

## BENZINE BLOWPIPE.

Dr. Paquelin has recently made to the Academy of Sciences two communications on the subject of some new apparatus, to which we believe it our duty to call the attention of our readers. Let us begin with the new mineral oil blowpipe, Fig. 1. This apparatus consists of two rubber bulbs forming a double bellows operated either by the foot or hand, of a metallic receptacle forming a carbureter, and of a blowpipe properly so called. The air expelled from the bellows traverses the carbureter and becomes charged therein, in passing through a plunge tube, with benzoline, the fuel of the Mille lamp. This product weighs from 700 to 710 grammes per liter. Mr. Paquelin employs also as a saturator an atomizer of the Giffard system, by means of which the air expelled by the bulbs, after atomizing the liquid combustible, becomes impregnated with its vapors. The carbureter is characterized by its measuring and mixing cock, the plug and shell of which present a special structure. In fact, the plug, whose travel is a half circumference, is provided on the surface with a channel inclined upon its axis. The seat is so channeled that a portion of the air from the bellows goes directly to the carbureter and another part directly to the blowpipe, becoming mixed in so doing with the hydrocarbureted air that issues from the carbureter. This point is indicated by the aspect of the flame of the blowpipe. This flame, in the first place either strongly tinged with white and fuliginous or else insufficiently supplied with hydrocarbureted vapor, becomes purified to a greater and greater degree, until it assumes a very pure violet blue color of extreme clearness. It is then at its maximum of calorific intensity and its color has the brilliancy and softness of a water body-color painting. The combustible is thus utilized with its maximum of effect.

The blowpipe is formed of a single tube, like the jeweler's blowpipe. Its originality resides in the arrangement of its burner, which emits two kinds of flames—a central flame with a very finely tapering point and two small lateral flames in the form of petals or crown, according to the direction of their channels, these latter serving to light the first and keep up its activity.

The melting of platinum may be begun with the flame obtained. Upon placing a cock of ordinary structure between the bellows and the measuring cock, the height of the blowpipe flame may be graduated at will. We can also graduate the diametrical dimensions of it. To this effect, it suffices to modify the ratios between the section of the orifices of the burner and that of the lateral orifices. We thus obtain a series of flames, which measure from one millimeter at the base to three or four millimeters or more.

The blowpipe which we have just described will find an application in workshops and laboratories. Pyrogravure artists also will be able to make use of it for stumping their wood. Fig. 2 represents a new model of Mr. Paquelin's well known thermo-cauter. The carbureter is of metal as in the preceding model, but of octagonal section, and may be adapted, through a large hook, to a girdle between the body and clothing. Owing to this, it is possible to transmit to the combustible liquid a constant temperature. The rings of the hook serve as pinchers for dividing the cauter in case of gripping. Here there is no plunge tube. The mineral oil is contained in sponges, and there is thus no upsetting of the liquid.

The charge of the carbureter suffices to supply the cauter for ten hours at the least. The products of combustion are expelled beyond the hand of the operator.

In the use of the large cauters, one of these products, steam, which is formed at a temperature of about 1,800°, is used for refrigerating the starting point and the channels that form a continuation of it. The handle is swept internally from one end to the other by a jet of air coming directly from the bellows, and which is divided at the lower part so as to form around the cauter holder three zones of isolating air.

These different conditions permit of reducing the handle of the instrument to such dimensions that it may be used as a crayon, and that the hand may be in close proximity to the operating field. It measures but 12 millimeters in diameter.

The older cauters widened out from the point to the base, but Mr. Paquelin has reversed that arrangement, for the new cauters widen out from the base to the point, the penetrating part only preserving its former dimensions. The instrument thus, with a great saving in platinum, possesses all its old advantages, and by this fact becomes a sort of *passe-partout* cauter.

The large cauters differ from the others in dimensions only in the diameter of the part formed of platinum.

Both the large and small cauters are mounted upon

a piece which is less than six millimeters in diameter and all screwed to the same handle. The manufacturer has reduced the variety of the forms of the cauter to two main types—the handle and the point; and, taking into account the thermo-cauter of 1876, has arranged his new carbureter in such a way that the old cauters may be utilized.

The alcohol lamp of the first thermo-cauter is done away with. Use is made of but one kind of combusti-



GERNSHYM'S KNITTED FABRIC.

ble—mineral oil. The cauter is lighted by any flame whatever or by means of the blowpipe described above, which serves also to clean it in case of need.

The applications of the Paquelin thermo-cauter are various, by reason of the forms and dimensions of the cauter. It answers the requirements of all kinds of surgery.—*La Nature*.

## Pressure of Electrolytic Gas.

An interesting experiment has been lately made by M. Chabry, of the Societe de Biologie, with regard to the pressure which can be produced by electrolytic generation of gas in a closed space. While the highest pressure before realized in this way was 447 atmospheres (Gassiot), M. Chabry has succeeded in getting

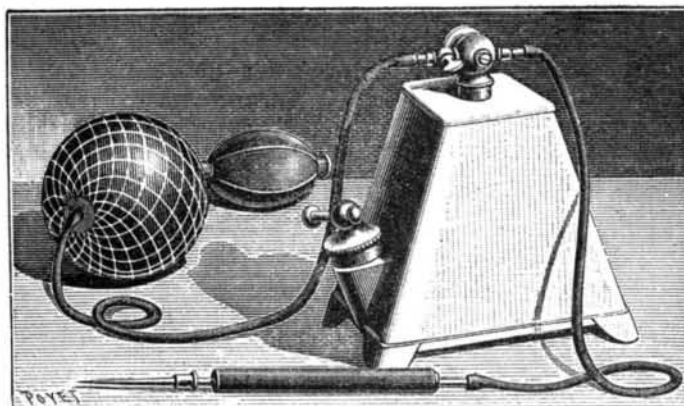


Fig. 1.—PAQUELIN'S BENZINE BLOWPIPE.

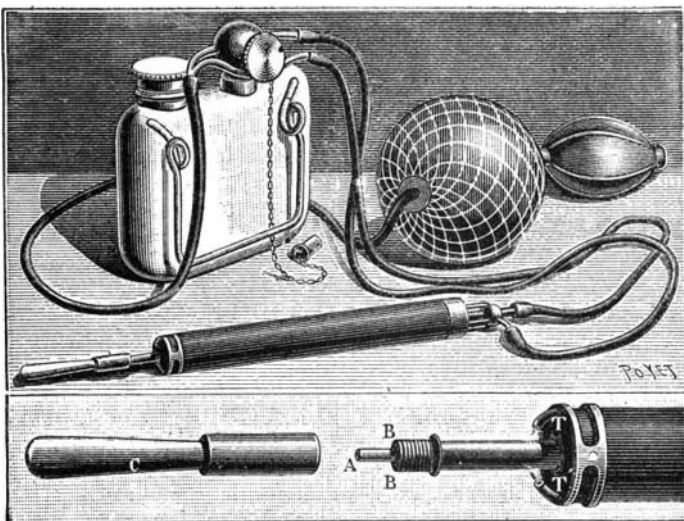


Fig. 2.—NEW MODEL OF THE PAQUELIN THERMO-CAUTER.

C. Details of the point of the thermo-cauter. A. Tube to carry carbureted air. BB. Tube for the return of products of combustion. TT. Condensation canals.

as high as 1,200, or 18,000 pounds to the square inch; and the experiment was broken off merely because the manometer used got cracked (without explosion). The electrolyzed liquid was a 25 per cent soda solution. Both electrodes were of iron; one was the hollow sphere in which the gas was collected; the other an inner concentric tube. The current had a strength of

1½ ampere, and was very constant during the experiment, which was merely one preliminary to a research in which very high pressures were desired.

## AN IMPROVED KNITTED FABRIC.

Mr. Max Gernshym, of the firm of Henry Gernshym & Bro., manufacturers of cardigan jackets, No. 85 Franklin Street, New York City, having mills at Nos. 32 to 50 Stockton Street, Brooklyn, N. Y., has recently patented a new knitting machine for making tubular knit fabrics. The fabric is used for producing a new style of highly ornamental garments, such as cardigan jackets, as represented in the annexed cut.

The back of the garment is of the ordinary style, made with plain ribs formed with cardigan or other stitch, while the front is knitted to produce artistic designs to heighten the appearance of the garment, without impairing the quality of the goods, but, on the contrary, making a more durable and better fitting garment. Buyers of such goods, who are always on the lookout for novelties suited to their trade, should not fail to inspect the line of garments made by this new invention. On this machine all grades of cardigan jackets are produced.

## Damage to Cloth.

A case of more than usual interest to makers and users of cloth has recently been decided in the Sheriff Court of Glasgow. The pursuer was Mr. Jas. Dyson, muslin manufacturer in Manchester, who got some gray cloth made to order by a manufacturing company. On delivery the cloth was examined, but not analytically, by Mr. Dyson, and sixty-four pieces were sent to Messrs. A. Macnab & Co., calico printers, near Glasgow, to be printed with handkerchief designs. Messrs. Macnab, in accordance with their usual process, singed the cloth with a gas-singeing machine and then wet it with cold water by means of a bleaching machine preparatory to bleaching. In the process of wetting the cloth several pieces burst in the washing machine, and on examination it was discovered that the weft of the cloth was sound and that the damage was caused by the warp having given way. The cloth was returned to Mr. Dyson and he then raised an action against Messrs. Macnab & Co. for its value, amounting to about £75, alleging he had supplied good cloth and that it was destroyed by Messrs. Macnab through carelessness and negligence in the process to which it had been subjected. The trial lasted two days, and the pursuer endeavored to show that the cloth as delivered to Messrs. Macnab was good, sound, merchantable cloth and that it had been damaged in the process of singeing, either by inequality in the gas jets or by one side of the cloth being subjected to greater heat or to greater tension than the other. The defendants, on the other hand, led proof to the effect that their machinery was in good order and condition, that the gas jets were all equal, that it was impossible for one side of the cloth in the process of singeing at their works to be subjected to a greater heat or to a greater tension than the other, that even assuming one side was subjected to a greater heat or tension than the other, the weft and warp would in that case both be damaged, whereas in the cloth in question the warp only was damaged, that the cause of the damage, therefore, must be something in the warp, which was not in the weft, that the warp which was subjected to chemical analysis contained both chloride of zinc and chloride of magnesia, that the weft was free from these ingredients, and that chloride of zinc and chloride of magnesia when subjected to heat, such as the cloth would be subjected to in the process of singeing, could tender cloth, and that the cloth was tendered in the singeing through the warps containing these chemicals and not through the defendants' carelessness or negligence. Mr. Sheriff Guthrie, before whom the case was tried, found for the defendants.

## Depilatory Powders.

Dr. Clasen says (*Monatshefte f. prakt. Dermat.*, 1889, ix. 541) that among the best depilatory powders are sulphohydrate of sodium and sulphide of barium. As to the sulphohydrate of sodium, he says that used as a paste, one part to eight of water, and allowed to remain on for a very short time, it acts well. But it deteriorates very rapidly and is dangerous to give to a patient, as it is quite capable of producing scars. The sulphide of barium is a safer powder for the purpose. It may be used by mixing 50 parts of it with 25 parts each of starch and oxide of zinc. This is mixed with water so as to form a soft paste and spread upon the face. After ten minutes it is scraped off, and leaves a smooth skin.—*Medical Tribune*.

DOCTORS say a healthy adult should eat at least ten ounces of meat each day.