"

"The card introduced the laundry. It was the fulfillment of the promise on the card that made the customer. If the work had come back unsatisfactory, he would have hesitated a long time before sending it there again."

"Supposing a laundry has been doing things the other way and has sent out unsatisfactory work, how can it overcome the prejudice against it?"

"That's another thing. I think a laundryman should advertise that it takes back unsatisfactory work and does it over. But if I had been doing things the other way—attempting to do all kinds of work when I knew that I could not do all kinds of work, or allowing unsatisfactory or slipshod work to go out of the place—I would be perfectly frank. I would advertise the new regime of good work and new methods, and state clearly just what work I was prepared to do. It would take longer to win back the lost confidence, but once won back it would be a firmer confidence than before. Don't abuse it again, though."

"How much do you think a laundry should spend in advertising?"

"That depends entirely on the amount to be gained. Less in small towns than in cities, of course. If there were a good deal of competition I should spend more to crush the competition and back it up by the very best work I could turn out, as promptly done as it could be done. On a percentage basis I should say 10 per cent. if the income could be profitably expended."

"Would you advertise consecutively—in every issue of the paper?"

"Yes, sir. To adopt a motto in advertising, 'In community there is strength.' There is laundry work to be given out every day, and I should advertise every day to get it. There is more work on some days than on others—a little experience will tell which those days are—and I would use more space on those days than on others, but some space always. In the case of weekly papers I should be in every week."

"The best advertisement for a laundry is what?"

"Good work, promptly done. Advertise to bring the work to you—do it well to keep it. That is the secret of success in any line of business."

"What have you found to be the great fault with most laundry advertising?"

"The standing card. It tells nothing but the name and address—offers no inducement for the work it aims to secure. It is the worst kind of wasted effort—if it can be called effort at all.

Mr. Chivers wrote the advertisements that are given here to exemplify his ideas, and it may be added in this connection, that the very marked success achieved by the Gibbons Brothers, Chicago, is due in a large measure to their continuous and persistent advertising in the local papers. This fully bears out Mr. Chivers' observations and should be an object lesson to brother laundrymen.

Immaculate Linen

Is the mark of the gentleman. We keep your linen as it should be. We do the work quickly and as well as modern machinery, pure soap and water and workmen can do it. A postal brings our wagon. Send today.

Send That Postal

Right along and you will get your laundry back in 48 hours. Our new "Domestic Finish" is the most comfortable and stylish for gentlemen's linen. Prevents shirts from bulging and saves the cloth.

Let your Bundle Come

To the best laundry in Warsaw. We have every modern means for doing good work and saving the clothes. Any finish you prefer—just like home if you want it. Try us. A postal brings our wagon for your bundle. Phone 794 Main.

Frayed Edges

On your collars and cuffs look as bad as chickens shedding their feathers. Your linen will look better and last longer if you TAKE CARE of it. Let us call for your bundle. A postal will bring us or 'phone 794 Main.

Climax Laundry, 600 14th St.

CAPITAL ADVERTISING

OF GOODHART'S LAUNDRY, CHICAGO.

Goodhart's New Method laundry, Chicago, has kept the Chicago billboards and newspapers alive with bright pictures and clean cut sayings about laundry work. The newspaper advertising of Mr. Goodhart has in fact been of the most effective character, and is some of the best advertising ever done in this city. A specimen of one of the Goodhart advertisements is given below:

We Mend Your Linen

—sew on buttons, put on new neckbands, etc.

If you'll give us a chance, we'll take such good care of all your linen, you'll never miss the darning girl of the old home.

Besides, our new methods will make all your washables last twice as long.

Try us next week; wagons call anywhere.

Goodhart's New Method Laundry.

374-6-8 Winchester Ave., 'Phone West 736.

ADVERTISING LAUNDRIES.

PROPOSITIONS AND QUESTIONS FROM AN OLD LAUNDRYMAN—SOMETHING ABOUT THE RESULTS, AND SOME SUGGESTIONS OF SERVICE TO ALL.

Why do not laundries spend more money in advertising? Other lines of business are spending almost incalculable amounts of money in advertising. Why not laundries?

I might say, if my observations have been correct, that there is a sort of prejudice against steam laundries, more in evidence in the smaller towns than in the larger cities.

Now the question arises, how can we overcome this spirit of indifference, not to say animosity, toward the modern steam laundry?

ABOUT THE RETURNS.

It will be of value for laundrymen who contemplate spending money in advertising to realize that advertising is not to be judged by the immediate, direct returns. An advertisement is an invitation. It provides an introduction and acquaintanceship and a feeling of good will between the reader and the advertiser. An invitation may not be accepted at once, to be sure, but an impression has been made which has been lasting, and very apt, at some time, to result in the benefit of the advertiser. Sooner or later the reader will see the article, or the establishment, or the work from that establishment, as in the case of the laundries, and then will spring up a feeling of recognition.

ADVERTISING AN INSTITUTION.

With what a feeling of ease and complacency one enters a store or hotel that is well advertised; he feels at home. He has been invited to come. How confidently you inquire for the article which is advertised! The proprietor believes in it, and wants you to believe in it and try it. This very spirit of good will, this appreciation of courtesy, this satisfaction of being pleasantly invited, has been the foundation of many a successful business.

Newspaper advertising is something more than spending money in the newspapers. If properly done, it is the widening of acquaintanceship and friendship, and this last is of inestimable value to any business depending upon public patronage, such as laundries.

Therefore, to come down to the more definite subject in hand: If every other kind of business is investing a part of its earnings in advertising, why not the laundries?

"ADVERTISING PAYS US."

Incidentally, I will say that our firm is a very strong believer in newspaper advertising. We have always advertised our business. We think that it has paid us. If you should put your finger on any one advertisement and ask the number of replies from that one in particular, we would probably not be able to answer you. Returns are not to be measured in that way. Our business has grown steadily until now we are probably doing twice the volume of business we did three years ago. During these three years we have been constantly and persistently telling people, by advertising in the daily newspapers, about our laundry.

You ask us what system of advertising we have used. Every system. Every style and shape of advertising. There is enough happening about our laundry to write about every day, or perhaps some event of local interest which we can weave in. We use all kinds of devices to persuade the people to read about our laundry. And yet

I must confess that I feel very ignorant when it comes to matters of advertising.

In my opinion it is not wise to cast stones at a competitor; as for instance, "We do not use chemicals;" or, "We do not tear the clothes," and all such rubbish. Tell what you do use and how you use them. Tell about your experienced help and your superior equipments; the clearness of the water and the purity of the soap; the advantage of steam, and correctness in marking and sorting; the promptness of calling for bundle and delivery of same, and so on. These are all points of vital importance. Then why not give them to the public, and not put in a lot of buncome, which not one sane man in ten, and no keen man, believes? It would give me great pleasure if my feeble attempts in this article would set some of the master minds among our laundrymen to working, so that we could all get the benefit of the larger experiences of those other laundrymen, without number, who know how to conduct their plants, and from those especially gifted ones who are skilled in advertising.

Byron C. Gould.

LOCAL ADVERTISING.

Many laundrymen advertise in their local papers. All laundrymen should. Lots of them make the excuse that they have not time to write the "ads." Here's a good sample, right to the point and suitable for any laundry that does good work—and they all do that:

Send For Us.

Get your soiled shirts, collars, cuffs, etc., done up in a bundle and then send here!

Our plant is as nigh perfect as money and brains can make it.

Finest machinery, perfect sanitary system, "expert" help, purest washing materials and prompt delivery means but one thing—BEST WORK.

If you care for this—but, of course, you do! drop a postal and one of our wagons will call for your bundle.

LAUNDRY ADVERTISING AN ART.

SPECIMENS OF THE KINDS OF ADS. RUN BY A WELL-KNOWN LAUNDRY MAN IN THE EAST.

Notwithstanding the fact that there are thousands of men rolling in wealth as a result of the wise use of printers' ink, the question is often asked, Does advertising pay? A gentleman who had been concerned for years in the advertising business once told the writer that he was fully convinced that 90 per cent. of the money paid for advertising was, as far as the advertiser was concerned, a dead loss. This probably was an extreme statement, and yet that there is a large percentage of waste in the line of advertising no one will deny. Probably a sufficient answer to our question would be: Judicious advertising always pays, the other does not.

But what is judicious advertising? We may lay down certain rules which may be summarized, something as follows: Care in selecting the medium; care in selecting location; space to be according to matter; originality; crisp and striking phraseology; absolute honesty, etc., etc. Generally speaking, the medium should be the best newspapers, or perhaps those newspaper which most perfectly reach the class the advertiser wishes to reach. Location is dependent upon the form of the medium selected.

Originality and striking phraseology are not within the reach of all, but may come by study. Here it may be well to remark that an ad. should never be written carelessly; it should rather be written with care and carefully studied before going to the printer. Many large advertisers have proof sheets made of their ads., which are studied, corrected and changed as need be, before they are spread before the public. Honesty in advertising is absolutely essential. Advertise what you have, no more, no less.

Under the head of bad advertising little may be said. We may, however, hint at a few common, and perhaps one or two uncommon faults. One, the sprawling all over a column what could better be confined to an inch or two of space, and the reverse. Another, wholesale use of "brag," with nothing to back it up. Another, the use of language supposed to be funny, but only so to the writer. Frequent and derogatory allusions to competitors, "suggestive" allusions. As an illustration of this we have seen a business card having printed upon its back a "smutty" story.

This ad. was written at a time when a labor disturbance was agitating the public:

Eighteen Years

Employing labor and never a strike or trouble of any kind, is a record of which we are proud. We hire help on the "live and let live" principle, the wage cost on our work being 10 per cent. more than in the average laundry. This leaves us a fair margin of profit and we are satisfied.

This was written during a campaign when discussions of the relative merits of gold and silver were so common:

There May Be $500,000,000

of gold in this country. We can't account for very much of it. The best we can do is to turn out a little of the best laundry work ever done by ourselves or others. Any old thing in the shape of money will do for exchange.

The kinds of advertising common to all, we need not more than allude to here. These are the signs over the door, the house, wagon, etc.

Without a larger discussion of our subject, we will now give a few advertisements which have been called good.

There are Many Simple Things

In the world that almost anyone can do—for instance, anyone can roll off from a log—and yet even in the simple things some excel others. It looks like a simple thing to launder a shirt or collar, and so it is if you don't care how 'tis done. Here again the "know how" cuts any amount of ice. The spotless cleanness, the pearly tint, the soft, silky finish, the flexible stiffness, these things do not come by luck and chance, but rather by systematic, intelligent handling, in short, the "know how" produces the results. We have it, and therefore work for and suit more people than anyone else in the city.

Lace Curtains and Draperies

Are not made of sailcloth as some seem to think. They require careful and intelligent handling. Our work in this line promotes happiness in the family. We might say more without exaggeration. Prices are right.

I have a number of smaller adds covering almost every phase of the laundry business, but the few given here will serve the purpose as well as if I were to add to the number.

AN EASTER ADVERTISEMENT.

Conger Brothers, of Springfield, Mo., write that they gave away 500 eggs on Easter Sunday. The eggs had a good big advertisement on them in addition to being colored in divers ways. This they followed up by a reception to the ladies of Springfield on the 22nd of April, the special features being the washing and delivering free of all shirt waists brought in by the ladies that day. The advertisement was a telling one.

EXCELLENT.

For a sign or advertisement in the local paper the advertisement given below and taken from Printers' Ink, not only "fills the bill," but is sure to attract favorable attention. It is pertinent, original and altogether "excellent" for this purpose.

"In the Neck"

is where you feel it when your collars are sent home from the laundry with a "raw edge."

When this happens to you, you say to yourself: "I'm tired of this. Believe I'll make a change. I'll try another place."

You will like the way we "do up" your collars and cuffs and shirts! Returned to you clean and white.

We are careful of your linen — handle it "gently"—use machinery that won't "tear" it.

Let your bundle come—we're always ready—our wagons will call. It wiil be returned to you the day promised, too!

Drop a postal.

A TELLING "AD."

The following advertisement of the Massillon (Ohio) Steam Laundry appeared in the local press in the form of a reading notice. It exactly hits the mark, as to the necessity of good machines and the best supplies :

When having laundry work done it is important to know the character of material used. Cheap labor, cheap soap, cheap starch, always shows themselves in the work turned out. A laundry that employs first-class help at living wages; that uses only the best material that money can procure, must of necessity turn out work to which the most fastidious can find no objections. Work turned out by the Massillon Steam Laundry, with its modern new machinery and expert employes, is first-class in every respect. A trial will convince you of the truth of these statements.

A GOOD "AD."

The accompanying is taken from Printers' Ink and is arranged for a laundry, It is certainly seemly and could be used with effect in the local daily paper by any laundryman :

We Are Turning Out

The whitest, cleanest, best laundry work in America—the only kind good enough for you.

Then, if you care anything for promptness, you'll like our delivery system. We're as punctual as clockwork—only faster.

Let your bundles come !

Drop postal and wagon will call.

WONDER IF HE "SAW" THIS.

He was immured in the darkest dungeon beneath the castle moat.

"If I had a saw, a file, anything," he moaned as he looked at the solid bars across the solitary window.

Then a thought struck him. His face brightened like a Cripple Creek conflagration.

Rapidly running over his supply of collars, which had just come from the laundry, he selected one fitted to his purpose.

Five minutes later the great middle bar of the window, dexterously severed by the sawlike edge of the laundered collar, fell apart.

He was free.

If he had had his collars laundered at the Troy Laundry he would be in jail yet. We have a device for ironing the top edge of collars and cuffs and return them to you with a perfectly smooth edge; try us. No. 92 Sawtell avenue. Phone 1973.—Trident, Cleveland (Ohio).

MONTANA LAUNDRY LICENSE LAW.

The laundry law enacted by the Montana legislature reads as follows: "Every male person engaged in the laundry business other than the steam laundry business, must pay a license of ten dollars per quarter; provided, that where more than one person is engaged, employed or kept at work, such male person or persons shall pay a license of twenty-five dollars per quarter, which shall be the license for one place of business only." When the law came before Judge Knowles he held that the law discriminated against Chinamen. The case has been appealed to the United States Supreme Court. The appeal alleges that Judge Knowles erred in holding that section 4079 conflicted with the fourteenth amendment; he erred in holding that the law requiring a different and more excessive license for conducting a laundry other than a steam laundry, unequal and unjust, and finally that he erred in discharging Yot Sang, the Chinaman against whom the test case was instituted, upon the return of the writ of habeas corpus. The outcome of the appeal will be watched with interest.

LAUNDRIES ARE NOT NUISANCES,

SAYS SAN FRANCISCO CITY ATTORNEY.

The Board of Supervisors of San Francisco asked the opinion of City Attorney Creswell as to its power to pass and enforce an ordinance preventing the establishment and maintenance of any laundry upon any street which may hereafter be declared to be a boulevard.

Mr. Creswell addressed a reply to the board, in which he says such an order would deny to those engaged in the laundry business the privilege of conducting a lawful and useful business on a boulevard, even though it might be conducted in a manner neither dangerous nor offensive to the neighborhood. The business is not a nuisance, and can not be made one by legislative fiat, merely because it is conducted on a boulevard. Such an order would be in conflict with the provision of the constitution of the United States, to the effect that no state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States. If passed, the proposed order would be unconstitutional and void.

Where the lease of a store includes the cellar, and covenants that it shall be put in good order before occupancy, the landlord is liable in damages to the tenant if, by reason of the faulty drainage of the cellar, the storeroom becomes damp and the goods are thereby injured and moulded. Where the premises are leased for a specific purpose, there is an implied covenant that they shall be fit for the purpose for which they are leased.

SUGGESTIONS.

One must know that he has the property he proposes to sell.

Purchase money paid upon land cannot be recovered back because there is a cloud upon the title.

One dealing with an agent concerning real estate, is presumed to have read his power of attorney.

The law will not undertake to rectify one fraud by aiding a party in the perpetration of another fraud.

A party who is using his own property in a lawful way can not be guilty of a breach of duty to anyone.

A factor has no right to pledge, deposit or apply the property of his principal to secure or pay his own debt.

The last word of an employer governs his employes, however much it may vary from his previous directions.

In legal contemplation a sale will not be regarded as fraudulent for the reason alone that the consideration is inadequate.

An agent employed to manage a store has no authority in consequence of such agency, to make or indorse notes in the name of his principal.

An agent to solicit orders merely, or to sell goods, who has not the possession of the goods, has no implied or apparent authority to receive payment.

A party employing a person who follows a distinct and independent occupation of his own, is not responsible for the negligent or improper acts of the other.

Before oral evidence can be admitted to contradict the terms of a written contract, on the ground of mistake, it must clearly appear that such mistake was mutual.

As a general rule, an action for malicious prosecution will not lie until the proceeding complained of has been legally terminated in favor of the defendant therein.

A deed absolute on its face, but shown by a separate written agreement to be a security for the performance of a personal obligation of the grantor or granted, is a mortgage.

Where a person enters into the employment of another, as a general rule, he is presumed to be competent to perform the kind of services required of him by such employment.

The admission of the receipt of a letter by a clerk in the office of a principal who has authorized him to receive his letters may well be deemed to be the admission of his principal.

The passenger is entitled to a reasonable time within which to receive his baggage before the strict carrier's liability ceases, and the less burdensome responsibility as warehouseman begins.

At common law, in the absence of a provision to that effect in the lease, the destruction of the building from any cause does not discharge the tenant from his liability to pay rent for the full term.

Where one is shown to be palming off his manufactures as those of another, he may be enjoined, even where he commits the fraud by the use of names which are not the subject of trademark property.

A writing importing an absolute sale of chattels, but in fact intended only to secure a debt, is a mortgage, and must be recorded to affect creditors and purchasers without notice; but, if recorded, it will bind them.

To constitute a warranty, it is necessary that the word "warrant" should be used; it is sufficient if the language used by the seller amounts to an undertaking or assertion on his part that the thing sold is as represented.

A party who has conveyed, by bill of sale, his goods, for the purpose of defrauding his creditors, will not be permitted in a court of justice to question the sale, although it appear that no consideration was received therefor.

By the common law every common carrier is bound to receive whatever may be offered him for transportation on hire, so far as comports with his means and the nature of his calling, and is liable to damages for unreasonable refusal.

In most States the making of a mortgage does not violate a provision in a policy of insurance that any change in the title, interest, or possession of the insured in the property, without the assent of the insurer, shall avoid the policy.

As an abstract question there is some danger in the use of any powerful machinery driven by steam, but it must be such as it is negligent not to guard or warn against, in order to make it a ground for recovery of damages in case of injury therefrom.

Where a father and son have the same name, and a conveyance of land is made, leaving it uncertain on the face of the deed whether the grant is to the father or the son, the law will presume that the father was intended as the grantee, in the absence of the proof to the contrary.

Although a person may have negligently exposed himself to an injury, yet if another, after discovering his exposed situation, injures him, or is negligent in not discovering his dangerous position until too late, and such person is, because thereof, injured, he may recover damages therefor.

A person seeking passage for his property has the right to prescribe the route and the manner of its transportation when more than one route and different means are open to the common carrier, and for the consequences resulting from failure to observe such direction the carrier is responsible.

The term "eviction" is not applicable to a mere trespass on the tenant's possession by the landlord, but to constitute eviction there must be something of a grave and permanent character done by the landlord, for the purpose, and with the intention, of depriving the tenant of the enjoyment of the leased premises.

A principal is bound by whatever his agent may lawfully do within the scope of the power conferred, and upon the theory, where a right is conferred the power is also granted, without which the right itself cannot exist, this scope includes whatever the agent may necessarily do in the performance of the particular act expressly authorized.

A master is liable for the results of his servant's negligence while engaged in his business, and one who employs a delivery wagon in his business is liable for damage caused by the negligence of his driver in driving the wagon. It is sufficient proof of ownership of the wagon to show that the wagon had painted upon it the name and address of the firm, and was engaged in making deliveries of goods for them at the time of the accident.

SOME LEGAL POINTS.

(Compiled from court decisions.)

Equity will not enforce a trust made in defraud of creditors.

As a general rule an assignment which is void in part is entirely void.

A mortgage taken for a precedent debt does not make the mortgagee a purchaser for value.

The possession of negotiable paper by parties liable upon it is strong presumptive evidence of its payment.

Money cannot be replevined by the owner after it has passed out of the hands of the original wrong-doer.

In the absence of a statutory provision, no interest can be recovered upon a penalty prior to its being merged into a judgment.

The rule is that, where a negotiable promissory note is given and is accepted in satisfaction of a present debt, the note is regarded as money paid.

A jury is not debarred from finding that receipt in full was not intended to cover all demands, when such is the fact and intention of the parties.

Under a bona fide sale of goods or chattels, though there is no delivery of possession of them before an attachment is levied, his title is good against the attachment.

When a material alteration is made of a written instrument by the holder, fraudulently and without the consent of the maker, it renders the instrument void so far as concerns the collection.

If one becomes a purchaser at a judicial sale and fails to complete his purchase as required by the decree, he is liable for the difference between the amount of his bid and the sum realized at a second sale.

When a note is made payable on demand, no demand is necessary before suit; but, if payable a certain time after demand, no right of action can arise until a demand and subsequent lapse of the time specified.

If every creditor of a debtor, acting independently of the other, agrees to receive less than the whole in full payment, his agreement does not bind him, for the want of consideration; but, if it is a combined agreement of all of the creditors, this concurrence or composition forms a valuable consideration, and each is bound.—Ex.

When one conveys his property to another for the purpose of covering it up, and thereby to hinder, delay and defraud his creditors, no vendor's lien can arise out of the transaction which will be enforcement in a court of equity.

The failure to object to account rendered is admissible in evidence as tending to prove an acknowledgement of its correctness; its weight or insufficiency for such purpose being a question of fact for consideration of the jury.

In action against one partner alone, on his individual obligation, given for a partnership debt, he may avail himself of any set-off of which the partners would have a right to avail themselves if the suit were against all of them.

An ordinary draft drawn by a creditor upon his debtor, and not made payable out of any particular fund, does not, before acceptance, operate as an assignment to the drawee, legal or equitable, of money due by account from the drawee to the drawer of the draft.

A letter containing an offer to compromise an account by paying a certain sum thereon, but which contains neither an acknowledgement of the justice of the claim, or any agreement to pay the same, will not revive the debt, if barred by the statute of limitations.

The shipment by a seller at one place, of goods consigned to himself at another place, the seller making a draft for the price, and attaching the bill of lading thereto, is a tender of delivery at the point to which the goods are shipped, and not at the place of shipment.

A check given to a person in the ordinary course of business is of such value that the person who receives it cannot look to the drawer of the check for the amount named therein until he has presented the check to the drawee or payee for payment, and payment refused.

When stock of an incorporated company is pledged by the owner as collateral security for the payment of a debt, the party to whom it is so pledged is, ordinarily, entitled to collect and receive the dividends thereon, unless this right is reserved by the pledger at the time the pledge is made.

So long as a debt remains unpaid, the creditor has the right to hold all the property pledged to him to secure its payment; and equity will not award to other creditors a part of the property so pledged solely on the ground that the remainder would probably be sufficient to pay the debt secured.

A mortgagee of real estate, in the absence of an agreement to the contrary, has the right at any time to take possession of the mortgaged premises, if he can obtain it peaceably, and to take the crops that may be growing thereon, and apply the proceeds therefrom to the mortgaged debt.

When a person, by his conduct, conversation, admissions, or otherwise, allows himself to be held out as a member of a pospective firm, and thereby a third party is induced to credit such firm, such person, to the extent of liability thus incurred, is barred from denying the existence of such firm.

A creditor may take a chattel mortgage to secure the payment of his debt, if the debt is a bona fide indebtedness, and taken in good faith as security, the mortgage will be valid, although the effect may be to delay and entirely defeat other creditors in the collection of their debts from the mortgagor.

One is presumed to intend the ordinary and natural consequences of his act, and a purchase of property without any reasonable expectation of paying for it, may be evidence of an intention to obtain it without paying for it at any time. A purchase with such a preconceived intention is a fraudulent act.

While the international alteration of a promissory note is a material part, if made by a person claiming a benefit under it, or by his agent with his consent, with the intent to defraud the maker, will give the latter, at the option, the right to treat his note as void, in order to avail himself of this right he must elect to rescind the whole contract of which he forms a part. He cannot enforce for his benefit a portion of that contract, and repudiate another portion of it.

The ability of purchasers to pay for goods bought on credit is often a matter of great uncertainty, and in the absence of any other fraudulent conduct, a court will not hold a person guilty of fraud for buying without the present means to pay, if he has a hope and a purpose to pay, if possible, in the future.

If an attorney buys at less than its face value, a note given by a client of his, and then collects from the latter the full value thereof, the attorney will be liable for the amount received in excess of the amount he paid for the note, together with interest thereon from the date he made the collection from his client.

If a note signed by a principal and two or more sureties is discharged by the execution and delivery of a note executed by the principal and one of the sureties, and the surety is forced to pay the last note, this does not entitle him to, and he cannot, compel his cosurety or cosureties on the first note to contribute.

Partners cannot sue one another at law for any breach of the duties or obligations arising from that relation. This can only be done in a court of equity by asking a dissolution and accounting, and, if damages accrue from any cause in such proceeding, they must be adjusted by some appropriate method in that tribunal.

The law will not enforce the performance of an agency which has for its object, or tends directly to promote, the commission of an illegal act, or an act opposed to public policy, such as the creation of fictitious and unnatural value, or the control or monopoly of traffic in the staple articles of commerce, or the prevention of free and natural competition therein.

A defendant in a civil action, who has failed to comply with an order of court, directing the payment by him of a certain sum of money to apply on a judgment recovered therein against him, is not liable for punishment as for contempt in refusing to comply with such order, where such disobedience was not willful, but was solely on account of his being insolvent and unable to pay the amount in the order required.

Where, for a valuable consideration, a creditor has agreed with his debtor to postpone and extend the time for payment, so that the debt shall be payable from time to time, in installments, an action to recover the entire indebtedness cannot be maintained until the amount of the last installment is due, notwithstanding the debtor has wholly failed to pay as the installments fell due.

Where the maker of a negotiable promissory note pays the same to the original payee, without requiring the production and surrender of the paper, he is liable to pay it again to an innocent holder, who acquired title to it in good faith and value, before maturity, unless the payee was the holder's general agent for the collection of such papers, or had special authority to collect in the particular instance, or the money in fact reached the holder's hands.

DECIDED.

That a sale of an article by a particular description constitutes a warranty that the article answers to that description, is well settled. But the Supreme Court of North Dakota goes a step farther, and holds that, because when, in response to an order for an article described in a particular way by the purchaser, the seller delivers an article of that general nature, though not fully corresponding with such description, the law regards his act as equivalent to a sale of such article by the particular description set forth in the order; therefore, he is to be considered to have warranted that it corresponded to such description. The illustration furnished by the case under consideration —Northwestern Cordage Co. vs. Rice, 67 N. W. Rep. 298 —is of an order for a quantity of pure Manilla twine. The company of which it was ordered having assumed to fill the order, the court holds that it must be deemed to have warranted that the article delivered was in fact pure Manilla twine. And, what is of not less importance, the court holds that the acceptance by the purchaser of an article which does not correspond to the warranty, with knowledge of the defects, does not, as a matter of law, bar his right to rely upon the warranty. It is a circumstance to go to the jury, on the question whether there was a breach, and possibly whether the purchaser has not waived his right to insist upon damages for it. The court itself seems to realize this, and in anticipation of the applications that may be sought to be made of it in the future, without trying to forestall the exceptions which may have to be made in different cases, the court says that it believes it to be in the interests of justice, and to fairly express the sense of business men upon the subject, that whatever form a warranty assumes, if there is in fact a warranty, the mere acceptance of the property will not, as a matter of law, bar a recovery for a breach of the warranty, although an inspection of the property would have led to the discovery of the breach, and the actual knowledge of the defective condition of the thing delivered should not necessarily preclude a reliance upon the warranty. One reason for this is that the purchaser is often so situated that it is necessary for him to accept the article in its defective condition.

RIGHTS OF THE HOLDER OF COMMERCIAL PAPER.

The harder the times, the greater the amount of commercial paper; for when a man cannot make immediate payment, the written promise to do so at some future date may become a collateral as useful to his creditors as the cash itself, depending, of course, to some extent, upon the financial responsibilities of the maker, but more so upon that of the creditor who indorses and discounts it. The strength of the promissory note depends on the resources of maker and indorser; but their utility depends upon their negotiability—the fact that they may pass from hand to hand, and that, when they finally become due, the holder has a right of action not only against the maker, but each and every one who has indorsed it, without limitation.

When times are hard, and creditors pressing, a merchant sometimes gives his note without thinking of the nature of his acts and the consequences that may ensue—

only desiring to get rid of present worry, but awakes to find that by transference, he has to deal with a still harder creditor—one who has given cold cash for the note, and possesses the temper of a Shylock in forcing its collection to the letter of the bond.

The party to whom he gave the note in payment of a bill of merchandise may have told him that he would make deductions on account of claims in regard to goods when the note was paid; or that if not paid at maturity he would extend it, etc. The holder at maturity, however, is not bound by any such promise, if he bought it before maturity, as even a court of equity cannot give the maker any relief against a bona fide holder for value. If one makes a promise of such nature, in order to get a note, the merchant should make the note payable to him, individually, and not to his order.

Another practice that is fraught with danger to the maker of negotiable paper is the one that has lately come into vogue, where the agent negotiating the loan requires that the notes be first executed and left with him for submission to the party who is to loan the money, for such notes have not infrequently turned up afterwards in the hands of innocent parties who have bought them, not knowing that the deal had in fact fallen through, and the agent had kept the paper, reporting that it had been lost through the mails, etc. An instance of this kind happened not long since, where a party found there had been a mortgage on his house and outstanding note, upon which the agent had not only received the money, but had himself been paying the interest for a year and a half.

As it is a very common practice for parties making loans to have the paper discounted, or put it up as collateral on a loan to themselves at a lower rate of interest, one who makes a payment on his note should always see that it is indorsed upon the note itself, and not rely upon a receipt for his money. And where one pays a promissory note executed by himself, to any person other than the holder, without taking up the instrument, he should see that the person receiving payment has a right to make the collection. By making the note negotiable, the maker expressly contracts to pay to any person who may lawfully acquire title to it in the course of trade. He therefore cannot rest upon the assumption that payment to the original payee will necessarily discharge him.

Of course, against one who takes a promissory note after its maturity, the maker may set up the defense that he had already paid it to the original payee before its assignment by the latter; but where one takes such a note before its maturity, such a plea of payment will not in every instance be available. The rule, as settled by the authorities, seems to be that in such a case the holder, notwithstanding the previous payment of the note by the maker to the original payee, may collect it again, unless one of three things appear: First, that the payee was the holder's agent for the collection of such paper; or, second, had special authority to collect in the particular instance; or, third, the money collected by the payee in fact reached the holder's hands. It will be obvious, without further elaboration, that if the payee collected for the holder under his authority, either general or special, or if the holder actually received the money collected by the payee upon the note, this should be an end to the matter; otherwise the law renders the careless maker liable to pay a second time.

It should also be borne in mind that although one may be authorized to receive payment of the installments of interest as they become due, he is not for that reason authorized to receive the principal at the maturity of the note, and such a note, should not be paid without both receiving the note and having it properly indorsed by the owner of the debt. In this connection, we might also say that by the statutes of many of the States it is provided that one cannot set up for the defense of payment, in whole or in part, of a note sued on by the administrator or executor, etc., of the payee, unless he is liable to produce the evidence thereof in writing, signed by such payee. So that no matter how honest, or how able financially a payee may be, payment should not be made without the production of the note itself; or, if that seems to be lost, take a receipt in writing, and preserve same during the running of the statute of limitations, if you would avoid the possibility of being called upon to respond the second time. Debts and interest are sufficiently burdensome without this additional liability—Stoves and Hardware Reporter.

RECENT JUDICIAL UTTERANCES.

The law presumes in favor of the validity of contracts.

Mutuality of obligation is one of the requisites of every contract.

Where two clauses of a contract are repugnant to each other the latter will be rejected.

In giving effect to the language of any instrument, regard must be had to its purpose.

No person can act as agent in regard to a contract in which he has any interest, or in which he is a party on the opposite side to his principal.

Where no place of performance of an obligation is agreed upon by the parties, the party to whom the other is bound may, as a general rule, designate any reasonable place of performance.

Any alteration of a contract as to which a third person has become a guarantor or surety, without his consent, extinguishes his liability, irrespective of the question whether an alteration would work an injury to him or not.

When a contract or contracts and other instruments are partly written and partly printed, and a conflict arises between such portions, the written portions are entitled to a higher consideration than the printed portions in ascertaining the intention of the parties.

When it is uncertain whether damages have been caused by the violation of a contract, none can be recovered, a jury not being permitted to speculate whether damages may not have been occasioned; but when it appears that damages have been caused by the breach of a contract, the amount of which is uncertain and incapable of ascertainment by computation or by direct evidence, the injured party is entitled to recover such as he can show to be the direct results of the breach of the contract.

Where there exists a contract of insurance, not expired, and there is an agreement between the parties to renew the policy, and no change is suggested or agreed upon, it will be implied that the renewal contract includes and adopts all the provisions of the existing contract of insurance.

Where the terms of a written contract are perfectly plain and unambiguous, the intention of the parties is to be ascertained from the language of the contract itself, and not otherwise; and, in such case, oral evidence is inadmissible to add to, vary, or explain the meaning of the contract.—Exchange.

It is a general rule that, when it is a part of the understanding between the parties that the terms of their contract are to be reduced to writing, and signed by the parties, the assent to its terms must be evidenced in the matter agreed upon, or it does not become a binding obligation upon either.

Judicial generation for the rule of evidence which pronounces a written contract the highest and best evidence of agreement between the parties, and denies to either the privilege of adding to or taking from such contract by the introduction of oral evidence, cannot successfully protest such a contract when it is assailed upon the ground of fraud in its procurement.

CONTRACTS NOT VALID

TILL APPROVED BY THE HOUSE.

The jury in the case of the Western Harness Manufacturing Company vs. Porter Bros. & Hackworth, Ottumwa, Iowa, recently brought in a verdict for the plaintiffs for the full amount of their claim. The outcome of the case is interesting to all wholesale houses, as it determined more or less the status of a traveling salesman.

A salesman for the plaintiff sold a bill of goods to Porter Bros. & Hackworth under a contract for prices considered by the firm low. The house declined to fill the order. Porter Bros. & Hackworth later bought a bill of goods of the plaintiffs, and when payment was requested put in a counter claim of damages for the failure of the firm to fill the first order. The instructions of Judge Fee, and the finding of the jury, determines practically that a traveling man's contract is not binding on the house, and that a sale is never consummated, or contract made by a salesman valid, until approved by the house.

A suit for the infringement of a patent can not be defeated by merely showing that the alleged infringing devices could be used for some other purpose.

The state courts have jurisdiction over questions arising out of contracts made concerning patent rights, where the validity of the patent arises collaterally, and is not directly involved.

Where a bill in equity is brought upon a patent, and during the pendency of the suit the right to an injunction fails by reason of the expiration of the patent, the suit is not determined, but the court will proceed to administer the other relief sought.

Where two patents for the same invention are issued to the same person, the second patent is void. But where after an inventor has applied for a patent, he makes improvements on his invention, and in asking for a patent for them necessarily describes his original invention, and the patent for the latter is issued first, the United States Circuit Court holds that the patent for the original invention will not thereby be rendered void, especially when the purpose of the patent granted for the improvement is so obvious as not to mislead the public.

The rule as to infringement of patents for pioneer inventions which point the way to new products or results, the United States Circuit Court of Appeals says is analogous to that applied in cases of infringements of process patents, in which the discoverer is only required to point out one practical method of using his process, and is permitted to claim tribute from all who thereafter use the process, whether with his apparatus or with different or improved means. It may even be that, being shown by the successful operation of the patent the exact nature of the functions to be performed by a part of the patent device, the infringer, by the use of his inventive faculty, hits upon something as a substitue which will perform the same functions more completely and satisfactorily. He is then a tributary inventor; but he is none the less an infringer if he uses the whole machine, with his substituted part, to accomplish the results.

Whether a patentee specifically claims in his patent the benefit of equivalents or not, the United States Circuit Court of Appeals says that the law allows them to him according to the nature of his patent. If it is a mere improvement on a successful machine, a mere tributary invention, or a device, the novelty of which is confined by the past art to the particular form shown, the range of equivalents is narrowly restricted. If it is a pioneer patent with a new result, the range is very wide, and is not restricted by the failure of the patantee to describe and claim combinations of equivalents.

Nothing will restrict the pioneer patentee's rights in this regard save the use of language in his specifications and claims which permits no other reasonable construction than one attributing to the patentee a positive intention to limt the scope of his invention in some particular to the exact form of the device he shows, and a consequent willingness to abandon to the public any other form, should it be adopted and prove useful. The mere fact that the claims of a patent are expressed by reference to the lettered parts of the machine, as shown in the drawings, will not of itself lead to literal and formal constructions of the claims and limit their scope to the form of device used and suggested by the patentee, so as to deprive him of the liberal doctrine of equivalents, if otherwise he is entitled to its application.—Business Law.

SOME IMPORTANT PROVISIONS

OF PATENT LAW.

1. After January 1st, it will not be possible to obtain a valid patent in the United States for an invention which has been patented in England, or in any foreign country, for more than seven months prior to the date of lodging the American application.

According to this amendment, English inventors must file their United States application within seven months of lodging their application in England.

2. American patents issued after January will not be limited in term by prior foreign patents, as is now the case, but will run for the full term of seventeen years from date of grant.

3. All applications must be completed and prepared for examination within one year from the date of filing, and applicants must prosecute their applications within one year after any official action therein; otherwise such applications will be regarded as abandoned.

5. Actions for infringement must be commenced within six years from the time the infringement is committed, or there can be no recovery of damages.

Delivery of possession is essential to a gift in view of death.

Testimony of a single witness is sufficient to prove a fraud.

Stubs in a check book are not admissible to show the purpose.

A noninterest-bearing deposit does not become due until demand.

The intent with which a conversion of trust property is made is immaterial.

The conveyance of all the firm property to a corporation dissolves the partnership.

A party cannot testify as to the meaning or legal effect of an instrument in writing.

That the books of a firm show a person to be a partner is not conclusive against him.

Evidence which shows poor business management or misfortune is not necessarily evidence of fraud.

Criminal intent is essential to the crime of forgery, and the testimony bearing thereon is always a question for the jury.

If fraud is not strictly and clearly proved as it is alleged, although the party against whom the relief is sought may not have been perfectly clear in his dealings, no relief can be had.

The law requires men, in their dealings with each other, to exercise proper vigilance, and apply their attention to those particulars which may be supposed to be within the reach of their observation and judgment, and not to close their eyes to the means of information accessible to them; but the seller must not use any art, or practice any artifice to conceal defects, or to make any representations or do any act to throw the purchaser off his guard, or to divert his eye, or to prevent his use of any present means of information.

TIME BOOKS AS EVIDENCE.

The entries in an account book, or book of original entries, may be proved by the clerk who made them, if he is alive and can be produced. But in order to make the book admissible, it is necessary that the entries should have been made in the ordinary course of business, by a person whose duty it was to make them, and that they should have been made contemporaneously with the doing of the work for which the charges are made, so as to form a part of the immediate transaction. It is also necessary that the books should have been fairly and honestly kept.

Where the clerk who made the entries had no knowledge of their correctness, but made them as the items were furnished by another, it is essential that the party furnishing the items should testify to their correctness, or that satisfactory proof thereof—such as the transactions are reasonably susceptible of—from other sources, should be produced.

Furthermore, the Supreme Court of Illinois, which states these general principles, holds that where there is original evidence that laborers were employed, and that their time was correctly reported by persons having personal knowledge of the facts, and that these reports were made in the ordinary course of business, and in accordance with the duty of the persons making them, and in point of time were contemporaneous with the transactions to which the reports related, and where this original evidence is combined with proof by the person receiving the reports, that he correctly entered them as reported in the time book, in the usual course of his business and duty, the entries so made are admissible as evidence to show the amount of work done.

BOOKS AS EVIDENCE.

The testimony of living witnesses personally cognizant of the facts of which they speak, given under the sanction of an oath in open court, where they may be subjected to cross-examination, affords the greatest security for truth. Their declarations, verbal or written, must, however, sometimes be admitted when they themselves can not be called, in order to prevent a failure of justice. The admissibility of the declarations is in such cases limited by the necessity upon which it is founded.

Entries made at the time acts took place, by one whose duty it was to keep record of such acts, or by the merchant whose habit it was, in the course of his business dealings, to preserve a minute of them himself, ought to be received as evidence of those acts. The mere fact that the accounts in the latter case may be to the interest of the party making them, does not of itself cause their rejection. In the former case it is urged in support of the admissibility of the book of items, that it will be presumed that he who was in duty bound to keep a faithful transcript of events has performed his duty. The presumption appears to be just as strong in the latter case, where the merchant writes up his own book of debts and credits, and at least should not be overthrown by the mere appearance of a balance in his favor.

The person who made the entry, if he is alive and a competent witness, and within the jurisdiction, is called to verify his writing. If dead or beyond reach, or incompetent, his testimony is dispensed with, All entries made in the regular course of business, private or public, are admissible, though not against interest. And though the circumstance that an entry in the regular course of business is against interest will undoubtedly add to its reliability, yet it cannot be considered as settled that the mere circumstance of an entry or declaration being against a person's interest renders it evidence of the fact between third persons after his death.

There is a distinction between entries made in the usual and regular course of business and a private memorandum. The latter is a mere hearsay, and inadmissible in evidence after the death of the person who made it. Entries made in the regular and usual course of business stand differently. When shop books are kept, and the entries are made contemporaneously with the delivery of goods or performance of labor by a person whose duty it was to make them, they are admissible, unless the nature of the subject is such as to render better evidence attainable.—Business.

INDEX.