Clear Off the Barnacles.

The following, from the *American Artisan*, to business men is worthy of the consideration of a good many manufacturers and merchants who are complaining of the stagnation of trade in their respective lines:

Whatever your business, whether mercantile or manufacturing, if you are not progressing, you are at a standstill or receding. This should not be in these times of competition and hustle. Either you are in the rut of old fogyism, in the wrong line or position, or you are indifferent to business success. Possibly, like an old ship, you have attracted barnacles by inactivity, or your energy has become stagnated like the inactive pool, or keener and more go-ahead rivals have depressed you, and, thus shorn of your old time powers, you have contracted the not-up-with-the-times fever and are going to the wall. Now, whatever is the matter, you should either stop business or overhaul the ship, for, as a writer aptly says, "Old ships lying at anchor may have the appearance of soundness and the outward evidence of strength, usefulness, and sea-going qualities, but when carefully examined for a sea voyage are often found to be covered with barnacles and to be affected with dry rot. When such a vessel, no matter what good it has done or what use it has been in the traffic and carrying trade, is condemned, it is at once replaced by a new or more modern one that is in perfect order and fully seaworthy. What is true of vessels is often true of men also, and especially of merchants in trade who have been anchored too long in old-time ways and methods of doing business, and, consequently, do not keep up with the progress and spirit of the age."

Progress of Electric Installations in London.

In electrical engineering, or the practical application of the science to the larger classes of work, the United States have usually been considered in advance of England. The electric light has hitherto been used here with a profusion unknown abroad, and electric railways are multiplying so rapidly that it is impossible to keep a reliable census of their number. But recently the English engineers seem to have taken a lesson from our experience, and in London some very important developments are in progress. One of these is the introduction of alternating current lighting from central stations.

The House to House Electric Supply Company have just completed a station at West Brompton, using the Lowrie-Hall system of alternating current supply. Babcock & Wilcox boilers supplied by Worthington pumps are used for generating steam for three compound engines of 250 horse power. These drive the dynamos by rope belts, seven 1½ inch endless ropes being used for each dynamo. The ropes run in as many grooves turned in the flywheel rim of the engine and face of the driving pulley of the dynamo. Each dynamo can give an output of 100,000 watts at 2,000 volts potential, with 10,000 alternations per second. The lighting circuit is carried underground. The leads are inclosed in iron pipes 3, 4, and 5 inches in diameter, and for one mile distance a loss of two per cent is expected. Transformers are used to reduce the potential, and a very ingenious meter is employed. It consists of a secondary battery in circuit with a decomposition cell and the lamps and connections of the house. The alternating current, when a lamp is lighted, passes through the two cells without any effect, but the secondary battery begins to act on its own account, and as lamp after lamp is thrown into circuit, it acts more strongly, precipitating metal in the decomposition cell. This metal is weighed from time to time as in the Edison meter, and gives the amount of energy used. The other details of the plant show much ingenuity, and indicate a probability that London may yet lead us in central station alternating current lighting. The new station partly occupies a piece of land 470 feet by 60 feet, room being left for extension.

This is not all. The metropolitan company propose, within a short time, to have a station on the Westinghouse plan, for 25,000 lights, in operation in Sargent Street. This will bring the leading American alternating current system face to face with the English one, just described as installed at West Brompton.

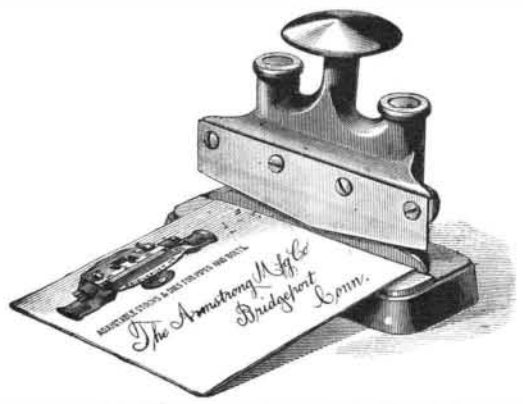
Electric traction is also advancing in London. A new underground railroad crossing under the Thames is in process of construction. It is called the Southwark subway. It consists of two tunnels, of segmental iron plates, 10 feet 6 inches in diameter and three miles long. The cars are to be driven by electricity, the current being taken from overhead conductors of Dr. John Hopkinson's system. The generating plant of over 1,000 mechanical H. P. is placed at one end of the line, and three large Edison-Hopkinson dynamos are to be used as generators. Fourteen locomotives, each of 100 H. P., are to be used, each capable of taking a train with 100 passengers at 25 miles an hour. As there are six stations, powerful engines are needed to start the trains quickly. It is proposed to give but three minutes' headway.

Finally the principal underground line, the Metropolitan Railway Company, are about to try storage battery locomotives, with a view to ultimately adopt electricity in place of steam. The use of accumulators is to be experimental only, the ultimate end being the adoption of a continuous conductor system. One trouble has been with the brake question, and the *Electrical Engineer* alludes to the Widdifield & Bowman electric brake, recently described by us, as being of interest in this connection.

For underground railroads, the conductor system of supplying current is peculiarly available, because the wire will never be coated with ice. The electric engine seems the perfect solution also of the ventilation question, that has given so much trouble in the London underground lines.

ARMSTRONG'S ENVELOPE CUTTER.

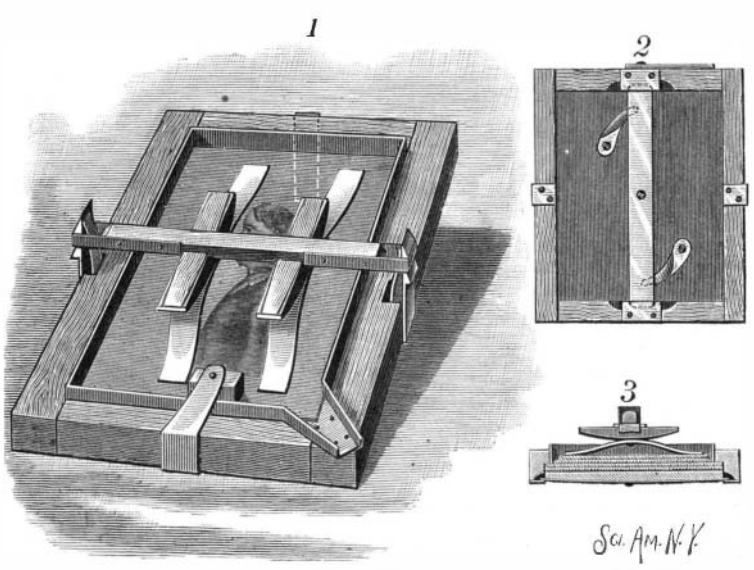
The accompanying illustration shows very clearly the operation of this ingenious envelope cutting machine. With a single stroke the movable knife cuts off the end of the envelope, without any injury to the contents of the envelope, and the springs instantly return the knife to its original position, enabling the operator to open the envelopes as fast as they can be fed to the cutter. The envelopes are opened much more rapidly and perfectly than in the old fashioned way, where mutilation of the contents is of ordinary occurrence. The cutter is handsomely finished and is placed on the market by the Armstrong Mfg. Co., the well known manufacturers of hardware specialties, of Bridgeport, Conn.



ARMSTRONG'S ENVELOPE CUTTER.

AN IMPROVED PHOTOGRAPH PRINTING FRAME.

A transferring and printing frame more particularly designed to be used in producing and transferring picture films to celluloid sheets is illustrated herewith, and has been patented by Mr. Cornelius T. Cain, of Owensboro, Ky. Fig. 1 is a face view of the frame as in use, Fig. 2 being a rear view, and Fig. 3 a vertical longitudinal section. The frame is recessed in its rear to receive the plates and clamping board, and has a ledge arranged as a lining along its inner sides projecting slightly above the front surface to form a trough, having a spout, to facilitate running off the solution used in preparing the celluloid plate or card. The rear clamping board is faced with a sheet of rubber, and has centrally pivoted to its back a turn-buckle spring bar, to hold the celluloid plate firmly in position and to make a close joint with the trough as formed by the ledge. There are also cams which give increased tension to the spring bar, and lock or hold it when engaged with the clips. A spring clamping device is also applied to the front of the frame, and is adjustable up or down to suit different thicknesses of the glass or plates. The frame has at one end a spring pressure device, with soft or rubber bearing block, to hold the transfer in position on the celluloid plate before clamping it down, and at the opposite end is a pivoted leg that may be turned down to hold the frame in an inclined position to keep the solution at the bottom preparatory to putting the glass plate down. The process for which this frame is especially adapted consists in preparing a picture film or transparency by the collodio-chloride or by the ordinary wet collodion process, toning and fixing the picture film, drying it, and applying thereto a celluloid card that has been flowed with a solution of gum camphor and alcohol, allowing the card to dry and stripping it from the glass. Pictures thus made not only present all the fine details in strong relief, but have a remarkable beauty and softness of finish.



CAIN'S PHOTOGRAPH TRANSFERRING AND PRINTING FRAME.

A Valuable Blue Rediscovered.

Prof. Fouque, of the College de France, at the last meeting of the Academy of Sciences (February 18), read an important memoir on the blue pigment used by the ancient Romans for wall decorations. It is a magnificent color, as bright to-day as when first applied, and is found in the fresco paintings of Pompeii and other monuments dating from the Roman period. Its production is one of the lost arts, as there is no record of the pigment being used after the invasion of the barbarians. Modern chemists have more than once tried to ascertain the nature of the compound, but beyond the point that it contains copper, nothing definite was discovered. M. Fouque thinks the lack of success is owing to the fact that the ancients followed no exact rules or proportions. Having secured comparatively copious specimens of the cæruleum—such is the old name of the pigment—he has succeeded not only in analyzing it, but also in finding a process for making it regularly in quantities. The compound is, according to M. Fouque, a quadruple silicate of copper and silica, which may be prepared with silica, oxide of copper, and lime, with or without any fluxes. The ancients simply made it with sand, calcined or roasted copper, and lime, but kept to no regular proportions. He worked differently and managed to obtain an exact chemical combination, which is neither a glass nor an enamel, but a crystalline substance of the composition already mentioned. The crystals are perfectly definite, and strongly dichroic, appearing deep sky-blue when viewed from the surface and pale rose edgeways. The only difficulty in the preparation is the heating. A bright red heat is necessary to effect the combination, but on heating too much the blue color is lost and an aventurine green glass is obtained—a circumstance which must have rendered the process a delicate one in old times. Nowadays, however, with the means at our disposal, the difficulty is trifling, and kilogs. of the cæruleum could easily be made in the College de France laboratory. It is a very stable pigment, so far as chemicals are concerned, as it stands, unaffected, boiling with sulphuric acid or potash lye, as well as quicklime and hydrogen sulphide. That it will be air and water proof is abundantly shown by the old fresco paintings. M. Fouque considers, therefore, it would be a great boon to the arts to produce the blue commercially, and promised his assistance to any French manufacturer who will undertake the fabrication. While examining the fine specimens of the rediscovered blue presented by M. Fouque, M. Berthelot, who is well versed in ancient chemical lore, remarked the cæruleum in question was no doubt the Alexandria blue, known in Egypt about the beginning of the Christian era, and taken to Pouzzoli, whence its use spread all through Italy. He agreed with M. Fouque that the pigment was unknown to the Assyrians and ancient Egyptians, and is no doubt a most valuable one.

Myrtol.

Myrtol is a perfectly clear fluid, and represents that constituent of oil of myrrh which boils at 160° to 170° C. Linderm is the only clinician who has instituted any detailed trials with myrtol. Eichhorst himself was first to apply it in gangrene of the lungs. The results which he obtained were so surprisingly favorable that he has used the drug in numerous cases, and is now convinced that, as a disinfectant of the air passages, myrtol has not its equal. The drug is best given in gelatine capsules (à 0·15, prepared in Paris, or by Pohl, of Schönbaum-Danzig). If a capsule is crushed, the peculiar odor clings to the room for a long time, and if a capsule is swallowed, the breath emanates the characteristic odor for many hours, and often for a couple of days. In putrid bronchitis and pneumonic gangrene two to three capsules should be taken every two hours to deodorize and disinfect the parts. The effect is rapid, and a few capsules suffice to remove the bad odor, and often to produce a permanent improvement. The drug is, however, apt to cause a temporary loss of appetite. Myrtol has also been tried against tuberculosis, but the drug has proved utterly useless against the bacillus tuberculosis.—*Therapeutic Gazette.*