THE KEYSTONE.

IN THE INTEREST OF THE JEWELRY TRADE.

Volume 9. Philadelphia, July, 1888. Number 7.

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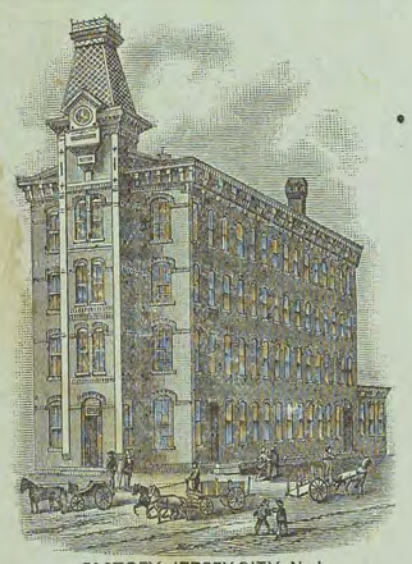

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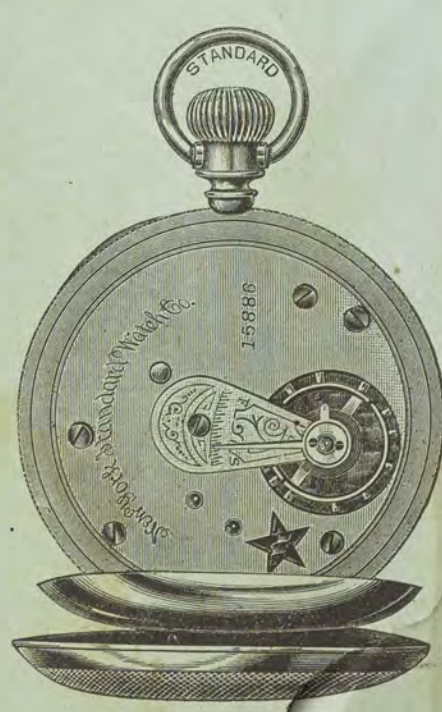

THE KEYSTONE.

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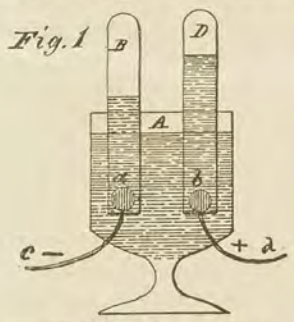
WORKSHOP CHEMISTRY.

By the Professor.

A GALVANIC battery of very moderate power serves to decompose water to its original elements, if the water is slightly acidulated by adding a few drops of sulphuric acid. The object of acidulating the water is to increase its conductive power; as pure water is a very poor conductor of electricity. The usual form of apparatus for illustrating the decomposition of water by an electric current is shown in Fig. 1, and consists of a glass vessel *A*, into which lead two wires, *c*, *d*. These wires terminate in two discs of platinum, *a*, *b*. If the wire *d* is attached to the positive or copper pole of a galvanic battery, and the wire *c* to the zinc or negative pole, and a galvanic current passed through the acidulated water in the vessel *A*, small bubbles of gas will commence to

Fig. 1



rise from each platinum disc. If we now place two inverted test tubes, *B*,*D*, filled with the same solution as is contained in *A*, one over each of the platinum discs; the bubbles will rise and gradually displace the water in these test tubes in the proportion of two volumes in the tube over the disc *a* to one over the disc *b*.

On investigating the contents of the two test tubes, it will find the one containing the largest volume of gas, filled with pure hydrogen, and the one containing the smaller volume filled with pure oxygen. These two gasses can be mixed or mingled together under ordinary conditions, and retain their individuality, *i. e.*, they are simply mixed elements of oxygen and hydrogen, as much as dry salt and dry sugar would be if stirred together. They form in this instance what is termed in chemistry a "mechanical mixture," and can be mingled together in any proportion. Such mingling must not be confounded, however, with chemical combinations, as the latter are generally effected in certain deffinite proportions, as in the instance of water, where two volumes of hydrogen combine with one of oxygen. If the gases are mingled in the proportions named, they retain as stated above their gaseous form; but at the touch of a flame or an electric spark they unite with great violence, developing intense heat. The same effect takes place if the mixed gases are exposed to direct sun rays. The result of the combination of the two gases are the production of precisely the same amount of water as was decomposed by the electric current; and the heat evolved considered in the sense of energy precisely equivalent to the electric force employed to decompose the water. We have now separated a compound body into its primitive elements through the agency of electric energy. The hydrogen element we will leave for subsequent consideration, and also leave the methods for determining, if the gas we accept as oxygen really is this element, or some other gaseous body. For the present we accept it as such, and go on and describe its properties other than those mentioned in June KEYSTONE.

Oxygen combines with almost all known elementary bodies, forming combinations known as oxides, as in the instance of combing with hydrogen and forming water. This compound chemically speaking is an oxide of hydrogen; or as it is termed in more modern nomenclatures, hydrogen oxide, and the chemical symbol would be H H O, or as it is generally written H_2O. The combinations of oxygen with other bodies, as stated before, are generally in definite proportions, as instanced in water. I do not mean by this that oxygen and hydrogen will not chemically combine only in these proportions, because we have another chemical combination of these elements (H_2O_2) known as hydrogen dioxide. Comparatively it is only known in the labratory as it is rapidly decomposed, leaving *oxyginated water*, a powerful bleaching agent, sometimes sold as *peroxide of hydrogen*, and occasionally used for "blonding" ladies hair. The space assigned to these papers will not permit giving all combinations, nor is it necessary to know them. It may also be well here to say that in preparing these articles it is more difficult to judge when to stop talking, or perhaps it would be better to say, where to drop the subject, than it is to write along and treat of a hundred and one compounds of no real interest to the artisan. Another point to be considered is, many persons have an idea that a chemist can analyze and tell the component parts of any composition. This is true in some cases, but not all; especially animal and vegetable substances.

To resume our consideration of the combinations of oxygen with other elementary bodies, chemists have adopted a system of naming the combinations in the order of the proportions of oxygen combining with the element in question, by adding a prefix of a Greek numeral if the combinations are in the proportions 1, 2, 3. In such cases the proportions of oxygen combining would be denoted by the prefixes "mon," "di," "tri." And if, as is not infrequently the case, a combination of oxygen with the other elements admitted of one between first and second,—*i. e.*, between the mon. and di-oxide, it would be termed a sesquioxide, or a one and one-half oxide. The combinations of oxygen with other elements can in most instances be grouped rather markedly into basic or alkaline and acid groups. The reader, in addition to the apology made above, will please bear in mind I am not writing for those persons who intend to pursue the science of chemistry down to fine distinctions, but rather for those who wish to know enough of it to help themselves in the arts. I shall make many omissions where I think combinations are not important, as for instance, in June article I spoke of only two oxides of iron, while three exist, and a fourth suspected but not yet isolated. Speaking above of the two groups of oxygen compounds as basic or alkaline and acid, it is not so easy in all cases to draw the line as I shall have occasion to instance further along.

Below I give a newer and more generally accepted list of elements with their atomic weights. It is well to have both lists so that in reading of chemical matters we can understand the text.

Name.	*Symbol.*	*Atomic Weight.*
Aluminium	Al	27.3
Antimony (Stibium)	Sb	122
Arsenic	As	74.9
Barium	Ba	136.8
Beryllium	Be	9
Bismuth	Bi	210
Boron	B	11
Bromine	Br	79.75
Cadmium	Cd	111.6
Cæsium	Cs	133
Calcium	Ca	39 9
Carbon	C	11.97
Cerium	Ce	141.2
Chlorine	Cl	35.37
Chromium	Cr	52.4
Cobalt	Co	58.6
Copper (Cuprum)	Cu	63
Didymium	D	146.6
Erbium	E	166
Fluorine	F	19.1
Gallium	Ga	69.8
Gold (Aurum)	Au	196.2
Hydrogen	H	1
Indium	In	113 4
Iodine	I	126.53
Iridium	Ir	196.7
Iron (Ferrum)	Fe	55.9
Lanthanum	La	139
Lead (Plumbum)	Pb	206.4
Lithium	Li	7
Magnesium	Mg	23.94
Manganese	Mn	54.8
Mercury (Hydrargyrum)	Hg	199 8
Molybdenum	Mo	95.6
Nickel	Ni	58.6
Niobium	Nb	94
Nitrogen	N	14.01
Osmium	Os	198.6
Oxygen	O	15.96
Palladium	Pd	106.2
Phosphorus	P	30.96
Platinum	Pt	196.7
Potassium (Kalium)	K	39.04
Rhodium	Rh	104.1
Rubidium	Rb	85.2
Ruthenium	Ru	103.5
Scandium	Sc	44.9
Selenium	Se	78
Silicon	Si	28
Silver (Argentum)	Ag	107.66
Sodium (Natrium)	Na	23
Strontium	Sr	87.2
Sulphur	S	31.98
Tantalum	Ta	182
Tellurium	Te	128
Terbium	Tb	148
Thallium	Tl	203.6
Thorium	Th	231.5
Tin (Stannum)	Sn	117 8
Titanium	Ti	48
Tungsten, or Wolfram	W	184
Uranium	U	240
Vanadium	V	51.2
Ytterbium	Yb	172.5?
Yttrium	Y	89
Zinc	Zn	64.9
Zirconium	Zr	90

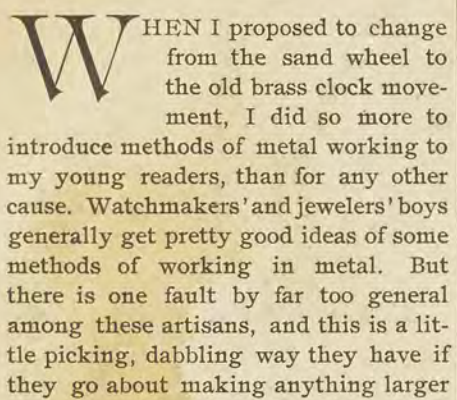
Eleven other elements exist in nature in great abundance. These will first enlist our attention as combining with oxygen. These are Hydrogen, Nitrogen, Carbon, Chlorine, Bromine, Iodine, Sulphur, Phosphorus, Silicon, Boron and Fluorine. These are known as non-metalic elements. Of these elements none exist pure in nature except Carbon in the form of diamond and graphite.

There is a term very generally used in all chemical works which is well to consider before proceeding further, and this is chemical affinity. This force exists in nature in all degrees, from combinations of the most feeble nature to instances of cohesion, where the atoms combine with great tenacity. Oxygen, the element we have had under consideration, has a great affinity for many elements combining to form products of remarkable stability, as exemplified in water.

The term affinity, in its accepted significance, indicates a natural tendency to combine; but this tendency is very much affected by conditions attending at the time the elements are presented to each other. Thus we say iron has an affinity for oxygen, but yet iron placed in an atmosphere of perfectly pure and dry oxygen at a low temperature would not combine; but an iron wire heated to redness and plunged into a jar of oxygen gas burns with intense splendor, evincing an enormous affinity. Oxygen under certain conditions assumes peculiar properties, and is then termed ozone. This condition will be taken up subsequently. Oxygen combines with hydrogen and forms water, as has been shown. Oxygen combines with Nitrogen and forms NITRIC OXIDE, N_2O_5; NITRIC MONOXIDE, N_2O, *Laughing Gas*; NITROUS OXIDE, N_2O_2; ATMOSPHERIC AIR is a *mixture* of Oxygen and Nitrogen in the proportions 79.19 of Nitrogen and 20.81 of Oxygen, with slight mingling of Carbon, Dioxide and Ammonia. In addition to the gases named is a diffusion of aqueous vapor, proportionate to temperature. The relative proportion of Oxygen and Nitrogen are constantly the same in all places. Oxygen combines with Carbon, and forms CARBON MONOXIDE, CO_2, formerly known as *Carbonic Oxide*; CARBON DIOXIDE, formerly known as *Carbonic Acid Gas*; Oxygen has but slight affinity to Chlorine, Bromine or Iodine. Oxygen and Sulphur combine readily, producing SULPHUR DIOXIDE, SO_2, *Sulphurous Acid*; SULPHUR TRIOXIDE, SO_3, *Sulphuric Acid*. Oxygen unites with Phosphorus and produces PHOSPHOROUS OXIDE, $P O_3$; and PHOSPHORIC OXIDE, P_2O_5. Oxygen unites with Silicon, forming SILICON DIOXIDE, $Si O_2$. This combination forms a great percentage of the solid matter of the earth, and will be further considered under the title of Silicon. Boron, like Silicon, only affords one combination—BORON TRIOXIDE, B_2O_3. The last of the non-metalic elements, Flourine, combines readily with Hydrogen, but not Oxygen. It has only very recently been isolated, and is the realization of the alchemists universal solvent, nothing being able to resist its powers.

JACK-KNIVES.

WHEN I proposed to change from the sand wheel to the old brass clock movement, I did so more to introduce methods of metal working to my young readers, than for any other cause. Watchmakers' and jewelers' boys generally get pretty good ideas of some methods of working in metal. But there is one fault by far too general among these artisans, and this is a little picking, dabbling way they have if they go about making anything larger than filing joint-pins. This comes from not being properly disciplined when learning the trade. Saunier, in his work, speaks particularly about workmen learning to file and drill and do other metal work in a large way. I don't mean by this making marine engines or shoeing horses; but every watchmaker should be able to do a medium heavy job with rapidity and skill. There is a job which would be no disparagement for any workman to know, and this is how to make a knife-blade for a pocket-knife, and do it with dispatch. We all know nice-looking handles are as common as cats, but a good cutting blade, which will hold an edge and do its work well, is hard to get hold of. The reason of this is not because good steel is scarce, but that the steel is burned and injured in working. Stub's steel can be bought in flat thin bars, and such as we would want



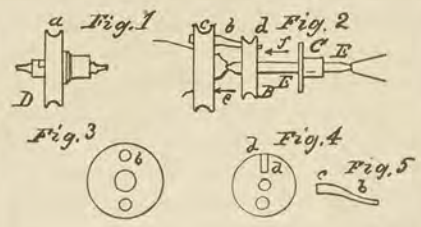
to make a blade of is seven-sixteenths wide, and a trifle over one-sixteenth thick. To make a new knife blade we commence by taking out the old one for a pattern. To do this drill into the rivet on one side with a drill nearly as large as the rivet. A square ended punch will generally drive the rivet back if inserted in the hole just drilled and struck with a hammer. At any rate get the rivet out without marring the metal cheeks, or bolsters as they are called, any more than possible. After the old blade is out, clamp it to the piece of steel to form the new blade with a pin vice, as shown in Fig. 1, and with a drill, drill a hole the same size as the one in the old blade. If your drill should be a trifle smaller, you can broach out the hole so they are alike in both. At Fig. 1 the new piece of steel is shown at *A* and the old blade at *B*. Here the old blade is shown as if entire; but if only the stub which goes into the handle is left, it can be used to get the exact size and shape for this part of the new blade. A temporary rivet should be used to hold the old and new blade together, to get the proper form, which is done in this way. The rivet at *a* holds this part, and with the pin vice clamp the blade as shown. Now with a sharp steel scriber point go all around the old blade, or if it is broken, say at the line *b*, clasp the vice farther back and go around the stub, adding the form of the blade subsequently to suit your taste. After the outline is complete, put the piece *A* into your bench vice as shown in Fig. 2, and file to the outline. For such filing a single cut file, such as is used to file mill saws, is better than a double cut file. A vice for such work should by rights be heavier than I mentioned in June KEYSTONE. To do such work well and rapidly, we should have a vice weighing fifteen or eighteen pounds, because in such a vice we can use a cold chisel to remove the excess of metal, as for instance to the lines *e*, *g*, Fig. 1. To do this with a cold chisel, put the new blade into your vice so the line *f*, Fig. 2, comes even with the jaws of the vice. Then with a cold chisel held obliquely, as shown at *F*, Fig. 4, cut away the superfluous metal. For the curved parts cut to straight lines, as shown at *e*, *g*, Fig. 1. The form of the new blade can be perfected with the file. After the new blade is shaped as shown at *A*, Fig. 3, we want to flatten the sides to form the blade. To accomplish this readily, get a piece of pine-board about five inches long by three-fourths of an inch wide, and say one thirty-second of an inch thicker than the piece of steel we are making a knife blade of is wide. We place this in the jaws of the vice edgewise, as shown at *G*, *G*, Fig. 5, with the upper surface about a quarter of an inch below the upper edge of the jaws. We lay our new blade on this as shown in Fig. 2. Now as the pine piece is a little thicker than the steel is wide, when the vice jaws grip the stick, the piece *A* can be laid in and moved to the place we want; and as the pine is soft we can close the jaws and grasp the steel securely. It will be seen the stick *G*, as shown in Fig. 5, will support the blade while we are filing it flat. The flattening should extend back to about the dotted line *h*. The vice jaws guide the safe edge of the file to the line *h*. Slack up a little on the vice, and the steel can be turned over without the wood becoming loose enough to move. The nail catch can be cut in with a graver while it lays on *G*, as shown in Figs. 2 and 5. The blade should be left fast to the steel *A*, only sawing in at *j*, Fig. 3, so it can be readily broken off.

The edge of the blade should be left about one sixty-fourth of an inch thick, to prevent burning and cracking in hardening. To harden a blade properly, coat it from end to end with a paste made by mixing castile soap and water. Heat to a pale red and plunge endwise. The material into which the blade is to be plunged is a question. The simplest is water at about sixty degrees. But it is a determined fact that water gives a harder temper, but not as tough a one as oil. The great trouble in tempering with oil is, people are apt to try and use too small a quantity. All jewelers should keep a cup of oil, holding at least a pint, for tempering gravers and the like. After dipping, move the blade about in the oil until cooled off. The best oil for the purpose of hardening is lard oil, and the temperature of the oil should be about 60° if possible. In moving the blade in the oil swing it edgewise like a pendulum. The sawing or cutting in at *j* should not be done until all the fitting is done and the blade ready to harden.

THE BOW LATHE.

THE methods of reducing the pivots of our cylinder to the right size has already been discussed in these papers. It may not be amiss to say, however, that in using the bow for turning in cylinders that a collet is cemented on to the cylinder in the same manner as the disc *D*, shown in June KEYSTONE. At Fig. 1, below, is shown such a collet at *D*, and a groove for the hair bow at *a*. The small brass whorls, which come on Swiss drills, if broached out to fit the cylinder, answer when attached with lathe cement or shellac. Of course the reader will understand that a split collet could not be used for holding a cylinder, as it would crush it. A back rest can be provided for a bow lathe having a loose pulley, which would be of immense benefit for many purposes.

In March KEYSTONE a back rest is described in the article on "Clocks." The description there given contains all the instruction which need be given, except to make a socket to slip on the bar of the bow lathe, similar to the slide shown at *N*, Fig. 5, December, 1887, KEYSTONE, in "Bow Lathe" article of that date. Such a back rest is very convenient for making centres for your lathe for special purposes. Centres have



not only to be made, but kept in order; the fine hollow cones and points soon wearing out of shape. I stated early in these papers that all the accessories of the bow lathe can be used with the loose pulley system. At Fig. 2 is shown a loose pulley at *A*. This pulley has a hole drilled in it as shown at *b*, Fig. 3, which is a view of the pulley *A* seen in the direction of the arrow *e*. In this hole goes a pin which extends forward to engage any pulley on a screw or taper arbor, such as is ordinarily used with the bow lathe. The driving pin is shown at *b*, Fig. 2, and separate at *b*, Fig. 5. At *B*, *E*, Fig. 2, is shown a taper arbor *E*, with an hour wheel *C* placed on it for turning up the sleeve where the hour hand goes. At Fig. 4 is shown an end view of the pulley *B* seen in the direction of the arrow *f*, with a slot cut in it to receive the pin *b* as shown. The slot in at *d*, Fig. 4, need not be more than one-sixteenth of an inch wide, and will in no way injure the pulley for using with the bow. There should be about three pins (*b*,) of different bends to fit small and large pulleys. The pin *b* is fastened to *A* by a set screw at *c*, which sinks when run in, to be flush with the groove in *A*. A set of screw arbors can, by slotting, be used with the loose pulley *A* for truing English lever barrels, and also for Swiss going barrels.

DIAMOND SETTING.

Some changes which competition has made in the jewelry business.

"Ten years ago," said a manufacturing jeweler, "there was but one diamond cutter in the city. When he got sick there was nobody to cut a diamond. Now there are plenty of cutters, and they use improved machinery, by the use of which they can cut diamonds better and more cheaply than it can be done anywhere in the world. Our diamond cutters can take many imported stones and add 25 per cent. to their value by improved cutting. The obvious increase in the number of diamonds worn has compelled the education of workmen to meet the demand.

"Another thing has been done. This is an invention of the American manufacturer, and consists of the application of machinery to diamond setting. The old-time workman would have considered with horror the idea of putting anything but hand work on a piece of diamond jewelry. Everything about it had to be done by slow and laborious hand work. But a shrewd workman got the idea that a good deal of the setting of a diamond may be done quite as well by machinery as by hand, and a good deal quicker and more cheaply. The fact is that where many diamonds are set, they resolve themselves into sizes about as regular as the sizes of any other commodity. It is easy enough to prepare settings to suit any size of diamonds that are sold in the market.

"It may seem a trifling thing to estimate the cost of such a comparatively trifling thing as the cost of a setting—or at least the difference between a hand-made setting and a machine-made setting; but the inevitable result of competition has been to get the cost of manufacturing even diamond jewelry down to the lowest rate. As to the value of the diamond itself, the experts have become able to fix that to a nicety.

"There is plenty of nonsense in the talk about the wonderful work of old time jewelers. You may go up and look at it in the Metropolitan Museum of Art. Our modern jewelers will take the best of it and reproduce it in *fac-simile* at prices that would stir the ancient jewelers in their graves. The application of steam, electricity, and labor-saving machinery has worked a revolution in the jewelry business. You go to buy a suit of clothes in the Bowery and they throw you in a watch better than kings carried a hundred years ago.

"There are artists and those who pretend to be artists who rave about the wonderful hand work that is put on metal vases, especially by Japanese workmen. The wonder to a skilled American workman is that such hand work should be accepted at any price. You see, for instance, an effort to mark a circle. The utmost skill of the human hand, with greatest expenditure of time and money, cannot make a circle as perfect as a lathe will do it at a trifling cost. You can buy a peachblow vase for nineteen cents; and then there are American carpets that look to most of us as artistic as the vaunted Persian rugs; indeed, I have noticed that a good many of the alleged imported tapestries are home made.

"In the jewelry business, as much as in any other, there has been introduced machinery. Enormous expense for patterns, designs, tools and machinery is often incurred for the production of some little article of jewelry that is sold at a price that is simply wonderful. The workman who makes plain gold rings can now earn more money at it than he could only a few years ago, when the price paid was much greater. It is all due to the introduction of machinery."—*N. Y. Sun.*

GOLD WORKING.

Extracts From the Work of George E. Gee, on Gold Working, with Notes by the Editor of this Journal.

PREPARING THE WORK.

THERE are several methods, as we have already remarked, of preparing the work for wet-coloring; each operator adopting the one which suits him best, and appears to claim an advantage over the others. We do not intend to assert that there is any particular advantage likely to accrue from the adoption of any particular process in the preparation of the work. The main principles are, thorough polishing (though this need not be so much the case as for dry-coloring, but still it is of great importance) and cleanliness, the latter element being very essential in the production of a good color. The operator cannot be too careful in enforcing these two conditions.

Some persons prefer to color from the black anneal; others to boil for a time in nitric acid pickle; others again, after the work has been well annealed, boil out in sulphuric acid pickle, and afterwards in clean water. In adopting any of these plans, the method is that, after the work has been well polished by means of the finest materials, and washed out, it must be placed upon an iron or copper pan and heated to redness upon a clear fire, the latter proceeding being of importance. If it appears greasy in the interstices, and it is desired to color it black, it should be boiled out and again annealed; it may then be placed aside to cool, and afterwards suspended upon the wires usually employed for this purpose. In the work of recoloring articles, it is by far the best plan to anneal them. Where this can be done, boil them out, and again anneal them, which process is easily performed. It is an economical plan to re-color this description of goods in old color, which should always be preserved for the purpose. If this appears dry or nearly so, when put into the pot, add one ounce of acid and one ounce of water; if tolerably liquid, make no addition whatever, for, in some instances, and especially where the alloys contain a great proportion of copper, the weaker the preparation the better and brighter is the color produced upon the work.

FINISHING THE WORK.

After the process of wet-coloring it is absolutely necessary that the work should go through another operation, that of "scratching;" which consists of submitting it to the revolving action of a circular brush of fine brass wire, mounted upon a lathe, after the manner of the round hair brushes used in polishing, and upon which a solution of weak ale is allowed to run from a small barrel with a tap to it. This removes any dull color that may be upon the work, and gives it a perfectly bright and uniform surface. Frosting is effected by keeping the points of the wires of the brush quite straight, and running the lathe very fast, just letting the ends touch the surface of the work; to do this accurately requires great practice. After this process has been performed, the work must be well rinsed in either hot or cold water, and finally dried in warm boxwood sawdust, which must not be allowed to burn or char in any way: if so, the color of the work will be much damaged, and part of the beauty destroyed. A soft brush will remove all traces of sawdust from the interstices of the articles which have passed through this operation.

GERMAN PROCESS OF WET-COLORING.

The German process of coloring gold articles can be applied to that metal of a still inferior standard; and if carefully operated upon, even 12-carat gold may be made to assume a beautiful rich yellow, possessing all the appearance of fine gold, by immersion in the following chemical preparation until the desired color has been obtained. It consists in some cases of a reduction of the salts usually employed, the abolition of the alum altogether, whilst a double proportion of spirits of salts (muriatic acid) is added to supply the place. A very good mixture, to which we have just referred, is prepared as follows, one which is especially recommended for large work. Take—

Nitrate of potassa	14 ozs.
Common salt	7 "
Muriatic acid	5 "
	26 ozs.

Reduce the above salts to a fine powder in a mortar, keeping them perfectly clean all the time; well mix them together; then take a blacklead color-pot about seven inches high and six inches across the top, place it on the fire and well dry; when this is done put into it the coloring-salts, stirring them well with a wooden spoon; when thoroughly dried fine and hot, add the muriatic acid (spirits of salts); the color will then soon boil up. Now take the work which has been previously prepared quite clean and free from grease, and also suspended upon fine silver or platinum wire, and place it in the preparation for three minutes, keeping it slightly on the move during this period, when it must be withdrawn and instantly plunged into a vessel of clean boiling water, and then into a second vessel of the same. Next add two ounces of hot water to the color, and when it boils up, again place the work in the mixture for one minute longer; rinse in fresh boiling water as before stated. It will then be done, and of a fine color if all things have been carefully attended to; dry in clean boxwood sawdust as usual. The work must be well and carefully scratched in weak ale, which liquid is perhaps the best for all practical purposes, or burnished with a proper burnishing-chain if desired; we much prefer the latter, because of the very rich color it produces. After the work has been well rinsed in clean water subsequent to these operations and dried as before pointed out, it is then ready for the transactions of the commercial world.

The drying of the salts at the commencement is to remove the water taken up during their crystallization, which operates injuriously where so large a proportion of muriatic acid is employed. A coloring is given to jeweler's work by this process in a much quicker time than could possibly be done by any of the preceding ones, but it is nevertheless much more difficult to perform. It takes considerable practice to become a good colorer; for, if not very skilfully treated, the large proportion of muriatic acid has a tendency to rot the work, as well as to reduce it to a honeycombed state, which latter condition would render it quite unsaleable. The time occupied by this process is four minutes, and the loss occasioned thereby will average about eighteen grains per ounce of the work under manipulation.

The Birmingham process occupies about seven minutes, with a greater proportion of loss of material. Gold alloys to be effectually colored by the German process should contain rather more silver than has been recommended for the others of which we have treated; because by this process a clean, deep, and smooth color cannot be produced under any other circumstances. The work would otherwise be frosted or sweated; and a very inferior color would be the result, if these or similar instructions were not carried out.

It is well to avoid as much as possible the introduction of wet articles into the color without previously shaking the surplus water from them. Neither should the color be thinned until the articles submitted to its action begin to show in an unmistakable manner the appearance of gold; for if this should be done, they are sure to come from the color-pot in a very rough state. This appearance of the work in the German process has successively baffled the skill and ingenuity of several gold-colorers of the old school in this country; and we have often smiled at the arguments in favor of the addition of water when the color of the work could not be properly effected in the given time, but came out black, which was probably due to the weakness of the acid employed, as it is liable to lose its strength if the mouth of the bottle be not sufficiently secured. The addition of water at such a time as this would certainly be fatal to the excellence of the finish. The proper remedy would be an increase of muriatic acid to the coloring mixture, an extra dip into which would soon produce the desired color. This should always be done before the weakening or *watering* process commences.

Articles of the commoner qualities, to be effectually treated by this process, must not under any considerations whatever (as we have previously remarked) contain too much copper; for this is the cause of many failures. Under other circumstances, where a large proportion of copper is employed, this weakening process seems to facilitate the object to be achieved; and where a much smaller proportion of muriatic acid is mixed with the other ingredients its addition is both practicable and advantageous. By the addition of water to the German mixture before the color has been brought up, upon a second immersion of the work a violent attack is made upon it, which, instead of producing color, acts as a solvent on the metals; and so powerful is this, that a few minutes' immersion would result, if the articles were thin, in their utter destruction.

In concluding our observations on gold-coloring we have simply to remark that the whole process is nothing less than an abstraction of the baser alloy from the surface, which leaves the gold behind with a full, rich color; its effect being to add richness to the color given to the surface of gold articles of inferior standards, and being nearly perfect in its resemblance to fine gold itself.

[Charcoal is undoubtedly the best protector for the surface of melted gold from oxidization when fusing. Mr. Gee, in the extract we published in our May number, recommends a mixture of charcoal and salammonic (muriate of ammonia) to be thrown in to the crucible, just as the metal is at the point of fusing. This reads all right; but let any person attempt to throw into a crucible fine charcoal when the furnace is in a glow, and he will find the light, fine charcoal will go into any place but the crucible; the hot air acting to blow the charcoal away. Make the charcoal and salammonic up into a little package, using just as little tissue paper as possible. In this way it all goes in a lump, and the paper is burned away in an instant, leaving the coal and salammoniac all on the melting gold. Fine charcoal can be bought at the druggists, and so can pulverized salammoniac. For those who would use much charcoal dust the better way is to grate it on a grater, such as is used to prepare horse-raddish root; sifting the dust through a fine sieve to remove the coarser particles, which would go into the ingot mold and make the ingot full of pits. Mr. Gee mentions "Sandiver" as a substance to mix with borax to prevent the small parts from rising and moving to one side. Sandiver is a substance which rises on the surface of glass melting pots. Now a few words on hard soldering. In our large manufacturies of jewelry there are never, to my knowledge, any substances used for a flux except borax and water. I presume there is no operation more simple to the experienced than soldering the joints on a watch case. Now, dear reader, if you never saw the operation performed in a large factory, how long do you suppose it takes to solder on the joints to a dozen Boss case backs? Give it up? Less than five minutes for the dozen; and if a joint slips, it is pushed into place with about as much apparent care as you would use in pushing a pair of pliers out of the way on your bench. Clean work, proper heat and knowing how; using simply borax and water, is all one needs for hard soldering. There is another point Mr. Gee is a little remiss in, and that is in regard to melting scrap filing, etc. After taking all out you can with a magnet, boil the filings in a mixture of muriatic and and crocus, to remove all the particles of soft solder. Take four ounces of muriatic acid, one-half an ounce of crocus, mix and shake well; take one ounce of this and four ounces of hot water; put the gold filings into this and keep hot for twenty minutes. An old tea cup answers to hold the mixture.]
—ED. KEYSTONE.

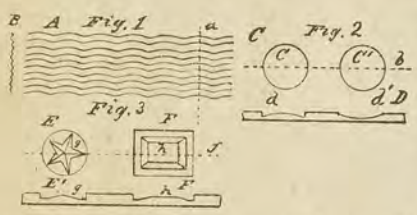
APPRENTICES can aquire more knowledge of the trade from the pages of the KEYSTONE than from any other source.

IT costs the city of Paris $8,200 a year to keep the public clocks going. This looks like a tolerably large sum, but when you come to divide it up it comes to only two-fifths of a cent apiece to the inhabitants of that city, who for that modest annual amount have the time of day kept within their sight on the gigantic dials that ornament the front of the Bourse, the Hotel de Ville, the Palais Royal, the Val-de-Grace, the Sarbonne, each of the twenty Maires, and nearly all other public buildings, including the tower of the Palais de Justice, where there is a famous clock presented by Charles V, and which has been goirg for more than five centuries.

ENAMELING.

A series of articles on this art by Cellini, Jr.

ENGRAVING, or as it is more generally termed, cutting for enamel, admits of great diversity of work, and many beautiful effects can be obtained by taking advantage of transparent enamels, as hinted in June KEYSTONE. A few more words in addition in regard to patterns and ornamentation showing through the coating of transparent enamel. At Fig. 1 are shown a series of waving lines; and at *B* a vertical section of the lines on the line *a*. Now if these lines are V shaped, and highly polished before the enamel is applied, the reflection from the bright lines will shine through, producing an effect similar to what is known as watered silk. An endless variety of effects can be obtained in this way if the surface enameled is broad enough to admit of it. Panels com-



pletely covered with enamel can be engraved so a portrait will show through the enamel when held in such a way the light will be reflected from the metal beneath the enamel. To produce such effects it is only necessary to engrave the lines pretty coarse and deep, and on the same principle as for copper plate printing, and after the enamel is applied the lines being deeper will show darker. Where the recessing can be quite deep, like in some heavy badge work, bright metal work in relief can be placed in the sink and so managed as to show through transparent enamels. Small round sinks can also be made to produce similar effects to rubies and opals, as shown magnified in Fig. 2, where *C*, *C'* represents two round sinks. At diagram *D* below, is a vertical section of these sinks on the line *b*. The dotted line *e* is supposed to represent the surface of the enamel. It will be noticed the bottom of the sink *C*, as shown in vertical section at *d*, diagram *D*, is convex, and the rounded top of the sink comes very near the surface of the enamel, leaving the reflection of the bright convex surface to show through, if a bright red enamel is used, giving much the look of a small ruby. The concave bottom recess shown at *d'*, diagram *D*, when

used with a translucent white enamel, gives a similar look to an opal. Small stars, and pyramid shaped figures in low relief, can be used with transparent green enamel, as shown magnified at Fig. 3. A vertical section is shown at *E'*, *F'*. These pieces, like *g*, *h*, Fig 3, should be cut from separate metal, and secured in place by fine gold solder. In broad recesses it is not necessary to leave all fine lines standing when cutting for enamel, as for instance, in Fig. 4 the zigzag line *I* is supposed to be a gold edge, left standing when the cutting was done; also the heavy white lines in Fig. 5. This figure is supposed to represent a leaf in two colors of green, and three red berries. In engraving such a design, if the bright lines represented in the cut by white lines would have to be left, and all the dark portion recessed, it would require a great deal of labor and care. But suppose it was a gold job in hand, and we desired these lines; if we took a small wire of the same kind of metal as the rest of the work, and after slightly flattening it, bent it to the form shown at *I* and *H*, and soldered it to the bottom of the sink with fine solder, we would accomplish the result much more quickly than if left when cutting the enamel sink. When using copper for practice, and you wish to try the wire, you can use copper wire and 16 K gold solder to fasten it in place. It would not do to use common hard solder, as it fuses too easily. After a copper job is ready for enamel, it should be dipped in nitric acid diluted with four parts of water, to remove any stain or oxide. Copper melts at almost the same degree of heat as 18 K gold. It is only within a comparatively recent date that enameling was done on gold less than 18 K fine, and now this is the best alloy for the purpose.

I might add, by the way of explanation, that sunk panels on which a portrait or the like is to be engraved, the bottom of the recess is first sunk to an even depth, and the surface of the sink made perfectly smooth and bright; and on this sunk surface the portrait is engraved in heavy lines. I gave the depth of the sinks for enamel as about one-fiftieth of an inch. In giving this depth I had reference to the copper practice plates, and not to gold work; as in such jobs the recess seldom exceeds one-hundredth of an inch in depth, except in such cases as are shown in Fig. 3.

APPRENTICES can acquire more knowledge of the trade from the pages of the KEYSTONE than from any other source.

WASTE-BASKET ADVERTISING.

The main object of advertising is to attract the attention of some certain class for a certain purpose, and to do this in the most economical and efficient manner ought to be the study of every business house with goods to sell. Half a century ago the principal reliance to effect this object was in circulars, and it still remains so with many, notwithstanding the fact that large advertisers of every class have discarded this old fogy method as being expensive and wasteful, when the benefits to be derived from such advertising is considered. While the mails are more burdened with circulars at present, perhaps, than at any previous time, it is not because such advertising is considered the best, but simply because it is not considered at all. A merchant or dealer has something to sell, and his imitative nature induces him nine times out of ten, to follow the example set him by others in the same line of business, without a thought of the probable effect such advertising will have, or its relative cost, compared with more modern methods. Successful advertisers, however, have long since learned that what is termed waste-basket advertising does not pay. It has become a habit with many business houses to continue this old fogy method of advertising by circulars sent through the mails, because they do not stop to take an account of stock and figure out the profits as they do in ascertaining the profits on their goods. Others, again, are well aware that it is money thrown away to advertise in this manner, but think they must continue to do so becaue others in the same line of business keep up the practice.

To have printed, in even ordinary style, 5,000 or 10,000 circulars, fold them, put them in envelopes, direct them, and with a one-cent stamp on each send them by mail, will cost, at the least calculation, from $15 to $18 per 1,000, providing a list of names is already prepared to send them to. This would be from $75 to $90 for 5,000, or $150 to $180 for 10,000 circulars. And yet the house that sends out just such a batch of advertising for others to read has a waste-basket in its office that is the daily receptacle of all unsealed circulars which are received, in many instances even without opening. If they suddenly wake up to this fact, they think a more costly and elaborate circular, sealed and mailed with a two-cent stamp, will have the desired effect, and the cost for the same number of circulars is nearly doubled. But, while this delusion is a plausible one, it still remains a fact that they do not pay in proportion to the money invested, when contrasted with legitimate advertising in trade or general newspapers.

It is now generally recognized by advertisers of large experience that there is but one form of advertising that can be relied on to bring in a reasonable return on the investment, and that is newspaper advertising. The same amount of money annually expended in sending out circulars to the trade will undoubtedly pay better in persistent advertising in some journal reaching that trade, while the circulars in most cases, are dumped into the waste-basket without cermony, the trade paper is looked for and read, and when goods are wanted the advertising pages become the reference book in which a search is made for the desired article. The trade paper is a regular and welcome visitor, while the circular is a nomad that is barely recognized. Outside of the regular annual trade catalogues and price lists, which are kept for reference, all other forms of advertising matter sent through the mails, even by the largest houses in any line of trade, receive but little attention from the people who receive them.—*Stoves and Hardware.*

AN INSTANCE WHERE LAZINESS BROUGHT A FORTUNE.

About three years ago Frank Martin sold the Horn Silver mine at Era for $55,000. By his drinking and gambling he has reduced this to about $1,000, and the Idaho *Register* says that his wife now petitions the Probate court to have a guardian appointed for him.

To read the above paragraph one would naturally say that there was nothing in it; that it was a common, every-day occurrence. But read this: Three years ago Frank Martin was as worthless and lazy a vagabond as could well be produced—one of those who never missed a meal or paid a cent. He resided at a place called Era, in Alturas county, in this territory, had nooccupation, and sponged his living from his brother, who had a small ranch and kept the postoffice by the roadside. One day his brother's wife requested Frank to cut her some wood. He refused, whereupon she beat him out of the house with a rolling-pin, and forbade him to ever enter her doors again. Sad and dejected at the condition of affairs, Frank walked up a hill in the rear of his once happy home, until within a short distance of its summit, when he sat down upon a flat rock, at the same time stretching out his legs and bracing his feet against a small boulder in front of him. He had not been there long when the boulder under his feet gave way and went rolling down the hill. Frank raised himself, and listlessly followed the rolling stone, and just here we will digress and say that his then experience exploded the old aphorism that a "rolling stone gathers no moss"—and, picking it up was surprised at its weight and general appearance. He showed it to some miners soon after, and they pronounced it horn silver ore of the richest character. Thereupon Frank prospected the place and soon found a ledge which paid big from the start, so that in less than a month after opening the mine Mr. Frank Martin's check was worth on its face from $3,000 to $5,000. He had hosts of warm friends—indeed his friends were red-hot—reaching from Houston on the north to Blackfoot in the center, and Hailey and Salt Lake in the east.

One evening, after delivering a shipment of his ore to the reduction works at Hailey, Mr. Martin dropped into a restaurant and ordered a square meal. He was promptly served by a comely waiter-girl, and, being in a somewhat hilarious mood, challenged the girl to marry him then and there. She accepted his proffer, a justice of the peace was sent for, and the twain were made one. About six months after this he sold his mine for the sum above stated, and, naturally enough, the transition from extreme indigence to much wealth unshipped what little intellect he had.

Moral: Wealth is a blessing to some, but a curse to others.—*Idaho News.*

MADE HER MAJESTY GASP.

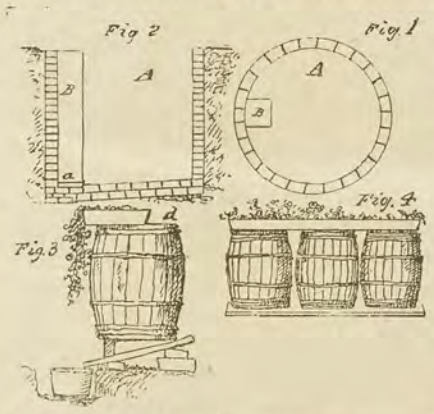
Porter Rhodes, who discovered the biggest diamond ever found at the Cape, believes quite as firmly in his jewel as the Queen does in hers. It weighs 150 carats and is perfectly clear, having "lights like white satin through it." Out at the cape Mr. Rhodes placed it on exhibition and charged $5 admission fee, clearing a handsome sum for one of the hospitals. When he came home to England the other day the Queen heard of him and expressed a desire to see his diamond. The professor, not being accustomed to the etiquette of the courts, he was carefully warned against contradicting her majesty, who is somewhat impatient of such things, and was bade to make no comparisons. He got on very well until the Queen, having examined it with considerable interest, laid it down with the remark that it was handsome, but not so large as her Koh-i-noor.

"Koh-i-noor!" cried the indignant diamond digger contemptuously, wrought out of remembrance of warnings, "why, the old thing can't touch mine. It's a deal bigger than yours, and I wouldn't give this diamond for two of your Koh-i-noors." The queen fairly gasped with amazement at his audacity, and had him peremptorily bundled out with his impertinent jewel.

LIMITED GARDENING.

By an Experienced Gardener.

FEW people, even of those who do a little gardening, half appreciate the item of manure. Procuring and applying manure are not among the pleasant features of gardening at the best; and, when one has also to buy it, and even go to some trouble to obtain it, it is very apt to be neglected, and the ground runs down and becomes impoverished. It is well to start into gardening with the idea that too much manure cannot be applied as long as it is thoroughly mixed with the soil; because it would indeed be difficult to make the soil of a garden too rich. For the present I will only speak of husbanding such manures as we get a chance to accumulate during the summer. It is well to dig a pit in some out-of-the-way corner, where house sweepings, lawn clipping (grass), weeds pulled from the beds, sawdust, shavings, in fact any vegetable matter almost can be thrown to rot for manure. Such a pit should be proportionate in size to the space we are cultivating. The one I used for the little yard, shown in June KEYSTONE at Fig. 1, was six feet long, two feet wide, and eighteen inches deep. This pit should be covered with loose boards



to avoid breeding flies, also to prevent evaporation, and to keep the heap damp. Liquid manure is very essential, especially when commencing to cultivate a rather poor soil. The best source of all for liquid manure is a brick-lined rotting pit. But such a convenience could not be attempted except we had quite large grounds. The method of making one is to sink a circular pit into the ground about six feet deep, and seven in diameter, and line it with brick laid in water lime cement. A plan of such a manure pit is shown at Fig. 1, where *A* represents the pit or cistern, and *B* a wooden box ten inches square extending to the bottom of the pit, as shown at *B*, Fig. 2, which is a vertical section of the pit. At *a* is shown a depression into which the liquid manure drains, and can be pumped or dipped through the box *B*. Liquid manure is used to water plants, being careful to keep it off the leaves. A good substitute for such a pit is two or three old casks, such as hardware comes in, set up as most of us have seen used for leaching wood ashes. Such a set of three leaches is shown at Figs. 3 and 4. If they are deemed unsightly, a long box can be placed on them in which are planted vines like morning-glories or Nasturtiums. At the back is left a place *d*, for pouring in water. The old casks are filled with good stable manure, and water poured on. Suppose we commence with the first cask in the series and pour on a bucket of water at night, and set the bucket, as shown, to catch any drips. If in the morning nothing is in the bucket, the following evening pour in another bucket of water, setting the bucket under again. Not more than three nights will elapse before you will find a bucket of the very essence of fertility. This liquid is to be used sparingly; not more than half a pint once a week to a large cucumber or tomato hill. The same process is repeated to all of the casks, using one cask after another until the water which comes through ceases to possess fertilizing properties. What is left in the casks can be thrown into the rotting pit first described. An old barrel, filled with rich earth, into which several large holes have been cut, can be made quite a curiosity by planting flower seeds or inserting rooted plants into the holes. Strawberries can be grown in this way, or summer squashes. Where a barrel prepared in this way is to be used for ornamental purposes, nothing equals the bright colored fringed Petunias. If a great number of holes are made, after a little the barrel will be completely hidden by the foliage and flowers. I should add in this chapter, which is almost exclusively on manures, that leaves from trees growing in the street can be procured generally with no expense but the collecting, which can generally be effected by hiring a few boys to gather them. Such leaves, placed in the manure pit, will in the spring be ready for placing with stronger manures in deep hills for tomatoes, or planting roses or vines. Next month I wish to give a chapter on growing roses and other shrubs from cuttings.

SUBSCRIBE for the KEYSTONE. It is doubly worth the fifty cents it costs to every jeweler.

THE BIRTH OF THE OPAL.

Mrs. Wilcox's latest original poem, which the New York *Graphic* give publication to for the first time, has a story connected with its birth. Mrs. Wilcox was looking at a private collection of opals in the possession of Mr. Herman Marcus of that city. Among them was a piece of rock from Honduras, in which nestled the uncut opal as nature placed it. Mr. Marcus, who is a man of rare poetic taste, said to Mrs. Wilcox: "I have always wanted some poet to put in verse my idea of the opal. I think a sunbeam wedded a moonbeam, and that the opal was their offspring." Mrs. Wilcox sent the poem published below to Mr. Marcus a few days later:

The Sunbeam loved the Moonbeam,
And followed her low and high:
But the Moonbeam fled and hid her head—
She was so shy—so shy.

The Sunbeam wooed with passion;
Ah! he was a lover bold,
And his heart was afire with mad desire
For the Moonbeam pale and cold.

She fled like a dream before him;
Her hair was a shining sheen;
And oh that Fate would annihilate
The space that lay between.

Just as the Day lay panting
In the arm of the Twilight dim
The Sunbeam caught the one he sought
And drew her close to him.

But out of his warm arms started,
And stirred by love's first shock,
She sprang afraid, like a trembling maid,
And hid in the niche of a rock.

And the Sunbeam followed and found her,
And led her to love's own feast,
And they were wed on that rocky bed,
And the dying Day was their priest.

And lo! the beautiful Opal,
That rare and wondrous gem,
Where the Moon and Sun blend into one,
Is the child that was born to them.

WORK IS HONORABLE.

"Whatsoever thy hand findeth to do, do it with all thy might."

All legitimate work is honorable. The man who looks down upon the working class is deficient in brains; and if he cannot go back and be born over again with the necessary amount of "gray matter" in his skull, his next best chance is to cultivate himself in common sense, and get that silly "looking down" business out of him.

And it might as well be said right here that one kind of work is just as honorable as another. Whatever needs to be done should be done, and no humiliation be experienced by the doer.

The other day we heard a woman, who takes in sewing, say that she could not possibly associate with Miss So-and-so, because she had worked in a shoe-shop. "Now, we would like to know where is the difference?"

We are put here in this world to work out some great purpose. What that purpose is, is known only to the Designer of all things. That we were not created for our own enjoyment is evident to every one. Daily life proves it. The sufferings, and trials, and afflictions that beset us all the way along, tell us constantly that we were not born to go through life simply to have a good time. When a man has had the toothache a week, or suffers from corns, and chilblains, and tight boots, he will be ready to agree to our proposition that there is something besides amusement in this life.

It is a world where there is much to be done. When one shirks his part, some one else has to do double duty.

It is well known that people, as individuals, are peculiarly adapted to certain lines of work. One man can do one thing well, another man can do another thing well.

And each and all of these tasks are equally honorable.

The girl who washes your dishes in the kitchen, and scrubs your floors, and blacks your cooking stove, is doing just as honorable work as the lady who designs your betwitching bonnets, and plans your entrancing draperies. And it is a good deal more necessary that the dishes shall be washed than it is that the bonnets shall be created, when it comes to that.

Let no man feel degraded by the work he is doing. Let him rather take pride in doing it well. It is one reason why so many are out of a job—because they will not work at what offers. A job of disagreeable work is often but a stepping-stone to something better. It does not do to be too particular. It is not profitable to follow Mr. Micawber's example. It is better to accept any work that you can get, and hope for something more desirable.

And yet every day we are told that Mr. A. is working himself to death. Over-worked—that is what the fashionable physicians have a habit of telling their patients, when they find that in their greed for gain, and for the unnecessary things of this world, men and women are breaking down before middle age.

Very few people break down in honest and legitimate work. Our longest-lived men and women come from the middle ranks of life, where there has been no attempt to heap up riches, or to keep up in the whirligig of modern fashionable society.

The happiest, healthiest people are those who have been given neither poverty nor riches.

And again we write the sentence at the head of this article—"Whatsoever thy hand findeth to do, do it with all thy might."

THE QUEERNESS OF THINGS.

This is a sort of a topsy-turvey world. No one seems to be satisfied. One man is struggling to get justice and the other is flying from it.

One man is ordered to eat eggs because they are nutritious, and another is cautioned to leave them alone because they produce bile.

The prize-fighter reforms and becomes a preacher, while the theological student leaves his university to become a professional baseball pitcher.

One man keeps a pistol to protect himself against burglars, while his neighbor doesn't keep one for fear of shooting some member of the house by mistake.

Robinson takes a sherry to give him an appetite, while Brown, who has a wine cellar, can't touch a drop of it on account of his apoplectic tendencies.

The man who can make $20,000 a year as a general thing can't save a cent, while the man who is thrifty and wise is seldom so gifted that he can earn anything at all.

One rich man wears poor clothes because he is rich and can do anything, while a poor man wears fine clothes because he is poor and wants to create the impression that he is not.

One man is spending all the money he can earn in taking a girl to the theater and sending her flowers, in the hope that he may eventually make her his wife, and his neighbor is spending all the gold he has saved to get a divorce.

The laborer with ten children keeps out of debt on ten dollars a week, while many an unmarried bank official with a hundred a week can't get along without helping himself to the bank's funds.

One man escapes all the diseases that flesh is heir to and is killed on the railroad; another man goes through a half a dozen wars without a scratch and then dies of whooping cough.

You will sometimes see a man planting trees around his place for the shade; and, at the same time, you will see another cutting down all the trees around his house because they produce too much moisture.

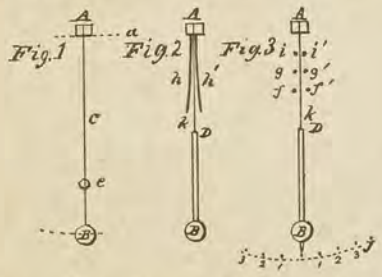
The doctor tells Morrill that if he doesn't stop work and take a rest he'll go into a decline, and then tells Blakely that if he does not abandon his sedentary position and go off somewhere and work on a farm he will die of torpidity of the liver.

We know a wealthy merchant who keeps half a dozen horses, who recently stated that his store was closed on account of a "holiday," and we also know a proof-reader who can spell every word in the English language correctly, and the only time he experiences any horse is when he eats horse-radish.

Good people die and bad people live. The man who is fat with health can't get employment, and the man who is making money hand-over-fist has to give up business on account of ill health.—*Exchange.*

CLOCKS.

PENDULUM suspensions are something of importance, and might as well be discussed now as at any time. As simple as the problem seems at the first thought, it is one which has puzzled the brains of our most eminent horologists. The mere suspension of a weight by a string forms all the elements of a pendulum of the simplest order. All we have to do to understand the first laws controlling the motion of a pendulum is to imagine a weight *B*, suspended by a cord *C*, from the support *A*. Now if the ball *B* was suspended by an imaginary cord or wire which had no thickness but the requisite strength, the ball *B* would oscillate on a curve, the centre of which would be at the intersection of the suspension line *C*, and lower face of the suspension arm *A* (on the line *a*.) As we can only imagine such a suspension, knowing that in reality such a condition can not in truth exist, we must do the best we can to approximate such a condition by making the suspension as thin as possible consistent with ample strength to support the weight *B*. We might imagine that if the mere making of the suspension spring thin was all, this could be attained near enough for all practical purposes; and so it would, but there are other factors in the problem, as for instance, the long and short arcs of vibration are not isochronous, *i. e.*, performed in the same time; the long vibrations being a very little



slower. This fact would have a small bearing on a poorly made clock, but in clocks constructed for accurate time-keeping every effort must be made to avoid sources of error. Consequently, many efforts have been made to isochronise the vibrations of the pendulum. This was attempted in several ways. Among them was to increase the strength of the suspension spring to such a degree as to cause the long and short vibrations to be equal. The trouble with this was the effect of temperature; heat diminishing the rigidity of the suspension spring, for which the compensation for heat and cold in regard to the expansion in the rod did not correct. Another device for isochronising pendulum arcs was by placing cheek pieces on each side of the suspension spring, as shown at *h*, *h*, Fig. 2. To understand the action of these cheek pieces shown in Fig. 2, is by substituting the pins *f*, *g*, *i*, Fig 3. In examining Fig. 3 you will see an arc *j* below. This arc is divided into degrees, and if the rod *D* is vibrated one degree the suspension spring *k* will strike the pin *i*, and if moved to two degrees it will strike *g*, and three degrees will strike *f*. Of course as the pins strike *k*, the effect is of shortening the pendulum and quickening the vibrations in proportion to the position in which pins *f*, *g*, *i* are placed. The form of the curved cheeks *h*, *h'* has the effect of such pins, only the action is continuous. The form of the curved cheeks *h* can be made so as to make the vibrations isochronal, or even to make the long vibrations the quickest. All these corrections have I think been abandoned, and the effort now is generally directed toward supplying a constant motive force, which renders all these corrections unnecessary. This branch of the subject will be considered more fully when we are talking about fine escapements. There has been a good deal of controversy in regard to spring suspensions of any form; some parties advocating a knife edge as a support. Now let us take up the facts and consider the *pros* and *cons* on this part of the subject. Let us inquire why a heavy pendulum ball has been generally adopted. The answer is to compensate for imperfections of the train. Now, if we could only realize a constant power applied to keeping a pendulum ball, weighing only one ounce, vibrating, there is no reason why such pendulum should not measure time as correctly as a pendulum ball weighing a thousand pounds. All horologists agree that a short arc of vibration is desirable, as being less affected by barometrical influences. Superior density of the ball is also desirable from the same reason. The most favorable condition for the best performance of a pendulum would be in a vacuum next in an atmosphere of hydrogen gas. A terrible disturbing influence to the correct performance of pendulums is vibration. This is particularly the case in large towns.

THE series of articles now running on "Enameling" is worth to any practical jeweler four times the price of the KEYSTONE'S subscription for one year.

A CORRESPONDENT, speaking of the recent presentation of Mrs. Vanderbilt to Queen Victoria, thus describes her appearance on that important occasion:

She led the line of the little batch of Americans under the wing of the United States Minister, Mr. Phelps, and her compatriots were so taken with her jewels that they had no eyes for the display of the Duchesses and Countesses that thronged the ante-room. Mrs. Vanderbilt wore a dress made with a demi-train of heavy crevette pink satin brocade with scattered bouquets of wild roses in gold and silver. The long court train was of cream-white velvet, lined throughout with pale yellow satin and bordered with a wide band of cream-white curled ostrich feathers. The pink bodice was long and pointed and draped with silver tissue, which was held in position with pale pink enamel wild roses, whose foliage was crusted with diamonds.

The silver tissue draperies were held at their juncture with the train by large diamond ornaments finished with pendant chains of diamonds and pearls. Her fan was of cream white ostrich feathers, and the same sort were in her hair, held by a superb diamond aigrette.

Her necklace of solitaires was estimated at $150,000 by the ladies who stood about her, and those in her ears were said to represent $15,000 more. She wore bracelets and rings of the same precious stones, and even the gold handle of her fan was thickly encrusted with these jewels. She fairly blazed with these myriad gems, and even royalty, which usually regards every one with equal indifference, opened its eyes and stared at the American woman's diamonds.

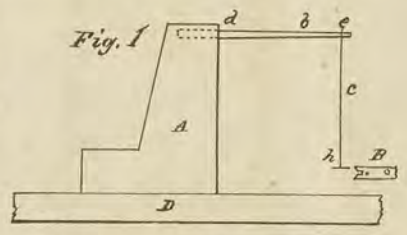
WORKSHOP NOTES.

"SUBSCRIBER" wishes to know "how a drill can be kept from bending when drilling lead and other soft metals?" Use a twist drill with soap and water, to wet the drill. The form of the cutting angle is important, so as not to shake or require much pressing.

"FRIEND" asks how to "close the screw hole in a stem when worn too large to hold any of the regular screws for this purpose." Screw in a plug of some metal like German silver. Drill and tap for new screw.

"MAGNETIC" asks "how to detect magnetism in watches?"

About the best method which has came to our notice is to suspend a small bit of fine, soft iron wire by a single filament or fibre of silk. The device is shown at Fig. 1, where *A* represents a three-cornered bit of inch board; *b* a small stick like a match; only it is better to be of hard wood; *c* a silk fibre; *h* a piece of the finest iron wire to be obtained. The makers of artificial flowers use the finest. The very smallest iron binding wire, such as jewelers use, will answer, but it is best to scrape it down about one-half; cut off a piece about three-sixteenths of an inch long. Get some floss silk, such as is used for embroidery, and cut a piece two inches long and divide it into strands; then separate one of the strands into fibres. The stick *b* should be whittled out round and nice and tapered at both ends; the end at *d* to fit easily into a hole in *A*, and the other end *e*, at which the silk fibre is attached, to be whittled down so as to be small and adapted for such a delicate affair as a single silk fibre, say the stick *b* is one-tenth at the end *d*, one-thirty-second of an inch at the end *c*. To attach the silk fibre lay both stick and



bit of iron wire down on a piece of paper; then with a match stick whittled to a thin taper point, dip into the shellac dissolved in alcohol until about as thick as honey. Touch the stick *b* at *c* with only the smallest possible atom, the same as if we were oiling a pivot. Then touch the centre of the bit of iron wire, and attach each end of one of the filaments of silk fibre, so the wire will hang about one-fourth of an inch above the bench, as shown in Fig. 1, where *D* represents the bench. This little tester needs to be used in a room where no air is stirring. We take the parts of a watch and approach the bit of iron as shown at *B*, where a lever fork is illustrated, and if any of the parts are magnetic, they will attract the bit of iron wire. If none of the other parts are affected, it is reasonable to suppose the hairspring is not, although the test can be applied to a hairspring, only it must be conducted very carefully. If the tester shown in Fig. 1 indicates magnetism, the best way to do is to annul it by some of the machines for demagnetizing. This device will thoroughly test when demagnetization has been produced.

"BREAKER" wishes to know "what solder is used on cheap scarf pins for attaching the joints and catches?" Gilded articles, or rather such goods as are made of brass or German silver and afterwards gilt, are joined by spelter solders, made from yellow brass, with one-eighth more zinc (also called spelter) added. Rolled plate goods are joined with gold solder, the same as solid gold goods.

"BREAKER No. 2" asks for "an explanation for mainsprings breaking into a number of pieces on some occasions?" This is something which has never been satisfactorily explained. Probably it is the shock given throughout the spring by a rupture at one point, while every particle of the spring is under a high tension. This idea is supported by the fact that the breaks are usually in radial lines.

CAMEOS bring poor prices now. The topaz is expected to become popular again, and many are being held for a raise. The importations of amber have increased remarkably of late. Moonstones were brought to light in the search for cat's-eyes. The opal in the last ten years has increased tenfold in sales, but purchasers in Mexico get cheated very often. The present demand for pearls has stimulated search for them in all directions. The fresh-water pearls from Kentucky, Tennessee and Texas are unrivaled for fine color. A diamond trust to control the prices and output is one of the probabilities of the near future.

SUBSCRIBE for the KEYSTONE. It is doubly worth the fifty cents it costs to every jeweler.

A WONDERFUL DINNER TABLE.

The following details of a dinner which was given the other day by a New York lady may be read with interest by people who want to know the latest thing in the way of American extravagance.

The dinner table was arranged about a miniature lake, in which palms, lilies and ferns appeared to be growing, while tropical trees arose from banks among miniature parterres of flowers. Small electric lights with vari-colored globes were arranged abut the lake, and electricity was introduced under the water of the improvised lake and caused to dance about in imitation of vari-colored fish. There was a fountain in the centre of the lake, and a colored glass ball, lighted by electricity, spurted up and down a jet of crystal water. There was no cloth on the table, and each of the twenty courses served at the dinner was placed before the guest on a natural palm leaf. The wall and room decorations—some of which came from Florida and South America—generally were of smilax, ferns, ivy and palm, mandarin, banana, orange and other trees. Hanging among them were hundreds of very small colored electric lights.

The decorations of each plate cost $30, the favors $60, and the menus were painted to order at $10 apiece. The truffles came from France, and the strawberries cost $7.05 per bunch of five berries. Roman punch was served in oranges hanging on the natural trees, the pulp of the fruit having been deftly removed, so that the guests picked the oranges from the branches.

Representatives, Representing Representative Houses.

R. W. Jones,
with J. H. Jones & Co., Montreal, Canada.

Henry Jenking,
with J. H. Jones & Co., Montreal, Canada.

R. C. Murray,
with J. H. Jones & Co., Montreal, Canada.

Frank G. Forbes,
with J. H. Jones & Co., Montreal, Canada.

D. B. McCunn,
with J. H. Jones & Co., Montreal, Canada.

J. S. N. Dugan,
with J. H. Jones & Co., Montreal, Canada.

Thos. Donohoe,
with J. H. Jones & Co., Montreal, Canada.

Frank E. Jones,
with J. H. Jones & Co., Montreal, Canada.

A. W. Hayden,
with J. H. Jones & Co., Montreal, Canada.

Chas. T. Segsworth,
with J. Segsworth & Co., Toronto, Canada.

H. M. Manning,
with J. Segsworth & Co., Toronto, Canada.

J. Segsworth, Jr.,
with J. Segsworth & Co., Toronto, Canada.

Benno Scheuer,
with Edmund Scheuer, Toronto, Canada.

Geo. Bray,
with Edmund Scheuer, Toronto, Canada.

J. S. Dalrymple,
with Edmund Scheuer, Toronto, Canada.

Wm. Maynard,
with Wm. Eaves, Montreal, Canada.

Herman Levy,
of Levy Bros., Hamilton, Canada.

Abraham Levy,
of Levy Bros., Hamilton, Canada.

Jacob Levy,
with Levy Bros., Hamilton, Canada.

Richard Russell,
with Levy Bros., Hamilton, Canada.

COLORED CLUB.

REPORT OF PROCEEDIN'S AT DE REG'LAR MEETIN'

Ob de s'ciety to 'stablish ethical culchaw, and 'vance de interests of de Boss case.

BY J. L. S.

ELL, my belubed Enlightners, I'se pow'ful glad fer ter see so many ob you dis ebenin'; an' as der has been a complaint ob de singin' in dis hall, I hab done pinted Tenor Mayler as de sweet singer ob de s'ciety. De poet ob de s'ciety hab composed a piece to de tune ob de "Tit Willow," which am from de opera ob de Mikado. An' as der am a great lesson in dis song, de artist hab done painted de strong point, an' you will keep your eye on de pictuah while Tenor am singin'.

GREAT SCOTT, DE MAN AM CUTTIN' HIS THROAT!!

On a bench by a window sat jeweler, Tom Pitt,
Singing snide cases, snide cases, oh! snide,
I said to him, "Thomas, why do you here sit
Singing snide cases, snide cases. oh! snide.
Is it a shortage of business, dear fellow, I cried,
Or have you been guilty of selling a snide?"
With a nod of his head, the poor fellow replied,
"Snide cases, snide cases, oh! snide."

He slapped at his chest, and his head he did bow
Snide cases, snide cases, oh! snide,
And a cold perspiration bespangled his brow,
Snide cases, snide cases, oh! snide
He sobbed and he sighed, and a gurgle he gave,
As he grabed up his razor, I thought 'twas to shave.
But he cut his own throat, and from a snide's grave
Echoes, snide cases, snide cases, oh! snide.

Now I feel just as sure, as I am sure that my name
Isn't snide cases, snide cases, oh! snide.
It was selling snide cases that made him exclaim,
Snide cases, snide cases, oh! snide.
Now, jewelers, be wiser than Tom Pitt who died,
And handle the Boss, and never sell snide.
'Twas the Patent Jas. Boss that your fathers all tried,
And not snide cases, snide cases, oh! no.

I'se glad ter see dat you am all so affected ober dis song, an' it am a sad one indeed. But it jess serves him right; an' am pow'ful warnin' to all who deals in dis kind ob goods.

I'se glad for ter tell you all dat de Association am gettin' on all right; but from de noise dat de expelled members am makin' you would tink dey was winnin' de fight. An' de falsehoods dey am tellin' must make Ananias tink he was killed 'bout a thousand years too soon. But it am no use. Dey must come down; an' you can jess bet dat when dey axes to come back der will be no fat cow killed. I radder tinks dat de chief dish at de festival will be crow, an' lots ob it. As for myself, I don't like crow; so guess I won't accept de invitashun Dis trouble am a most pow'ful illustration ob de fact ob what a great amount ob wind it takes to sail a berry small ship. I don't tink I eber got on to de fact befo'. But it am a case where all de wind am made on board de boat, an' so it doan amount to much. Ebery day I is in receipt ob letters from jewelers all ober de land sayin' dat de Association hab done so much for dem; has kept up de prices, an' at de same time kept de goods from de outside stores. Dat dey don't mind if some manufacturers do hab to sell de goods below cost in order to raise money to keep de wind up. Dey can stand it; an' feel sure dat in de end all will come to de same opinion.

I hab heah in my hand a lettah from a jeweler who wants fer to know why it am de case dat some jewelers still sell snide cases. I always likes to enlighten ignorant folks, an' it should be de case wid all members ob dis s'ciety.

Dis am a difficult question fer to answer. I feels like sayin' dat it am ignorance. But as all jewelers know 'bout de Boss case, an' hab receibed circulars, cards, etc., an' hab eben had missionaries call on dem, it don't seem dat dis could be de fact. Yet on de odder hand, it seems as if der ought not to be any ignorance in de world, when you comes to tink ob de papers, de magazines, an' all de odder means ob enlightenment. Yet I don't tink der am a single niggah in dis hall what hab got de nerve to stan' up on dis flo' an' dispute de fact dat der am mo' ignorance in dis world den der am intelligence. Some folks intelligence acts in a different way den it should, an' makes rogues ob dem, instead ob honest men, or in odder words, education seems to sharpen up de wrong set ob wits. But fo' all dis it shows dat education am a pow'ful ting, as de educated rogue will give pints to de ignorant one ebery time, an' don't you forget it.

I don't want you niggahs to get de idea under your wool dat I tinks or says dat ebery jeweler dat sells a snide case am a rogue. I knows dat der am a lot ob people in dis world dat tinks dey am jess a little bit smarter den de smartest. An' dey lays up ebery little sayin' dey heahs, an' den dey shoots it off when dey gets a chance, an' den some ob de people what heahs dem says, "I jess tell you dat Mr. Jones, or dat Mr. Smith, am a mighty smart or pert sort ob a fellow." But dis, folks, allus seems to me like a glass ob beer wid a great deal ob froth on it. De froth looks nice, but as you all knows, de froth am de part we blows away befo' we drinks de beer. It am de beer we wants, an' not de froth. Dat minds me dat de chaplin ob de s'ciety bet me a glass ob beer dat John L. Sullivan would knock out Charley Mitchell. He did not, but I'll jess 'journ de meetin' while I slides 'round de corner an' knocks de beer outer' de chaplain. An' while I'se doin' dis de artist will show you a new paintin' ob his.

SIGNS OF SPRING.

Well, I hopes you all likes de pictuah as well as I liked dat glass ob beer. Lemme see. I was blowin' to you 'bout ignorance when I went out to get dat beer, so I'll jess sail in where I left off.

Der am some ignorance in dis world dat am excusable, an' some dat am commendable. Fo' instance, de more ignorance a man has 'bout rascality, de less he knows 'bout cheatin' an' lyin', de better citizen he will be, an' also neighbor; provided you keeps chickens, an' his ignorance runs in dat way. An' again, der am some ignorance dat der am no excuse fo'; an' among dese tings am ignorance 'bout de poor qualities ob snide filled cases, an' de good points ob de Boss case. De first makes you enemies an' looses you customers, while de Boss makes you lots ob friends an' customers, an' you becomes rich an' great, an' gibs your grandchild a chance fer to be 'lected President. De sellin' ob snide cases may make you a New York Alderman, wid a ten karat diamond stud in your shirt bosom de first year, an' a striped suit at Sing Sing de next. Ain't dis enough, I wants fer to know, to make you all shuddah so dat you shakes de buttons off your vests.

I once knew a jeweler dat sold a man a snide case. Ob course de man soon foun' it out, an' started out to hunt dat jeweler wid a shot gun. De jeweler kept dodgin' an' dodgin' dat man, until de people got ter callin' him de "Artful Dodger," hence de name. An' not only dat, he got badly cross-eyed tryin' ter look 'roun' two corners at de same time. Still an odder one, a young jeweler, dat put on a great deal ob style in a certain town out in Ohio, fell in lub wid de daughter ob a bery rich man dat libed der, an' use to ter take her to meetin' on Sunday nights. Well, one day de ole man came in to de store an' said he wanted ter buy a Boss case for hisself, as he thought dat was de best case. But dis young jeweler tole de ole man dat der was a new case out much better den de Boss. But de ole man wanted de Boss, an' said dat was good enough fo' him. But after 'bout two weeks blowin' an' lyin', de ole man was bulldozed into buyin' de snide case. Well, shortly after dat, one ob our s'ciety came 'long an' tole de ole man dat he was carryin' a snide case. Well you jess ought to hab heard dat ole man. Gollys! how he did swear, an' said he would fix dat jeweler. So he went down town an' bought a savage bull-dog wid sharp teeth, an' de next Sunday afternoon, when dat jeweler called to see de ole man's girl, de ole man an' de bull-dog was waitin' in de back room, an' when he came in de pallaw, de ole man wid a shot gun an' de dog sailed in. Jewhillikers! you ought to hab seen dat jeweler goin' down dem steps; de girl yellin', de ole man howlin' an' shootin off de shot gun; de dog growlin' an' holdin' on to de seat ob de young man's trowsers. De street was full ob people who yelled an' laughed, an' jess as de jeweler an' de dog got to de bottom ob de stairs, de seat ob de jewelers pants gib way, an' de dog carried de piece to de girl who put it in a crazy quilt, wid de word "Snide" worked in red silk. An' while de young man was rushin' down de street he was met by Anthony Comstock, who arrested him fo' indecent exposure ob his person, an' de judge sent him to de penitentary for ten years. Now, I wants ter know what you all tinks ob dis, an' if it am not a warnin'.

Our artist hab been out 'mong de Indians, an' hab sent in dese companion pictuahs. Dey speaks for demselves, an' shows dat de branch ob de s'ciety dat was started in de Indian country, am in a prosperous condition.

De President ob de Indian branch, de Hon. James De Scalpraiser, writes me dat de s'ciety is need ob a lot ob Boss stickers, chewin' gum, an' tommy-hawks. De proper officers will see dat dese tings am all sent out.

I am not suah dat I hab answered de question ob de jeweler, as to de cause ob jewelers sellin' snide cases, but I'se done my best, an' if he don't understan' me its his fault, an' not mine.

Befo' we adjourns, I wants ter know what hab become ob de funny man ob dis s'ciety, an' some ob de odder officers. Befo' some ob dese niggahs knows it der will be a bouncin' bee in dis organization, an' I'll be de bouncer. You heah my horn!

WE are incurring a great deal of expense in procuring valuable technical articles for our readers, and we earnestly desire our friends to add their names to our subscription list.

FROM the report of Major Roe it appears that the jewelry trades in the Birmingham, England, district afford occupation, directly or indirectly, to from 14,000 to 16,000 persons, and supports probably 40,000 to 50,000; and this industry has suffered probably more than any other from the prevailing depression. The Post Office Directory for 1885 gives 1123 master-men as thus engaged in Birmingham, and to these must be added a large number of "garret" masters or out-workers, who perhaps employ two or three hands. The increase of female labor, particularly in silver jewelry and warehouse duties, is very considerable, and has tended to keep down the wages of men. Still these have risen to very high points in seasons of prosperity, and even in the present time of depressed prices a skilled journeyman jeweler earns with his own hands thirty to forty-five shillings per week of about fifty-four hours. Gilt and plated jewelry has been almost superseded by silver, and these departments, which twenty-five years ago were of large proportions, are now almost obliterated.—*London Horological Journal.*

TO CLEANSE NICKEL.

Watchmakers sometimes think that nickel movements are more difficult to cleanse than gilt movements. This is not so, however, and the former are to be cleansed by the same process as the latter. It is also generally supposed that nickel is but little liable to tarnish. This is a great mistake, as it is far more liable to be affected by exposure to moisture, handling, etc., than gilding. In fact, it is almost as bad in that respect as iron, to which it is very similar in its chemical reactions. So far as is publicly known, the best agents for cleansing nickel are mechanical in their nature—that is to say, it is best done by the use of polishing powders. These should not be used dry, however, as the nickel would all be worn off before a polish is produced; nor will moisture make the action any better. Either soap and hot water, or, what is better, a very little oil on a piece of buff leather, mixed with the polishing powder, should be used, finishing with the soap and water, or the alcohol bath. A mere trace of oil on the tip of the finger, gently rubbed over the parts, will readily loosen and remove the dirt and tarnish, after which the oil can be removed as usual.

As far as patent or secret unguents and cleaning agents are concerned, they may, on the whole, be looked on with suspicion, and to the watchmaker at large there is really nothing more accessible or quick-acting as soap and water or oily substance and polishing powders, with gentle rubbing.

A good polishing powder for polishing up nickel is finely powdered and sifted unslaked lime, used on a buff wheel with a little oil. It should be kept in tightly-corked bottles or jars to exclude the air, and only a little powdered as wanted.—*Ex.*

The above applies to bright nickel work, not to watch movements. Soap and water for nickel watch plates; rinse in clean warm water, and dry with a perfectly clean old linen cloth.—ED.

A HISTORICAL WATCH.

Mr. J. Morch, a Brooklyn jeweler, is the possessor of a very valuable and historically interesting watch. It was made to order for a lady belonging to the house of Orleans, and gradually found its way into the hands of one of the younger members of the family, who was, in 1848, forced to flee from France together with Louis Phillipe. In the same year the watch was pawned in New York by a foreigner, who was in financial straights. It was then sold, and came into possession of the Morch family. The watch is said to be a wonderful product of human ingenuity. It has 603 parts, and a musical work is connected with it, which plays several pieces. It is a repeating watch, indicates the full and quarter hours, and its rate is said to be in no way inferior to our best chronometers. The dial is of the finest enamel, and represents the Touilleries and their surroundings. In the corners, underneath foliage, are seated two female figures, one of which plays upon a lyre, the other upon a guitar, while a rope dancer gesticulates upon a gold wire stretched above the dial. The watch was once about to be presented to President Lincoln, but for some reason or other the conveyance was never effected.

DO INVENTIONS DECREASE WAGES?

Among the men who are prominent agitators in industrial lines are many who explicitly assert that inventions and improvements in machinery are responsible for the decrease in wages so much talked about nowadays. The assertion is of course easily disproved by the fact that in comparison with wages in the old days before machinery came into general use, the wages of mechanics are higher in these days of mechanics of the highest excellence. The Illinois Central Railroad publishes a record of locomotive service for thirty years which has a strong bearing on this point. According to that record, which is given in *The Milling World*, the running cost for a mile has fallen from 26·52 cents in 1857 to 13·93 cents in 1886. This reduction has been effected wholly by inventions and improvements in machinery. But the figures show that the progress of invention has been even more remarkable than these figures imply, because the wages of engineers and firemen have risen in the same period from 4·51 cents to 5·52 cents per mile run. In 1857 the engineers and firemen received 17·201 per cent. of total cost. In 1865 the engineers and firemen received 15·091 per cent. of total cost. In 1867 the engineers and firemen received 20·865 per cent. of total cost. In 1886 the engineers and firemen received 39·627 per cent. of total cost. Demagogues may dispute these figures, adds our contemporary, but it is nevertheless true that improvements in machinery, not only in railroads, but in other important lines as well, are a benefit in every way to everybody concerned. The general public are better served at cheaper rates, and the mechanic receives increased wages. Those peculiar individuals who advocate a return to "good old times," who prefer hand work to machinery, and who preach that invention is really a curse to labor, should try to understand the situation. Cases like the one quoted will open their eyes.—*Milling World.*

AMERICAN FINGER RINGS THE BEST.

It is claimed by travelers who have given attention to the study of artistic and useful articles for personal adornment that the United States is coming to be specially noted for the excellent quality of rings now manufactured. This high position has only been obtained by diligent research and study by our designers and manufacturers. The jewelry manufactured in France is very light, neat and pretty, but the fact that Parisian jewelers are required by law to make nothing less than eighteen carats fine is responsible for the flimsiness of the work turned out. The English jeweler, on the other hand, works in a fashion diametrically opposed to that of his French brother, using the heavy, bulky patterns. The more gold is utilized the more favor it finds in the sight of the English public. The New York maker has profited by the faults, if faults they may be termed, of both the English and French workmen by adopting a happy medium, in manufacturing rings in such a manner as to not make use of such a large quantity of gold, and by so doing he is enabled to give the stone with which the ring is garnished a finer setting, thereby making it instead of the metal the principal object to be desired. The manufacturer who uses only a sufficient quantity of gold, enough to secure the safety of the stone, finds his goods more in demand than those who adopt either the French or English fashion.

The styles of rings have changed wonderfully during the last few years. Formerly corals, cameos and garnets found favor with the fair sex, but nowadays diamonds are the most popular stones with fashionable people. Many rings are made of a combination of rubies and diamonds, while turquoise and opal are in general use. Opal was considered up to a few years ago, a sign of ill omen, except for persons born during the month of October; but a reaction has set in, and it is steadily gaining in favor, The designs worn now are often original with the wearer, and any one can have a ring manufactured, no matter how peculiar or intricate the design, providing he is willing to pay for his originality, which often comes high.

The most popular ring for gentlemen is the initial, the top of which is usually made of black onyx, the letter being fastened securely to it, and is oftentimes thickly studded with rose diamonds. These rings are now made as cheaply as the ordinary cameo, and have altogether taken the place of that once fashionable stone. Ladies' low-priced rings are generally combinations of garnets and pearls, turquoise and rose diamonds, all prettily shaded. Moonstone, now coming into prominence, is a high-priced article. The United States uses five-eighths of the diamond product of the world. The best stones and the most artistic lapidary work are in constant demand, no other description finding a sale. Sapphire is already fashionable, and promises not to decrease in public favor. There are pink, yellow, green as well as blue sapphires, each of which has its admirers, and all of which are gaining in popularity.

Now is the time we like to hear from our friends in the way of subscriptions —its only fifty cents, gentlemen.

LEAP YEAR.

The year is 365 days, 5 hours and 49 minutes long; eleven minutes are taken every year to make the year 365 1-4 days long, and every fourth year we have an extra day. This was Julius Cæsar's arrangement. Where do these eleven minutes come from? They come from the future, and are paid back by omitting leap year every 100 years. But if leap year is omitted regularly every 100th year, in the course of 400 years it is found that the eleven minutes taken each year will not only have been paid back, but that a whole day will have been given up. So Pope Gregory III, who improved on Cæsar's calendar in 1582, decreed that every centurial year divisible by 4 should be a leap year after all. So we borrow eleven minutes each year, more than pay our borrowings back by omitting three leap years in three centurial years, and square matters by having a leap year in the fourth centurial year. Pope Gregory's arrangement is so exact, and the borrowing and paying back balance so closely, that we borrow more than we pay back to the extent of only one day in 3,866 years.

The Keystone.

ADVERTISERS say that it is the best medium to reach trade that they ever saw.

THE KEYSTONE reaches every Jeweler in the United States and Dominion of Canada.

To secure a place in the columns of the KEYSTONE, advertisers should forward copy so that it may reach us not later than the FIFTH of each month.

ADVERTISEMENTS under the heads FOR SALE—SPECIAL NOTICES—and WANTED are Three Cents for each word, and no charge less than twenty-five cents.

ADVERTISEMENTS.

FOR SALE.

GOOD paying jewelry business in the best town in the state of New York; is rapidly growing and very healthy. Will invoice $3,000. Only those meaning business need apply. Can reduce stock if desired. Address, "John," care this office.

FIVE shares of stock of the Aurora Watch Co. Address, "A. E.," care this office.

IMPROVED and unimproved land, will exchange for jewelry stock. Address, G. W. Tallman, Lanark, Ill.

ON account of poor health, in eastern Iowa. Stock about $2,000. The only jeweler in town. Terms cash. Address, "E. S.," care this office.

STOCK and fixtures of well established jewelry store. Owner retired on account of ill health. Excellent repair business. Can be sold very cheap. Investigation solicited. Address, J. H. Vercoe, Receiver, Columbus, Ohio.

OR trade. All or any part of 800 acres of fine farm land. Some only one-half mile from county seat and largest town in county. Give full description of stock, value, rent, etc. Address, Box 133, Springfield, Kansas.

SPECIAL BARGAIN.—For sale cheap, an established jewelry business of 15 years in one of the richest counties in western Illinois, near Mississipi river. Town of 3,000 inhabitants. Only one other jewelry store. Rent only $12.50 per month. Stock, fixtures, etc., complete, worth $1,500. Terms $800 to $1,000 cash; balance on time. Parties having the required cash, address, T. R. J. Ayres & Sons, wholesale jewelers, Keokuk, Iowa.

RARE CHANCE.—Jewelry store and fixtures for sale in town of 6,000 inhabitants. Good location; old established business $3,500 stock and fixtures. Rent low; easy terms. Reason for selling is on account of a government appointment. For particulars ad., Burt & Hurlbut Co., Detroit, Mich.

A GOOD jewelry business. Stock and fixtures inventory about $5,000. Goods nearly new. A large run of repairing. Location in one of the best towns in eastern North Carolina. 4 railroads; 5,000 inhabitants. For full particulars address, R. A. Watts, Goldsboro, N. C.

BIG BARGAIN.— A first-class stock of jewelry in a town of 3,000 in southern Michigan. Stock about $2,000, will sell for $1,500 cash. Have 2 R. R's and good prospects for another. Good country, good location and rent low. Reasons for selling have other business that I am obliged to look after. Address, "F. P. G.," Box 30, Sturgis, Michigan.

IN Spring Green, Wis., a small stock of watches, clocks, jewelry, safe, fixtures, etc. Will sell very cheap if taken before September 1. For particulars address, A. M. Dye, Spring Green, Wis.

JEWELRY business well established. Enterprising town, 4,000 innabitants. Stock, store and fixtures if desired. E. A. Wilcox, Administrator, Monson, Mass.

LARGEST watch and jewelry business in Birmingham, Ala. None but those meaning business need apply. Address, Box 351.

A JEWELRY store established in 1851. Address, P. Ford, Rochester, N. Y.

JEWELRY store in county seat of Scott county. Two railroads. One of the best locations in Kansas. No competition. Will reduce stock and fixtures to about $1,600. Reason for selling, bad health. For particulars address, O. D. Johnson, Scott City, Kansas.

OR exchange for good real-estate, jewelry store and fixtures, worth about $2,000. Will pay difference. Address, J. C. Garten, Hinton, W. Va.

ON account of poor health, will sell well established jewelry store. Stock, fixtures etc., about $3,000, can reduce. Part cash, balance on time. Lease on good brick town of 2,000. Northern Ills. Two railroads. Ad., "Z. T.," care this office.

CLEAN neat stock of watches and jewelry. Stock $2,000. 3 fine show cases. Live town, county seat. Population 2,300, 5 churches, 3 railroads. A rare chance for good man. Will sell all or part to suit for cash, as I wish to leave. Competition light in south-eastern Kansas. Address, "S. G. W. P.," care this office.

A PAYING jewelry business established 18 years, in a booming town of 1,000 inhabitants, very healthy location; cheap rent; no competition; good run of bench work. Stock and fixtures invoice $800, will sell for $600 cash. Reason, failing eyesight. S. B. Yingling, Box 52, Reisterstown, Md.

AT a bargain. An old established jewelry, watch and clock business in a growing, thriving city. The proprietor must sell, and at once, in order to accept a position more congenial to him. Apply in person or address at once, Capt. Thomas Dermot, Rockland, Me.

"SNAP."—A combination lathe, foot-wheel, universal head, slide rest, tail stock, countershaft head and bed newly nickle-plated, all for $25. Apply to C. W. White, 315 Elk St., Buffalo, N. Y.

ONE of the best jewelry stores in Northern Ind., A fine, small stock and fixtures. Good run of watch work. Reason for selling, poor health. Ad., E. B. Alsbaugh, or N. G Yevinson & Co., 114 Dearborn St., Chicago. Ill.

$1600 will buy a good paying jewelry business in a large manufacturing town of 6,000 inhabitants. Box 272, Claremont, N. H.

WATCHMAKER and jewelers tools (second-hand) very cheap. Address, A. Moeller, Cumberland, Maryland.

SPECIAL NOTICES.

ALL professionals use Allen's Engraving Paint. The best ever invented and the only thing in the market of the kind. Just the thing for the amateur engraver. Anybody can design with it. Sent post-paid on receipt of 25 cent postal note. James Allen, eng., 29 N. Broadway, Yonkers, N. Y.

160 acres of fine farming land in Kansas to trade for regulator, engraving machine, watches and jewelry. Address, "Kansas," care this office.

JEWELERS wanting watchmakers, and watchmakers wanting positions would do well to correspond with me. I keep a record book of all such wants. Enclose postage stamps. Have been the benefactor on both sides. C. Reiss, wholesale jeweler, dealer in watches, tools, materials, etc., 31 and 33 S. Pearl St., Albany, N. Y.

THERE is not a village, town or city in the United States that a nice, bright boy cannot be selected and made a good watchmaker by W. F. A. Woodcock, Winona, Minn. Jewelers now is your time! Select a good boy at once and have him taught the trade by W. F. A. Woodcock, and then you will be provided with a reliable workman.

MOSELY & CO., Elgin, Ill., manufacturers of the "Mosely Lathe" with full line of fixtures and attachments. Designed especially for watchmakers and repairers. Combining accuracy, durability, convenience and style. Honest tools at fair prices. Send for new price list. Agencies with most of the jobbers.

GOLD and silver plating of every description for the trade. Orders by mail promptly attended to. Buffalo Plating Co., 39 Clinton Street.

SEND all your work to Charles Reiss, 31 and 33 South Pearl St., Albany, N. Y. New staffs, pinions, cylinders fitted with despatch. Stem-winding wheels cut to order. 7 expert watch repairers employed specially for trade work. Send for catalogue. Correspondence solicited. Mention this paper.

TO do a nice, easy job of hard soldering, you should use Frear's Gold and Silver solders. They are superior. Prices, Gold Solder, 75 cents dwt. Silver solder, $1.50 per oz. W. S. L. Frear, Manufacturing Jeweler, 55 Cayuga St., Union Springs, N. Y. Cash should accompany the order. N. B. Sample of Silver solder for two 2 cent stamps.

CHAS. REISS, 31 and 33 S. Pearl St., Albany, N. Y., is the busiest trade repairer in the U. S. Packages with broken watch work coming from all over and promptly attended to by experts under his personal supervision. Special despatch to jewelers at a distance.

I AM paying standard prices for old gold and silver. 10 K., 40 cents per dwt.; 14 K., 56 cents per dwt.; 18 K., 72 cents per dwt. Send packages by mail or express. Remitted for same day. H. T. Roberts, Refiner, 1132 Arch Street, Phila, Pa.

SEA shells for watch charms. 10 sent postpaid for 25 cents. Address, A. Hamilton, Westerville, O.

MY work and instruction is thoroughly practical and to your interest. You can use it every day. Come and bring your own customers watches and I will teach you or your journeyman, or your son, or your adopted boy how to properly do the work. You can come and return as often as you like, all at the same price. I mean business. Come and see me, and I will do you good. W. F. A. Woodcock, Winona, Minn.

ANY jeweler giving information of Boss Filled, 18 size eng. case, with P. S. Bartlett nickle movement No. 1,894,077, will be suitably rewarded by notifying M. V. Loomis, Prineville, Organ.

Do Your Own Plating.

Valuable receipes for gold, silver and nickle plating with and without battery, and instructions for jewelers, metal workers, etc., all for 25 cents; or with "Valuable Suggestions," 50 cents. H. Wettstein, Harvard, Ill.

200 packet note heads beautfully printed, postpaid, 90 cents. F. H. Jackson, Printer, Angelica, N. Y.

NO "CHESTNUT," But something new. A jewel pin setter with which a roller jewel can be placed, adjusted or removed without removing the hairspring or roller table. Price 50 cents. Address, E. L. Tobie, Keithsburg, Ill.

JEWELERS.—On or about June 17, 1888. Stolen, one ladies gold watch and chain, Raymond make, full jeweled, No. 53375. Reward given. E. L. Hoffman, Olean, N. Y.

Breakage of Mainsprings.

Electrical disturbances affect watch springs and cause them to break. Send one dollar to J. Harding, Effingham, Ill., and get one bottle of anti-electrical fluid and avoid this difficulty. Directions with each bottle. Money refunded if not satisfactory.

SEND your jewelry jobs and gold and silver plating to Buffalo Plating Co., 39 Clinton Street.

WANTED.

FOR cash. Oculist's complete trial cases. H. H. Hempler, optician, Washington, D C.

OLD gold and silver, full value paid. Packages received by mail or express remitted for same day. H. T. Roberts, Refiner, 1132 Arch Street, Phila, Pa.

EXPERT watchmaker and engraver. (One having lathe preferred.) Steady work; half-pay. Humphrey Bros., Monterey, Mexico.

TO buy stock of watches, clocks, silverware, etc. Will pay part cash and balance in fine farm land in this county. Address, Hadley, the Jeweler, Liberal, Seward County, Kansas.

A FIRST-CLASS watchmaker and engraver. Steady position. Best of refs. required. Address, Milton Kohler, Hagerstown, Md.

TO buy an engraving machine. Must be cheap and in good order. C. W. Bollinger, 115 W. High Ave., Oskaloosa, Iowa.

AT once. A good watchmaker, one willing to do clock and jewelry repairing, and to be generally useful about the store. Apply at once. F. M. Powers, Youngstown, Ohio.

TO trade a No. 1 hard Whitcomb lathe, chucks, etc., for Francis engraving machine. H. J. Brown, Columbus, Kansas.

WANTED.

A RELIABLE man to take charge of a neat branch store in a small town in this State. Must be a gentlemen, good workman and salesman, and no whisky drinker. Wages at first, $15. H. G. Bemis, Longmont, Colorado.

WATCH and jewelry repairer. Good workman, must hard solder, furnish lathe and tools—also act as clerk. Young man, refs. for good character. Permanent situation, fair wages. George C. Alles, Birmingham, Conn.

TO exchange a good Margett's chronometer for a full set of occulist's complete trial cases. H. E. Bemis, Spencer, Mass.

WATCHMAKER at once. One that is first-class. No other need apply. Phil Harris, Albany, Ga.

SITUATIONS WANTED.

AS watchmaker or salesman, over 14 years practical exp. Speak both English and German; 30 years old. Steady job wanted. Best references given. Ad., Henry Linn, Atchison, Kansas. *

BY first-class watchmaker in Philadelphia. Exp. 20 years in all kinds of fine watch and clock work. Best tools. Address, "L," care this office. *

BY young man in jewelry or optical store. Can do jewelry repairing, clock and ordinary watch work and all kinds of optical work, including fitting of spherical and compound lenses and oculist's prescriptions. Good salesman. Salary reasonable. Would like to work with first-class watchmaker. Can give the best of refs. Ad., at once, John Jelgerhois, 120 N. Pine St., Indianapolis, Ind. *

BY young man 3½ years exp. Can do watch, clock and jewelry repairing, also plain engraving. Speaks German, French and English. Good refs. E. Benoit, 348 W. Chicago Ave., Chicago, Ill. *

BY young man, 23 years old, as watchmaker in a wholesale jewelry house or as clerk, 13 years exp. in selling, repairing, etc. Best refs given. Address, "Watchmaker," 79 Columbia Ave., Jersey City, N. J. *

AS watchmaker, 16 years experience; full set tools; can engrave. Best refs. Address, "Experience," care this office. *

BY young man 21 years old, with a little over three exp. at watch and clock bench. Fine set of tools. Best reference and recommendation furnished regarding ability, character etc., Middle Atlantic States. For further particulars address, "Watchmaker," P. O. Box 26, Phoenixville, Pa. *

BY competent watchmaker and jeweler, with 10 years practical experience, position to manage first-class store, good salesmen. Can do any work pertaining to the business. Can furnish first-class refs. Address, "Reliable," care this office. *

BY young unmarried man of 6 years experience at bench and as salesman. Refs. A 1. Address, "Jeweler," drawer 110, Sturgis, Michigan. *

AS watch and clock repairer at $10 a week. F. W. Loomis, Box 46, Liberty Hill, Conn. *

A YOUNG man, 17, with American lathe and tools, having 1½ years exp. at bench wants situation in jewelry store with good workman. Good refs., moderate salary. Address, "G.," care this office. *

AS foreman in repair shop or watchmaker and salesman in jewelry store, by a thorough workman of 20 years exp. in the jewelry business. A. No. 1 refs. Address, "R.," care this office.

BUY THE BEST.

Tweedle Dee and Tweedle Dum, the Best and Cheapest Nickel Time and Alarm Clocks made.

Oskamp, Nolting & Co.,
Wholesale Jewelers, Cincinnati, Ohio.

Pivot Wire.

The best ever used for that purpose. The steel uniform in temper throughout. Once used always used. Three sizes (red, white and blue wrappers.) Ten cents per bundle. Three for twenty-five cents. For sale by jobbers and

Roberts & Pettengill, Mfgs.,
Boulder, Colo.

H. M. DAVIS,

No. 73 Nassau Street, Room 6, New York.

Watch Case Repairer.

Jewelers desiring first-class workmanship and prompt attention will find it to their advantage to give me a trial. Jobs sent me by mail or express will be repaired and returned promptly. Engine Turning, Springing, Jointing, Polishing and general repairing neatly and quickly executed.

Send to Headquarters for Goods.

H. H. Kayton,

82 Nassau Street, New York.

Importer and Jobber

In Watch Materials, Tools, Jewelers' Findings, Spectacles, and other Optical Goods. Best goods at lowest prices. Work for the trade promptly attended to. Orders filled by any catalogue.

Gold and Silver Refiner.

H. T. Roberts,

1132 Arch Street, Phila., Pa.

Old Gold and Silver bought. Packages received by mail or express promptly remitted for.

Trade Work.

We make a Specialty of doing work for the trade. Satisfaction guaranteed.

E. & J. SCHWEIKERT,
No. 19 W. 4th Street, Cincinnati, Ohio.

J. J. DONNELLY,

73 Nassau Street, Room 6, New York

Gold and Silver Electro Plater, Fire Gilder and Colorer.

All kinds of work neatly and promptly executed. Orders by mail or express will receive prompt attention.

Cash for Old Gold and Silver.

We pay cash for silver and gold. Returns made same day as received.

E. & J. SCHWEIKERT,
No. 19 W. 4th Street, Cincinnati, Ohio.

Alex. Wiederhold,

No. 43 Nassau Street, New York,

Repairing Jeweler,

Makes a specialty of repairing all kinds of jewelry for the trade. Also matches up lost pieces such as Sleeve Buttons, Ear Rings etc. Gold Vest Chains filled and equal to new. Jobbing sent us by mail or express will be repaired and returned promptly.

Prices moderate and
first-class workmanship guaranteed.

To the Trade.

Do you wish your repairing done well at reasonable prices? If so, send to

Edward W. Fox

all your broken jewelry, silverware, watch cases, movements, clocks, spectacles, eye-glasses, pipes, fancy goods, also engraving and plating. Save express by sending everything in one package to
7 Province Ct., Room 3, Boston, Mass.

To the Trade.

We make a specialty of doing all kinds of watch repairing for the trade, having had years of experience in the largest houses in the city, and having all the best facilities for doing work. We are enabled to do the most difficult repairing promptly, and on short notice.. Send for our new price list.

GEO. J. RICHARDS,
Successor to Richards & Rutishauser,
149 and 151 State St., Room 10, Chicago, Ill.

CHARLES KOHLBUSCH,

Manufacturer of
Fine Balances and Weights
For all purposes.

35 Nassau St., N. Y.

Send for Catalogue.

Repairs promptly attended to.

HOUGHTON & CO.,

Manchester, N. H.

Manufacturers of face plates and slide rests. Prices reasonable, and quality guaranteed. Ask your jobber for one on approval.

SUPERIOR ESTAB 1824 QUALITY
MUSIC BOXES
Gautschi & Sons 1876 PHILA 1030 Chestnut St.
PHILADELPHIA. SEND STAMP FOR CATALOGUE.

Hibarger's Oil Cabinet.

Here is just what you want to set off your bench. One of HIBARGER'S PATENT OIL CABINETS. It is a pretty ornament, and perfectly protects the oil from dust and light. On the top you can put your eye-glass and screw drivers.

Wholesale Agents:

Sussfeld, Lorsch & Co., New York.

All Jobbers have them. Price $2.50.

OSGOOD FOLDING CANVAS BOAT

Invented and Manufactured by N. A. OSGOOD, Battle Creek, Mich.

BEST, SAFEST and Lightest.

Impossible to tip it over by Rocking.

Makes up four different weights, the same as four boats combined in one. Oars and paddle are jointed, and pack in boat without extra charge. This cut shows the twelve-foot boat and packing chest.

Send for Illustrated Catalogue.

The Keystone

A monthly journal for the Jewelry Trade, published at Nineteenth and Brown Streets, Philadelphia. Price, 50 cents a year in advance.

CORRESPONDENCE and other copy for publication should reach the KEYSTONE before the FIRST of each month.

ADVERTISING rates for column, double column quarter page, half page, and full page advertisements furnished on application at this office.

CIRCULATION is 15,000 larger than that of any other journal of its class, reaching every jeweler in the United States and Canada.

THE KEYSTONE has a bona fide circulation of 22,000 copies.

Address all communications to
"THE KEYSTONE,"
Nineteenth and Brown streets,
Philadelphia, Pa.

J. T. WILLIAMS, Editor.
S. H. STEELE, Publisher.

PHILADELPHIA, JULY, 1888.

SUBSCRIBE!

We would again call the attention of our readers to the importance of at once subscribing, without waiting for a further reminder from us. You have all had ample proof that like rare old wine, the KEYSTONE is growing better with age, and the manifest excellence and value of the present volume should be more than sufficient argument for all our readers at once to become subscribers, and also to secure a remittance from those in arrears unsolicited. We promise you even better things in the future, and propose advancing the KEYSTONE to that high degree of merit and worth that must render a subscription indispensable to every intelligent and progressive watchmaker and jeweler in the trade.

To defer this matter profits no one, and occasions needless inconvenience and loss to us; so that we request that every reader who feels benefitted or repaid by his perusal of the KEYSTONE to fill out and send in at once the enclosed slip for that purpose. This kind action will be duly regarded and appreciated by us as a tribute of confidence in and appreciation of the manner in which this journal has been conducted.

While some individuals may think their own personal subscription of small account and easily dispensed with, they should remember if every one of our subscribers would think the same thing, that it would cause a very serious loss to us. What individually may appear small, collectively is the "sinews of war" for defraying the cost of this publication. Kindly send in your subscription, and thus encourage the policy pursued in the management of the KEYSTONE.

THERE are few things which annoy the window-dresser at this time of the year more than the little busy fly. Talk about your busy bee! We are ready to go large odds the busy fly can distance him, especially during July and August. The bright, light window, with its glittering contents, is his especial delight. A clean, white card is to him an enviable possession; and he proceeds immediately to place his private mark on it. The next fly which comes along, not to be outdone, places two of his marks on it, and so each visitor in rotation place their private marks, in number according to geometrical progression until the paper is covered, or the fly exhausted. The same industrious course is pursued with the glass of the windows—in fact, everything is smeared. Then, and only then, the busy fly can be said to be perfectly happy and contented with his lot. To lay nonsense aside, however, and come down to business; show windows should in all instances be made double—that is, there should be glass doors, or sliding sash inside of the show windows, so that it is, we might say, a separate apartment. A small door should be arranged so goods can be conveniently placed in, or taken from the display. Jewelers stock is not like dry goods, or almost any other articles of merchandise, which can be placed in the window and then left for days. They are too tempting to thieves. Fine gold and diamond goods must be taken out every night, and go into the safe to be replaced the next morning, at a time flies are pressing toward the light—for they are eminently partial to a bath of sunshine. Even with the protection of double sash a few will find their way in. These are best dealt with by placing a sheet of sticky fly-paper in the brightest lighted portion of the window A spot of sunshine is sure to be visited by every fly left in there in a short space of time, and a sheet of the sticky paper placed in this space will soon have them fast.

THE direct manufacture of rubies and other precious stones is something promised for the near future. Artificial rubies, or, as it is claimed by some, small rubies fused together, are now on sale.

WE would beg to call our readers attention to the phenomenal growth of the KEYSTONE, as evidenced by the following tabulated statement:

July 1885, it contained	4	pages.	
" 1886, " "	8	"	
" 1887, " "	16	"	
" 1888, " "	32	"	

It will be seen by this that the growth has really been during the last three years, as prior to 1885 the KEYSTONE had for three years held to four pages. To quote the words of a friend, speaking of the KEYSTONE, who said: "It is the most astonishing achievement in journalism of the age; not only in trade journalism, but any journalism. I remember it three years ago, a little *red* sheet of four pages, which everybody glanced at and threw into the waste basket. It is now a magazine of thirty-two pages, and *read* yet by everybody in the watch and jewelry business. The management of your paper has been wonderful to achieve such success at this time, when the country is teeming with cotemporary journals in the same interest. But it serves to prove the truth of the apothegm: 'The best method to ensure success is to deserve it.'"

DID you ever notice in the advertisement, or on the sign of a first-class A. No. 1. Botch we always see these words, "All work warranted." Now what do you suppose is the fellow's idea of putting stress on the "warranted?" Simply because it adds a look of respectability to his really absurd pretensions. All he wants is to get the job, or rather what he desires is the "sucker's" money, and the statement of warranty is only baiting the hook. If he adds "complicated and fine watch repairing a specialty," this is what one may term "spitting on the bait for luck." Now the watch and jewelry trade is full of enterprising men of this stripe, and in some—yes, many instances, they are higher up in business than renting half of the window of a barber shop, and ruining watches at seventy-five cents apiece. But the same recklessness in regard to guaranteeing worthless productions holds good with them. "I warrant" and "I promise to pay" are very much alike. The responsibility of some parties gave these terms respectability; and now unscrupulous persons are trading on the credit established by years of integrity and skill, backed by the will and ability to make a guarantee or promise to pay good in a commercial sense.

THE subject of industrial art schools is attracting a great deal of attention among the trade, and it is very just it should. One great trouble with a practical solution of the problem is our system of manufacture; quantity more than quality being sought for; and we have unquestionably fallen into the rut of conventional mediocrity. The methods of successfully extracting ourselves are questions the KEYSTONE proposes to take up in the near future.

ONE of our readers sends us two dollars conscience money, saying he has been reading the KEYSTONE for the last three or four years without paying a cent, and that he has largely profited by it. We do not ask arrearages of our readers, but beg them to notice the attractions we are adding every month to our paper; and on the strength of it would modestly hint that all these things cost money. We certainly put the subscription price low enough so our patrons cannot plead the excuse of not being able. What we want is the name of every man in the watch and jewelry business in the United States and Canada to be on our paid up subscription list.

MANY thanks to F. D. Woodruff, of Keyport, N. J., for back numbers requested in June issue.

THIS is an excellent time of year to go through one's stock and sort out such articles as seem "stand-by's," getting them together in some place and mark them at such figures as will ensure their sale. A bargain case of this class of goods will close out stock we had better realize on, even at a sacrifice.

WATCHES not affected by magnetic influences are the watches for the future. The next decade will witness immense advances in the application of magnetic engines, and the ordinary watch will not be reliable under their influence.

WE do not fancy that even in the "recollection of the oldest inhabitant" there has been a Presidential campaign which less effected the business relations of the country than the present. We advise our friends to read up the situation carefully; not exclusively from one side, but hear what the opposite party has to say; and then vote quietly according to their convictions. There is nothing to be made by the average watchmaker and jeweler in spending three or four nights in a week at political meetings, or in following a brass band and carrying a transparency, as large as an ordinary pig-pen, for three or four hours. No, no, better stay at home, whittle peg-wood, and sell badges to both parties.

OUR readers are especially invited to notice our increase of four pages, beginning with this number. This was in a measure forced upon us, from the pressure of advertising matter. The trade is becoming more and more convinced of the superiority of the KEYSTONE as an advertising medium. The management of the KEYSTONE is well aware of the value of its columns in this direction, and promises its readers to increase the interest and value of the journal proportionately. With the June number we commenced two new series of articles of great value to the working members of the trade. We refer to the articles on "Workshop Chemistry," by the Professor, and the essay on "Enameling," by Cellini, Jr. As regards the value of these articles to the artisan we cannot speak too highly. There is no class of men, after physicians, who have as much need for a knowledge of chemistry as watchmakers and jewelers, and the trouble has heretofore been that any workman who sought to inform himself in this respect was so cumbered with abstractions that half a life-time would have to be spent in winnowing out the chaff to get to the grain. The articles on "Workshop Chemistry," now being published, are to be just what a workingman requires—brief, practical, and after establishing the foundation, confined strictly to such chemical knowledge as is requisite in the workshop. The articles on "Enameling" need no comment, more than to call attention to the author, who is too well-known to the readers of the KEYSTONE to need any puffing. These articles are to be a complete and practical expose of this beautiful art, and will explain many things which have never appeared in any text-book. These two series will be worth many times the subscription price.

MR. R. B. LESTER, with Aiken, Lambert & Co., was married on June 14th, to Miss Ida M. Walker, of Brooklyn. The KEYSTONE extends its best wishes for the prosperity and happiness of Mr. and Mrs. Lester. Mr. Lester is well and favorably known on Maiden Lane, and has charge of the watch department of his firm.

THE Eddyville (Iowa,) *Tribune*, of a late issue contained the following:

"In 1882 Grant Cowley, the jeweler, sold to Mr. John Lafferty, of this city, a Boss filled watch case manufactured by the Keystone Watch Case Co., with their usual warrant. After so long, the case was discovered to contain a flaw. Grant immediately returned the case to the Company, and last Tuesday he received a bran new one of an excellent design in its place. Evidently the Keystone Co. intends to maintain their high reputation gained by honesty and fair dealing with their patrons."

THE average retail jewelry trade throughout the country can be pronounced as satisfactory. From some sections of the country sales are reported above the average. We always have a class of chronic croakers who find something to grumble about. Aside from this class, we hear few complaints. There seems to be about an even balance in the want columns of workmen wanted and positions wanted. This indicates a healthy state of business.

TRADE TOPICS.

FEW, if any, business houses in the jewelry trade are more pleasantly situated than Stern & Stern, of 13 Maiden Lane, New York, who are now thoroughly settled in their new quarters. A very attractive feature of their new place is the magnificent show window, which very recently had a display of $100,000 worth of diamonds alone. This obliging firm has the "stuff" to decorate their own and other people's windows.

MESSRS. M. A. MEAD & CO., of 104 State Street, Chicago, Ill., wholesale dealers in American watches, are universally well spoken of by the trade throughout the West, and we can cheerfully recommend them to our readers.

THE most practical hand-book for learning Engraving is by Cellini, Jr., and is given to each subscriber of the KEYSTONE.

THE enterprising firm of Bowman & Musser, Lancaster, Pa., report their business as eminently satisfactory. As nothing satisfies these friends of ours, except getting rich, their business must be "booming."

MESSRS. LAPP & FLERSHEM are now settled in their new quarters, 92 to 98 State street, Chicago, and the changes made have greatly increased their business facilities. They cordially invite every jeweler visiting that city to call and see their new quarters and new goods.

JEWELERS who like to be up to the front in elegant jewelry, should cast their admiring eye over the advertisement of Mr. Joseph Muhr, on page 27.

THE Newark Watch Case Material Co., manufacturers of the celebrated Insulated Watch Protectors, report a good business. These Protectors should be seen by the trade, as they afford a sure protection to watches from magnetism.

MR. J. T. BURGE, formerly of Clinton, Ky., has removed to Ector, Texas, where he is still engaged in the watch and jewelry business.

MESSRS. H. F. HAHN & Co., make very liberal offers in relation to sending selection packages of diamonds. Remember their motto, "Honest goods at honest prices." See ad. on page 18.

E. HIBARGER, of Hagerstown, Md., is making many sales of his oil cabinet advertised on page 14. It is one of the few things which a watchmaker can use to make his bench look attractive.

C. H. KNIGHTS & Co., Chicago, Ill., is looked to as headquarters in the West for watchmakers tools and materials.

CAPT. MAJO, of Markegan, Mich., writes that he caught two muscalonge with one frog, using one of Wakeman's bait-holders advertised on page 18. One of the fish weighed 40 lbs. He has sold six doz. of the bait.

OUR premium book on Turning and Pivoting is well worth $2.00, and yet we give one to every KEYSTONE subscriber.

OTTO YOUNG & Co., of Chicago, are meeting with a large demand for their campaign badges. They anticipate and are fully prepared for a large sale of these goods, of which they have a great variety of styles. The other lines of this house are intimated in their advertisement.

PUPILS anxious to learn watchmaking in a practical, efficient manner will do well to read the advertisement of W. F. A. Woodcock on page 11.

THE firm of Simons, Bro. & Co., doing business at 618 Chestnut Street, Philadelphia, is now composed of the following gentlemen: John F. Simons, Fred. K. M. Simons, and Edwin S. Simons.

EVERY young man apprenticed to watchmaking should subscribe to the KEYSTONE and get the premium work on Pivots and Pivoting.

WE can assure our readers Seewald's Balance Truing Tweezers are a very useful and efficient tool.

MESSRS. BENJ. ALLEN & Co., are meeting with good success with their popular line of goods. They claim "the largest stock of cases and movements to be found in the United States." They also carry a full line of watches, diamonds, jewelry, fine tools and watch materials.

THE E. Howard Watch and Clock Co., have established for themselves a reputation second to none in horological matters; from fine pocket watches to town clocks. This reputation is not the fame of a day, born of whim and caprice, but the steady growth of thirty years of energetic and persevering efforts, guided by thorough knowledge of their business and the wants of the public.

CHARLES S. PINE & Co., of Providence, R. I., who have also offices at 196 Broadway, New York, are manufacturing a line of bracelets which are found to be rapid sellers by the many dealers who have tried them.

AMONG our solid wholesale jewelry houses none are spoken of more favorably than David F. Conover & Co., S. E. Corner of Seventh and Chestnut streets, Philadelphia, Pa.

GLICKAUF & NEWHOUSE, of 84 and 86 State street, Chicago, Ill., make a specialty of Gravier mainsprings. These springs stand with the trade on about the same level as Stub's cutting pliers. This firm also carries a full line of other goods for the trade.

MANY of our readers could do their customers a favor, and put a cherry or two into their own pockets, by advising them to have their watches changed from key to stem winders by Henry Abbott. See "ad," page 14.

THE leather-lined swivel made by Burt Ramsay & Co., Cleveland, O., is certainly a good thing and deserves patronage. See "ad" on page 15.

MESSRS. STEIN & ELLBOGEN, Chicago, have an enviable reputation among the western trade for square dealing. They make a specialty of American watches and fine diamonds. They have an ad. on page 17.

OUR premium book on Turning and Pivoting is well worth $2.00, and yet we give one to every KEYSTONE subscriber.

THE Olin Pendulum Foot-Power for watchmakers lathes, manufactured by the Ohio Watch Tool Co., runs easily and without noise, and has adjustable joints to take up the wear.

"NO MISREPRESENTATION" is an appropriate motto adopted by S. Kind & Co., 441 and 443 Market Street, Philadelphia, Pa. They make a specialty of mail orders, and carry a complete line of movements and cases.

MR. C. KANE, who hails from the State of New York, has started in the jewelry business at Baxter Springs, Kansas.

WE clip the following notice from the Union Springs, N. Y., *Advertiser*, regarding the extension Mr. W. S. L. Frear, the well-known manufacturing jeweler of that place, has lately been making in his business: "Mr. W. S. L. Frear, the pushing and enterprising manufacturing jeweler, has been overhauling and renovating his factory and adding new and expensive machinery, including a fine, new engine and boiler, and has doubled the producing capacity, making it one of the best and finest equipped factories of its kind in the State, of which Union Springs may well feel proud. The productions, which are chiefly gold and silver rings, badges, gents' scarf pins, fancy chain and bangle pins, and bangles, find a market in nearly every State and Territory and in the Provinces. Mr. Frear is a thorough, practical artist, and with his corps of assistants his customers are sure of being served with promptness. Fair dealing, first-class workmanship, and reliable and trustworthy goods are the mottoes strictly maintained."

THERE is no book for learners of Engraving, no matter what its cost, so thoroughly comprehensive and practical as the one by Cellini, Jr., given to every subscriber of the KEYSTONE.

THE report of the Treasury Department shows that in the month of April, of the present year there was imported jewelry and manufactures of gold and silver valued at $114,388, as against $56,224 imported in April of the preceding year. For the ten months ending April 30, the importations were valued at $1,003,720 against $721,439 for the corresponding period of last year. The importations of precious stones and imitations, not set, amounted for April to $627,855, and for April last year to $611,929, but for the ten months ending April 30, the importations were $8,315,018, and for the corresponding period last year they were $8,487,488. There was an increase of about $6,000 in the value of the importations of clocks and parts of clocks in April over April of last year. The value of watches and watch material imported in April was $157,607 as against $114,746 a year ago, while for the ten months of the present year ending April 30, the importations were valued at $1,411,477 as against $1,241,190 in the first ten months of last year. Our dealings with the old country, so far as the jewelry trade is concerned, is steadily on the increase.

WE do not believe there is another business extant which requires as much judgment in buying as the watch and jewelry trade. It would be impossible to keep in stock every whim wham produced by the various manufacturers; consequently the true way is to keep full lines of some particular class of goods as, for illustration, Filled Gold Cases. The head of the line is of course the James Boss Filled gold case, which is in every way the peer of a solid gold case, except in cost; and one which not one purchaser in fifty will live to find out whether it is solid or not. Then comes the Keystone Filled, elegant, strong and serviceable, and guaranteed for fifteen years; followed by the Star Filled—just exactly the case for such young fellows as desire a cheap, showy gold watch; good, stylish, and guaranteed for ten years. A full line of these goods completely meets the wants of the most fastidious customers; and why shouldn't they? Are not all the resources of case making art called into requisition in producing them?

KEYSTONE
WATCH CASE COMPANY.

CAMPAIGN ARGUMENTS.

WITH A MORAL.

If your customer has no watch we don't expect you to advise him to buy a key-wind Ellery or Wheeler and then have ABBOTT'S STEM-WIND ATTACHMENT fitted to it. But if your customer owns a good Raymond or an A. T. & Co., or a Howard key-winder that he loves, you take your life in your hands when you tell him it is worth "only what the case will melt up for." If you want to retain that man's friendship and keep his trade don't do it. His watch is worth just as much to him as when he bought it, even though he paid "war prices," and you undertake a big contract when you attempt to destroy the illusion.

It requires a salesman of no mean ability to convince the owner of a watch which he has carried ten or fifteen years, and which has never failed to keep perfect time, that he ought to discard that watch and buy a more modern one. It is to the troubled soul of such a man that ABBOTT'S STEM-WINDING ATTACHMENT comes with healing in its stem.

This "Artist in Horology" undertook to force a new watch down the throat of a man who wanted a STEM-WIND ATTACHMENT applied to his faithful time-keeper. The effort was not only a dismal, failure but the Artist was called in.

These Stem-Winding Attachments may be bought of any reputable Jobber or of the Manufacturer. Watches may also be sent direct to us for alteration.

HENRY ABBOTT,

No. 4 MAIDEN LANE, FACTORY: JOHN STREET, NEW YOKK.

ALL RAILROAD MEN

Carry Fine Watches

and use

RAMSAYS' LEATHER LINED

SWIVELS

To Protect the Watch Bow.

We will send samples of not less than one-half dozen to any regular Jewelers, and if you do not agree with us that they stand head and shoulders above any other swivel on earth, you can return them. They cost no more than any good swivel.

Manufactured only by

Burt Ramsay & Co.

185 Superior Street,

Cleveland, O.

The Best Watch Oil Ever Produced.

Every watchmaker in the world is acquainted with the fact that the Oil that will stand the lowest temperature is invariably the one that gives the best results.

Working upon this fact, we have found that our Watch and Clock Oils, when passed through the process of refinement at temperatures lower than 20° below zero, are freed from all impurities that Corrode and Blacken the Pivots of a Watch, at the same time they are rendered Perfectly Unaffected by Heat or Cold.

We have spent much time and money in determining this method of refinement, and the exquisite quality of the goods that were produced by our experiments caused us to immediately establish a refinery at a high Canadian latitude, where the work could be carried on uninterruptedly in severe cold.

Watchmakers have always found trouble, even with the best known Watch and Clock Oils, and have strongly desired an article that could be invariably relied upon. We are the first to respond to the demand for an improvement in these Oils, and we invite the severest tests that can be applied to them.

William F. Nye

In use upon all Watches sent out from the Waltham Factory.

MR. WILLIAM F. NYE, Waltham, Mass., Nov. 11, 1887.

DEAR SIR: It is now one year and nine months since I commenced testing your Watch Oils, and it affords me pleasure to state that I am satisfied with the results. They have been subjected to various tests, but the severest and best test has been its actual use upon watches carried in the pocket. In every instance your "Melon" and "Jaw" Oil has made an excellent showing. The "St. Albans" Oil which you sent me a few months ago, is, I believe, from such tests as I could give it in so short a time, a better oil than you left with me nearly two years ago, and to which I have made reference. It is essentially the same, except that it seems to have more "body," and, therefore, will no doubt wear longer. It shows no tendendy to "dry up," "spread" or "gum" when subjected to high temperature (200° F.) for several weeks. We received the Oil ordered from you, and I trust it is all the "St. Albans" brand. I term it the "St. Albans" Oil to distinguish it from regular oil or that which I first had. I now have so much confidence in this oil that I have ordered its use upon all watches sent out from the factory. It may seem to you that it has taken me a long time to arrive at a conclusion regarding your oil, but unfortunately, it takes a long time to thoroughly test watch oils, and it is a matter of great importance to a large Watch Company. Yours truly,

D. W. ELDRIDGE.
General Inspector American Waltham Watch Co.

To the Watch and Clock Trade.

Realizing that we were in possession of the finest stock of raw material for such goods, the "Jaw" and "Melon" Oil, and knowing from years of experience the great difficulty of producing a uniform quality of this Oil in a climate so variable as in the vicinity of our factory at New Bedford, we attempted the scheme of refining it in a higher latitude, and accordingly a stock was sent to the borders of Canada—St. Albans, Vt.—and after a thorough chilling at a temperature 35° below zero, the process of refining was completed at an average temperature of 20° below zero. The experiment was a great success, and we can now assure the trade that we have produced the finest quality of watch and clock oils ever shown to the world. Watchmakers have only to ask their dealers to send them a bottle of Nye's Watch or Clock Oil to prove the correctness of our statement.

WILLIAM F. NYE,
New Bedford, Mass., U. S. A.

CLASS PINS, RINGS,
SOCIETY PINS,
MEDALS, TROPHIES,
EXCLUSIVE DESIGNS.

Correspondence Invited.

Catalogues sent Dealers upon request.

A Perfect Fountain Pen.

Handsome, vulcanized rubber case fitted with best quality of Gold Pen. Holds ink enough to write 10,000 words. Always ready for use. Writes instantly. Samples on receipt of price. Send for circulars.
Plain case, $1.25; Engraved case, $1.50.

Acme Pen Co.,
No. 130 Fulton Street, New York.

W. H. Sheafer & Co.,

612 Chestnut St., Philadelphia. Manufacturing Jewelers.

Link, Band and Wire BRACELETS.
Lace Pins, Ear Rings, Sleeve Buttons, Studs and Lockets.
Diamond Mountings and Diamond Goods.
Designs made to Order and Estimates furnished.

To Watchmakers.

Pat. Jan. 25, 1881.

THE LOOP KEY cannot be excelled in quality and finish.

Pat. Aug. 30, 1880.

THE DIME KEY has the same enduring qualities.

CLARK'S FIVE HOLE CASE SPRINGS. None better or more reliable for repairing.

Made by
A. N. Clark, Plainville, Conn.
Sold by the Trade.

Established 1870.

J. L. Clark,

Refiner and Sweepsmelter of
Gold and Silver
No. 823 Filbert Street,
Philadelphia, Pa.

Gold and Silver of any kind bought.
Send by Mail, Express or Freight.

S. Kind & Co.,

441 and 443 Market Street, Phila., Pa.

Wholesale Dealers in
American Watches,
Jewelry and Silverware.

We carry a full line of all grades of movements and cases in 14 K., 10 K., Wheat and Eagle. Full line of Boss and other filled cases. Mail orders get our special attention.

Our motto: "No Misrepresentation."

Charles S. Pine & Co.,

New York Office, - - - 196 Broadway.
Factory: 111 Broad St., Providence, R. I.

Manufacturers of
The Flexible Rolled Edge
Block Bracelet.

Pat. May 7, 1878. 203,426. Pat. Feb. 20, 1883. 272,829. Pat. Dec. 22, 1885. 333,083.

The "Mary Anderson" Pat. Bracelet, with Patent Cap, and the Rolled Edge Pat. Flexible Bracelet. Sole Agents for H. A. & G. M. Church's Roller Chain.

Col. J. M. Rutherford, Auctioneer,

Specialty made of Diamonds, Watches, Jewelry, etc.

Sales made only for established jewelers in their regular places of business. Am a practical jeweler, with an experience of 25 years as a special salesman. Can refer to over 100 jewelers, for whom I have made successful sales in all parts of the United States. Address,

Room 7, 618 Chestnut Street, Philadelphia.

H. H. HEINRICH,

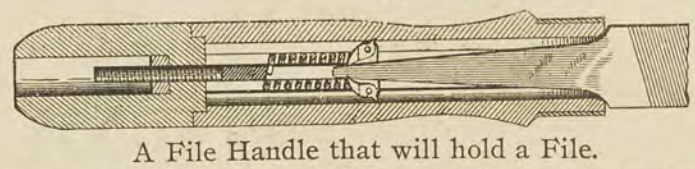
Chronometer Manufacturer, and Agent for K. Zimmerman Watches,
No. 14 John Street, New York.

Chronometers sold on installments on terms to suit the purchaser.
Chronometers to Rent. $5 per month.

This cut is a Marine chronometer with Heinrich's adjustable balance. Certificate from U. S. observatory. In order to give an opportunity of examining and testing my chronometers, I will rent them out at the rate of $5 per month, payable in advance. To those desiring to purchase chronometers, after examining them, an allowance of the first month's rent will be made from purchasing price.

A large stock of new and second-hand marine chronometers on hand for the trade. All my second-hand chronometers are in the very best condition, readjusted, and look like new. **Springing and Adjusting with C. A. Paillard's Palladium Balance Springs a Specialty.**

Something New.



A File Handle that will hold a File.
Ask your Jeweler for it, or send Twenty-five cents for sample to
C. M. Powers, Inventor and Mfgr.,
DuBois, Penna.

To Whom it may Concern.

WE are the inventors and sole manufacturers of "THE QUEEN" cuff holders for which U. S., letters patent No. 370,786 were issued to us October 4, 1887. Said patents sets forth and covers, especially, two points, *viz:* First, a loop, preferably a spring, forming one end of the cuff holder, and designed to secure and hold together the two lower edges of the cuff and sleeve; and second, a head of any design whatever, forming the opposite end of the holder, and furnished with a pin, of any desired shape to secure the same to the dress sleeve; And wheras, it having come to our notice that certain persons are infringing on our said patent, by various devices, as by making a movable, or swivel, head; by bending the pin in the form of a spiral; by adding a second pin; as also by copying the original design from which our patent was drawn, and in other ways; all of which are plain and palpable infringements on our patent aforsaid. Now therefore; we hereby caution all persons against manufacturing, buying, selling or using any cuff holder whatever, combining the loop and pin, as above referred to, and as fully set forth and described in our letters patent aforsaid; as we shall prosecute all persons in whose possession these goods may be found, unless the same shall be stamped on the short arm of the loop as follows: *viz*; Pat'd October 4, 1887.

J. W. HENRY & CO.,
24 Calender Street, Providence, R. I..

Do you use a polishing Lathe or a lathe of any kind? If so, and you have not a

Hammond Wheel

You are simply behind the times. More and finer glass grinding and polishing can be done in one hour, than is possible to do all day by the old rigs—or new—for ten times its price.

No set of lathe furniture complete without it. For sale at all stock houses, or free by mail on receipt of price, $1.00

W. F. HAMMOND, Man'f'r,
38 Main St., Greenport, Suff. Co., N. Y.

Established 1869.

Chas. Reiss,

31 and 33 S. Pearl St., Albany, N. Y.

Watchmakers' Tools and Materials

Watchmaker to the Trade.

Watchwork received from all over the United States and Canada.
☞Send for Price List.

Barnes' Patent
Foot-Power Polishing Machine.

THIS Polishing Machine has advantages that were never before gained by any application of foot power for this purpose. All the appliances common to the polishing departments of jewelry manufacturing establishments can be tried on this machine, and equal results attained. It is inexpensive, and dealers cannot afford to be without an outfit.

The consequence and convincing powers of a salesman are poor inducements to the purchaser as compared with a well kept stock of goods, that have their original charms of polish, luster and freshness.

Our Lithological or Lapidary Lathe has the same application of foot-power, and it is giving results never before reached by any other application of foot-power for this purpose. These machines are of great value to Jewelers, and their correspondence is solicited. Illustration Catalogue FREE.

Address, 660 Ruby Street,
W. F. & John Barnes Co.,
Rockford, Ill.

Stein & Elbogen,

Chicago, Ill.

Wholesale

JEWELERS,

Importers of

DIAMONDS,

and Dealers in all Grades of

American Watches.

Border Chased.

Successors to

McCarty & Hurlburt,

131 N. Second St.

Chased.

H. O. Hurlburt & Sons,

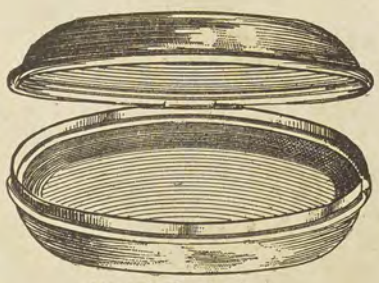
Wholesale Agents for AMERICAN WATCHES.

Manufacturers of

Gold and Silver Thimbles, Gold Spectacles, and Silverware.

938 Market Street, Phila., Pa.

R. & L. Friedlander.



Watch Protectors.

$2.50 per Dozen.

Adjustable Casesprings.

Best in the Market.

50 cents per Doz.

Watches, Jewelry, Optical Goods and Jewelers' Supplies.

We have on hand a large stock of Bamboo goods and offer the following bargains:

1000 dozen Bamboo Vest Chains @ 75 cents per dozen.

65 and 67 Nassau Street, N. Y.

☞Send for Price List.

H. M. Betz,

No. 631 Chestnut St., Philadelphia, Pa.

Manufacturer of

Society Badges, Charms, Scarf-Pins and Rings.

Made of Solid Gold, handsomely enamelled, patented designs. Send for Price List containing cuts of Charms, Badges, Scarf-Pins, Rings, etc. Badges and Charms of all organizations made to order.

L. Lelong & Brother,

Gold and Silver Refiners, Assayers

AND

Sweep Smelters,

S. W. Corner Halsey and Marshall Sts.,

NEWARK, N. J.

Campaign.

Headquarters for

Campaign Badges, Charms, Pins, Buttons, etc.

King & Eisele

283 Main Street, Buffalo, New York.

Send for Illustrated Circular.

I. Bedichimer,

616 Chestnut Street, Philadelphia.

Manufacturers of

Masonic Marks,

Society Emblems, Pins and Jewels.

Highest award at Franklin Institute, 1874, International Exhibition, 1876.

Breitinger & Kunz,

Importers, Manufacturers, Jobbers and Dealers in

Diamonds, Watches, and Jewelry,

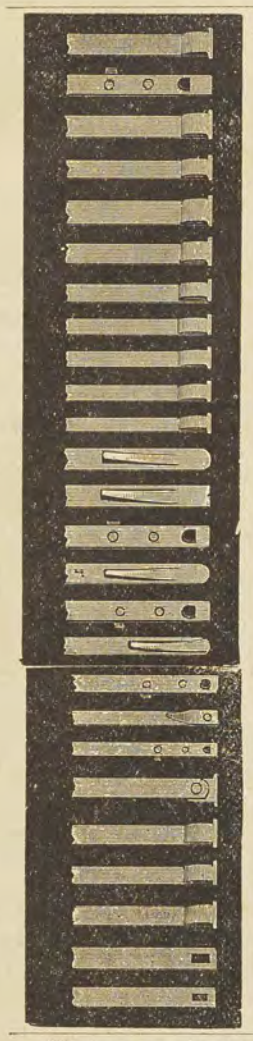
Silverware, Musical Boxes, Foreign and American Clocks, Watchmakers Tools and Materials.

No. 37 and 39 N. Ninth St., Phila., Pa.

Sole Agents in the United States for G. Becker's Regulators.

GLICKAUF & NEWHOUSE,

84 and 86 State Street, Chicago, Ill.



1 WALTHAM, Old Model, New Style, 18 Size.
2 WALTHAM, Old Model, Old Style, 18 Size.
3 WALTHAM, A. T. & Co.
4 " Crescent Street.
5 " New Model Hunting 18 Size.
6 WALTHAM, New Model, Open Face, 18 Size.
7 WALTHAM, 16 Size.
8 " Bond Street.
9 " 14 Size.
10 " 10 Size.
11 " 8 and 6 Size.
12, 13 ELGIN, New Style, 18 Size.
14 " Old Style, 18 Size.
15 " New Style, 16 Size.
16 " Old Style, 16 Size.
17 " New Style, 10 Size.
18 " Old Style, 10 Size.
19 " New Style, 8 and 6 Size.
20 ELGIN, Old Style, 8 and 6 Size.
21 HAMPDEN, 18 Size.
22 ROCKFORD, 18 Size.
23 ILLINOIS, 8, 6 and 4 Size.
24 " 18 Size.
25 HOWARD, 18 Size.
26 " 16 Size.

We will supply you with the G. & N. Gravier Mainsprings, which have proven themselves Superior to those made by any Watch Company. Our Springs are each one coiled separately and tag with name of Spring on. Also each Spring has the G. & N. Gravier name engraved on end.

The
G. & N. Gravier Mainsprings
For Waltham, Elgin, Hampton, Rockford, Illinois, Howard and Lancaster.

The only Reliable Mainspring in the World.

A Trial will convince. **$1.25 per dozen.**

Why are these the Cheapest Springs for You?

Because we guarantee you against a loss of more than ½ dozen to the gross, which surely is money in your pocket, besides time saved in putting another Spring into your watch.

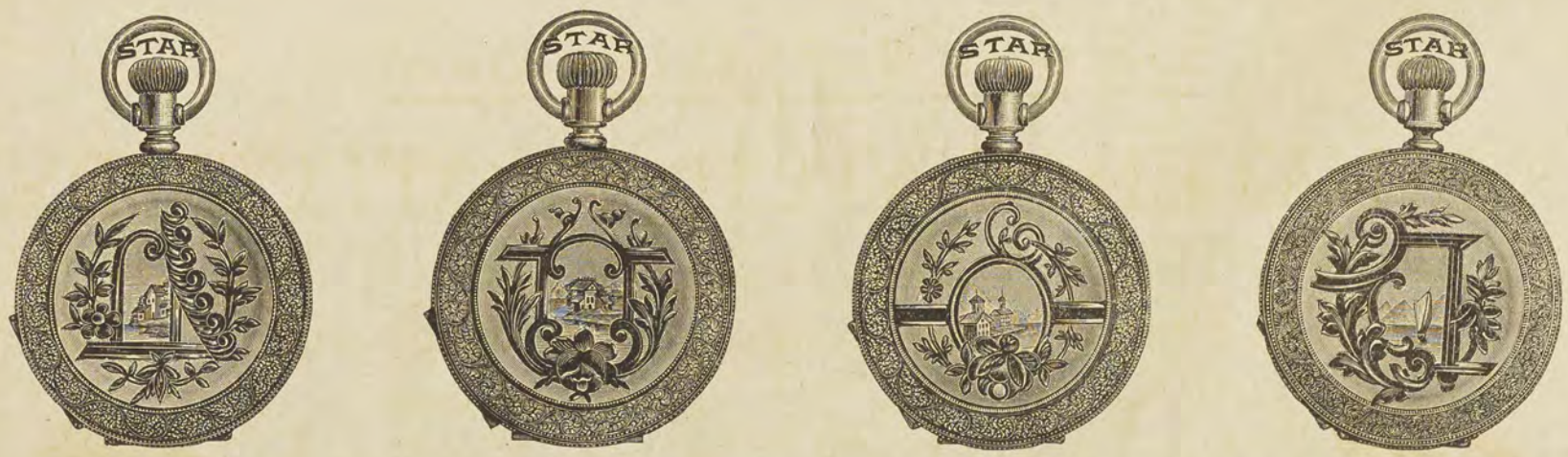
1 Doz.
Elgin Mainsprings
S
18 O S
Glickauf & Newhouse
G. & N. Gravier.

Fac-simile of outside wrapper.

☞ Send for some and try them, and if they are not as we guarantee, we will take them back from you.

Remember, These are not Sold as Cheap as the Common Goods in the Market, but as Cheap as any American Made, although superior than those.

We have now in stock a full line of FLINT GLASS GENEVA WATCH CRYSTALS, which for Whiteness in Color and Accuracy in Measurements we place in the market for $1.50 per gross, being far better equivalent for the money, than any ever offered to the Trade. Our Extra Thick Mi-Concave, at $3.00 per gross, is a very superior Glass, and well porportioned; not having the convexity so unshapely as in most Glasses.



Star Filled Gold Watch Cases.

WHO is the favorite Candidate? Not for the Presidency but for Public Favor, in the way of a cheap Gold Filled Watch Case. Fortunately, this question is not as difficult to answer as it is to name the next occupant of the Presidential Chair; because the Star Filled is nominated and elected by public acclamation to the position of supremacy. And why should it not, standing as it does on the platform of Perfection of Color, Workmanship and Engraving. There is another plank in its platform solid to the core, without knot or wind-shake, viz., a guarantee to wear for ten years, by a Company perfectly responsible.

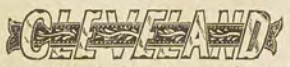
Keystone Watch Case Company,

Philadelphia.

New York. Chicago.

Prices per dozen.

No. 2. Rolled Plate raised edge, and letters and figures with red, white and blue enameled background. $3.20



No. 4. Rolled Plate Engraved. $2.00.

No. 5. Rolled Plate Engraved. $2.50.

No. 1. Rolled Plate raised edge, and letters with hard enameled background. $3.20.

No. 3. Rolled Plate raised edge, and letters with enameled background. $3.20.

No. 9. Rolled Plate raised edge and letters. $3.20.

Rolled Plate cup with glass covered photograph.
No. 6. Sleeve Buttons (pairs), $3.20. No. 7. Lapel Buttons (single), $1.60. No. 8. Scarf Pins, $1.60.

No. 10. Charm. Rolled Plate showing Mr. Thurman on reverse side. $3.00.

No. 11. Charm. Rolled Plate showing Mr. Thurman on reverse side. $3.00.

No. 12. Badge. Rolled Plate. $3.00.

It is still undecided

as we write this,

As to who shall be
The Nominee
Of the Republican Party.

But we shall have as soon as possible after the Candidates are named, a full line of Rolled Plate Pins, Charms, Badges, Scarf-Pins, Sleeve Buttons, Lapel Buttons, etc., suitable for our Republican Friends, and will be pleased to supply them to the Jewelry Trade at Rock Bottom Prices.

We present here a few of the best selling patterns for the use of our Democratic Friends, the prices quoted are subject to the same discounts as the jewelry shown in our 1888 Book.

Push the sale of the Campaign Goods of all Parties, thus creating enthusiasm, and bringing out a full vote, and then "May the best Man win."

In conclusion, and with our usual modesty, we will say, SEND US YOUR ORDERS, not only for these Campaign Goods, but for anything and everything you may need, and we will guarantee to give you prompt and careful attention, and honest goods at honest prices.

In ordering goods, please remember THAT WE SELL TO THE LEGITIMATE JEWELRY TRADE ONLY, AND THAT WE GUARANTEE ALL OF OUR GOODS TO BE EXACTLY AS REPRESENTED.

Also, that when any dealer offers you goods at less than our prices, we simply ask you to compare the finish, and test the quality. The rest we are willing to leave to your judgment.

Yours respectfully,

Otto Young & Co.,

Chicago, Ill.

Importers and Jobbers of Diamonds, Watches, Jewelry Tools, Materials, Optical Goods, etc.

Something New and Low Priced

INSULATED WATCH PROTECTORS.

Will Protect all Watches against Magnetism.

Convenient in Use.

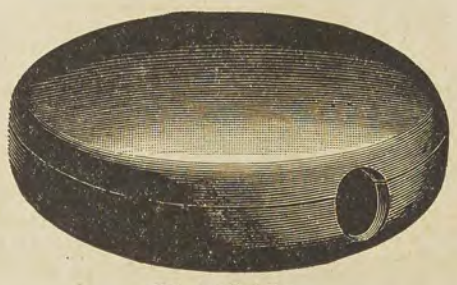
Made in various Sizes.

Perfect in Action.

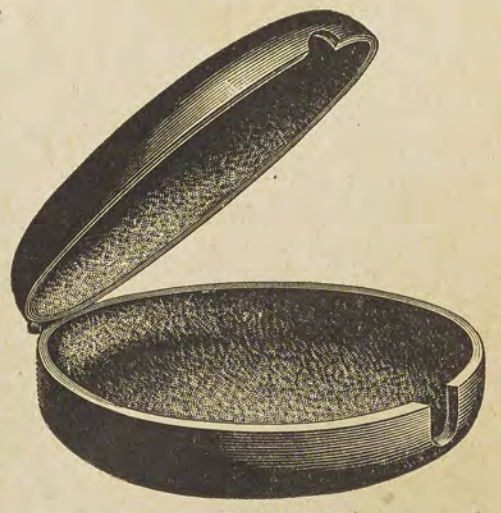
Price within the reach of Everybody.

For Sale by all Jobbers and Wholesale Dealers.

Pat. Applied For.



Pat. Applied For.



Pat. Applied For.

Manufactured only by the

Newark Watch Case Material Co., Alex. Milne, President.

Manufacturers of PENDANTS, BOWS, CROWNS, SPRINGS, etc.

New York Office: No. 41 Maiden Lane.

Mention this Paper.

Factory: No. 19 Ward St., Newark, N. J.

Jas. Boss Filled Cases.

"Three males a day, and all the time bether cookery," is what "Pat" said he would have if he was rich. He did not ask better meats, these were as good as could be ; all he desired was a constant improvement in the way it was served. So in Boss Cases. All we can do for you is to make them a little more elegant day after day.

Keystone Watch Case Co.,

Philadelphia.

New York. Chicago.

Keystone Solid Gold Cases.

WE all expect the greatest perfection to exist in the article for which we pay the highest price. It follows then as a foregone conclusion that as we pay more for a solid gold watch case than any other, we should get in return for our money the highest and most perfect specimen of case making art. Acting from these convictions, we have produced our Solid Gold Cases of the standard quality of 14 K. throughout (which we guarantee), combining with this the most perfect workmanship in fit and finish, together with the crowning effect of high art engraving.

Keystone Watch Case Co.,

Philadelphia.

New York. Chicago.

No Charge.

WE have been of considerable help to the Trade in the past few years, in the way of securing workmen for jewelers, finding positions for workmen, etc. We keep a Register of all such applications, and act as "go-betweens" to parties that might wish to come together for their mutual advantage. We make no charge for such service, and you are cordially welcome to the use of our Register and of our service in connection therewith.

Write us if you are a

Jeweler Wanting a Workman,
Workman Wanting a Position,
Jeweler Wanting to Change Location,
Beginner Wanting to Establish Himself,

and we will do all we can for you.

Bowman & Musser,

Jobbers in

Watches, Chains, Tools and Materials,

Lancaster, Pa.

Have you seen the

14 K. 1-4 Gold Chain of

R. F. S. & Co.'s make?

THEY are warranted to wear TWENTY-FIVE YEARS, and are made in open curb trace and cable links. What use has any one for a solid gold chain that will soon have to be sold for old gold at a GREAT SACRIFICE, when for one-fourth of the money they can procure an article equally satisfactory?

Krementz & Co.,

184 and 186 Broadway, Cor. John Street,
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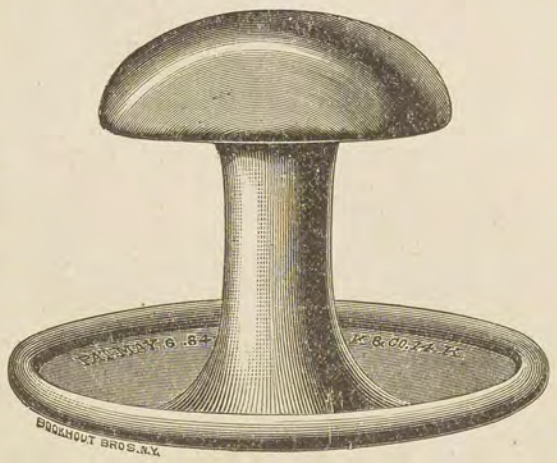
Manufacturers of

Fine Gold Jewelry,

and the Well-Known

"ONE-PIECE"

GOLD COLLAR



BUTTON in ten sizes.

Ask your Jobber for them or address

Krementz & Co,

182 and 184 Broadway, New York.

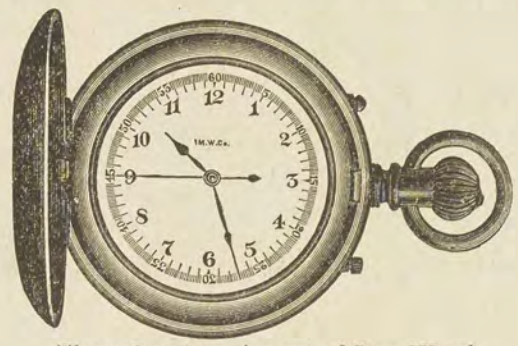
Manhattan Watch Co.,

Manufacturers of

Low Priced Watches.

Sold DIRECT to the RETAIL TRADE.

List Prices $5.00 to $15.00. Discounts given on application.



Three-Quarters size cut of Stop Watch.

Movements with or without
Sweep Seconds and Stop Attachments.

Nickel-Silver and Gold Plated Acid Proof, Open Face and Hunting Cases.

Every Watch Fully Guaranteed.

Sample of any style will be forwarded by registered mail to any dealer not having them on application with business card.

Office and Salesrooms | 234 and 235 Broadway, New York City.

Opposite Post Office.

S. C. Scott. Established 1847. J. T. Scott.

The Latest:
"THE LEADER,"

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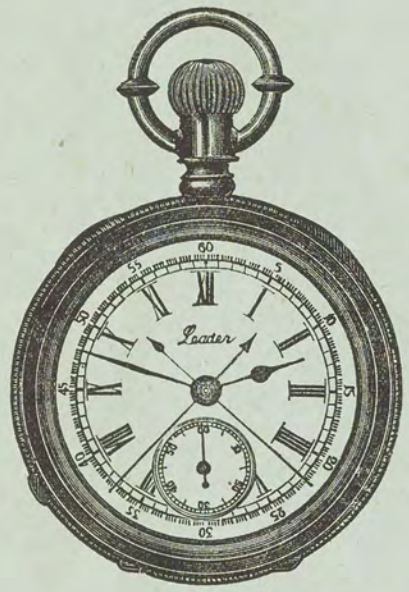
Open Face



Split Second Watch

in the Market.

Also our

"SUCCESS"

Initial Ring

Complete Ring. Part of Prong Exposed.

Ring without Initial. Initials (Front View.) Initials (Back View.) Prong.

Ask our Travelers for them and send for samples.

J. T. SCOTT & CO.,

4 Maiden Lane, - - New York.

Jobbers in all kinds of

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Importers of SWISS WATCHES, including a full line of Chatelaine Watches in Gold, Silver and Nickel.

Also a full line of

Diamond Goods,

Comprising Loose Stones and Mounted in Ear-Drops, Lace-Pins, Scarf-Pins, Collar-Buttons, Fancy and Soltaire Rings.

Sole Agents for Chas. F. Tissot & Son's Fine Movements, fitting the 6 and 16 Size Elgin Cases; Also for Nickel Open-case Roskopf Triumph-Roskopf Watches.

Largest and most complete Stock ever offered.

Would call special attention to our full and complete line of Chronograph Watches.

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TRAVEL ON THEIR REPUTATION.

AN unsullied character for thirty-five years, "in which there has been no variableness or shadow of turning." Dealers, who handle these superb cases, can rest assured the quality will never deteriorate.

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