A NEW LABORATORY TROMP.

The suction apparatus formerly used in laboratories consisted of a bottle from which water was allowed to flow, and which had the inconvenience of being cumbersome. For obtaining a vacuum, recourse was had to the air pump—a costly apparatus; and for forcing air into the blow pipe, the device used was a bellows operated by foot. All this is now replaced by the suction and force tromp, which merely requires to be connected with the faucet of a water pipe. With this remarkable apparatus, one has nothing to do now but open and regulate two cocks in order to obtain a continuous supply of air under pressure. The apparatus is shown in its entirety at T, in Fig. 1, where are also shown some of its applications. In the first place, it communicates with a safety bottle, F, which is provided above with a valve to prevent the water from entering the vacuum apparatus—an event that would occur should the pressure of the water happen to diminish suddenly in the pipes. R is a board, to which are affixed two glass cocks, forming a double T. This arrangement permits of obtaining a vacuum in two different directions. M is a pressure gauge that shows the degree of the vacuum produced in the various apparatus. M′ is a pressure gauge that can be moved from place to place. These two instruments are so constructed that they can be easily filled and cleaned, and their scales are detachable. C is a bell glass with polished edges, and which is provided at the top with a polished glass cock. It rests upon a base which has been polished with emery, and which is cemented to a metallic frame supported by four legs. This bell glass covers a stand upon which capsules or vessels containing extracts may be placed. Under the lower shelf of this stand is placed a vessel containing sulphuric acid. The degree of vacuum is ascertained through a small manometer.

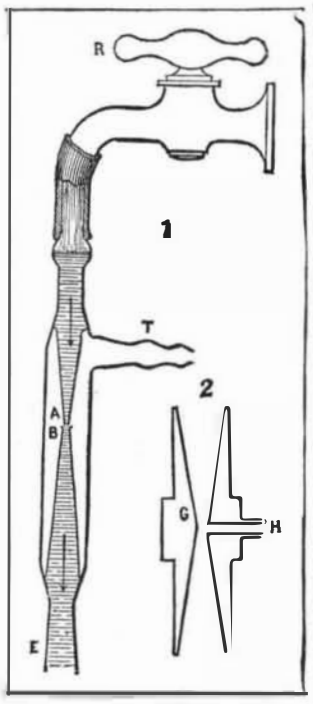


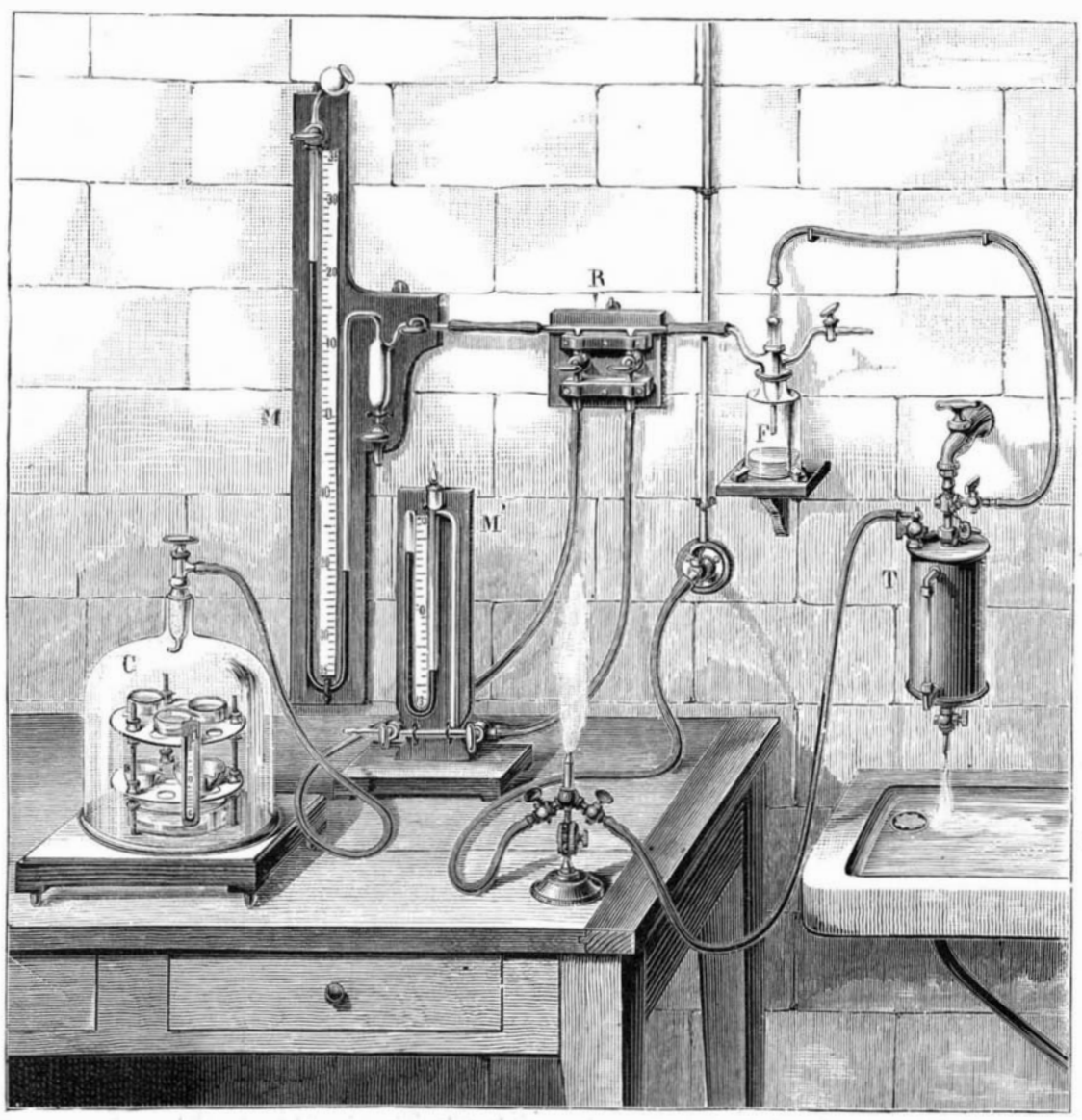
Fig. 2.—PRINCIPLE OF THE TROMP.

In the foreground may be seen the gas burner that the tromp converts into a blow pipe when air is forced into it. It only remains now to explain the mode of operation of the apparatus. The tromp is based upon the principle of the Giffard injector, and was devised in 1872 by Mr. Lane, a pupil of Deville's. Shortly after that period, the brothers Alvergniat put the first models of the apparatus into the market, and the use of them has now become general in laboratories.

The tromp, which is made of glass, consists of two conical nozzles, A and B, arranged as shown in the diagram in Fig. 2. The water enters through the faucet, R, passes from cone A into cone B, as in the injector, and, on making its exit, carries along with it the air that it has sucked in at T. The water that flows out at E is thus mixed with air. The suction of the tube, T, is very strong, and, upon putting the tube in communication with a bell glass, it is possible to obtain a maximum vacuum, which varies in winter and summer according to the tension of the aqueous vapor.

The apparatus may be made of metal. Mr. Alvergniat, in his new apparatus, has connected the two cones at G (2, Fig. 2), and left but one aperture, H, or two aptures, as shown in Fig. 3, which represents one of the metallic tromps at *t t′*. The tube through which the water flows is prolonged in a metallic cylinder, G. If the lower cock, D′, be nearly closed, a certain quantity of water will accumulate in the cylinder and compress the air therein, and the latter will escape under pressure, through the cock at the top. It is possible to obtain a pressure of 0·10 m. of mercury. The discharge of compressed air is regulated through the cock, D′.

This exceedingly practical apparatus is destined to render valuable services to physiologists, botanists, and all laboratories of science.—*La Nature.*



LABORATORY TROMP AND OTHER APPARATUS.

Capitalists and Inventors.

Inventors often complain of the difficulty experienced in inducing capitalists to join them in their enterprises. No doubt there is often good ground for such complaint. Not infrequently, however, we think the blame rests as much with the inventor as with the man of money. It must be remembered that usually the inventor studies the field more closely than the capitalist, because he has more time, and his attention is more closely directed to the investigation. It can hardly be expected that the man who devotes one hour to a superficial investigation of the subject can explore it so deeply and satisfactorily as the one who has given to it months and perhaps years. The capitalist is often blamed for not seeing into the advantages of an enterprise, when the fact is it has never been presented to him in the right light. Some one makes an important discovery, which, if utilized, will seemingly yield large results. Capital is invoked, but no systematic method is employed to demonstrate that the returns for an investment in working this new field of discovery will yield profitable results. Inventors too often think that capitalists should take their simple assertion that the invention will yield large returns. This would be very well if inventors as a class were not over-sanguine, and their predictions in a business way did not so frequently prove futile.

Every investor has a right to have some reasonable assurance that his money will be spent in a profitable direction. Money is the great lever that moves the world. If judiciously employed, it is a source of great gain; if wrongly employed, it too often becomes powerless for good. Every man, therefore, who would seek the aid of capital in furthering his plans for introducing an invention should first be prepared to show the whole state of the art covered by such invention, and wherein the improvement exists. Second, he should, if possible, show what particular market needs to be supplied with such improvement, and something approximating to the returns which reasonably may be expected. Third, he should have some well settled plan of introducing the new product or furthering the new scheme. Fourth, it should be supported by well considered arguments tending to the convincing of the men whose money will be embarked in the enterprise. Because, however sanguine the inventor may be, the man who is called upon to risk his money should be shown a reasonable hope for obtaining fair returns, and, further, that investment is measurably safe.

The general denouncement of capitalists for their proverbial slowness in coming to the rescue of inventors is too often ill timed. There are millions of dollars to-day invested in experimental plants and in promoting new discoveries. We are glad to say that in the majority of cases these investments have proved very lucrative. Probably no field of enterprise offers more allurement than this, and if capital is not always secured, it does not follow that the man with the money is to blame. Inventors must employ business methods when approaching businessmen. If they are not capable of doing this, let them employ a third party, who, in many cases, furnishes the missing link between the patent and the bank account.

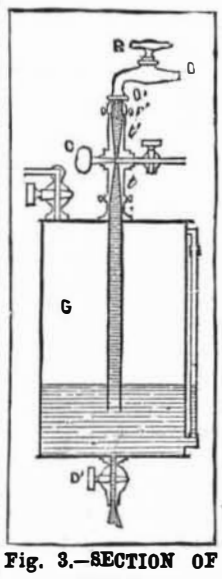


Fig. 3.—SECTION OF THE APPARATUS.

There are without doubt thousands of patents which have never been introduced to the public, which would yield very large fortunes to any one who would take them up and work them properly. Whose fault is it? Probably not the capitalists', for they are, generally speaking, only too glad to find a good way to invest their funds. The blame, if any, rests upon the inventor, who, in many instances, places so high a value on his invention that capitalists cannot afford to assume the risk of introducing the new thing, or because the inventor has not taken the right method or adopted the proper plan of bringing his matters to the attention of the men whose aid he invokes.

Inventors, often, get too easily discouraged. They bring their invention before three or four capitalists, none of whom feels disposed to introduce it, and they immediately give up, blaming the stupidity of capital, and bemoaning their own sad lack of funds. Now, the commercial traveler does not thus easily lie down under difficulties. He moves on from town to town. Each negative answer he gets only urges him forward to the man who he is sure sooner or later will be found to say yes. If the inventor had more of the commercial instinct, more of the commercial man's persistency and push, more of his indomitable will and pluck, he would succeed. There is far less trouble with capitalists than with inventors themselves. It really seems as though in most cases a "go-between" were absolutely necessary. When the inventor himself fails of eliciting help, the best thing he can do is to obtain the services of some keen, shrewd, far-seeing business man to help him out of his difficulty. If his invention is worth pushing, nine cases out of ten there will be little trouble in procuring financial help if the proper methods be employed.—*The Industrial World.*

Nickel Bromide.

Nickel bromide has been employed medicinally as a hypnotic and a sedative. According to Mr. A. Drew (*Amer. Jour. Pharm.*), it may be prepared conveniently by treating granulated nickel with bromine under water, and carefully evaporating the dark green solution, when the salt is obtained in deep green deliquescent crystals, freely soluble in water, but much less soluble in alcohol. The salt is conveniently administered in the form of a sirup, which may be prepared by placing 377 grains of bromine and 137 grains of nickel in a flask containing 12 ounces of water, digesting at a gentle heat until the reaction has ceased, filtering, and then adding 24 ounces of sugar and sufficient water to make 32 fluid ounces. The sirup, which is of a beautiful green color, contains in each fluid drachm 5 grains of crystallized nickel bromide, which is an average dose.