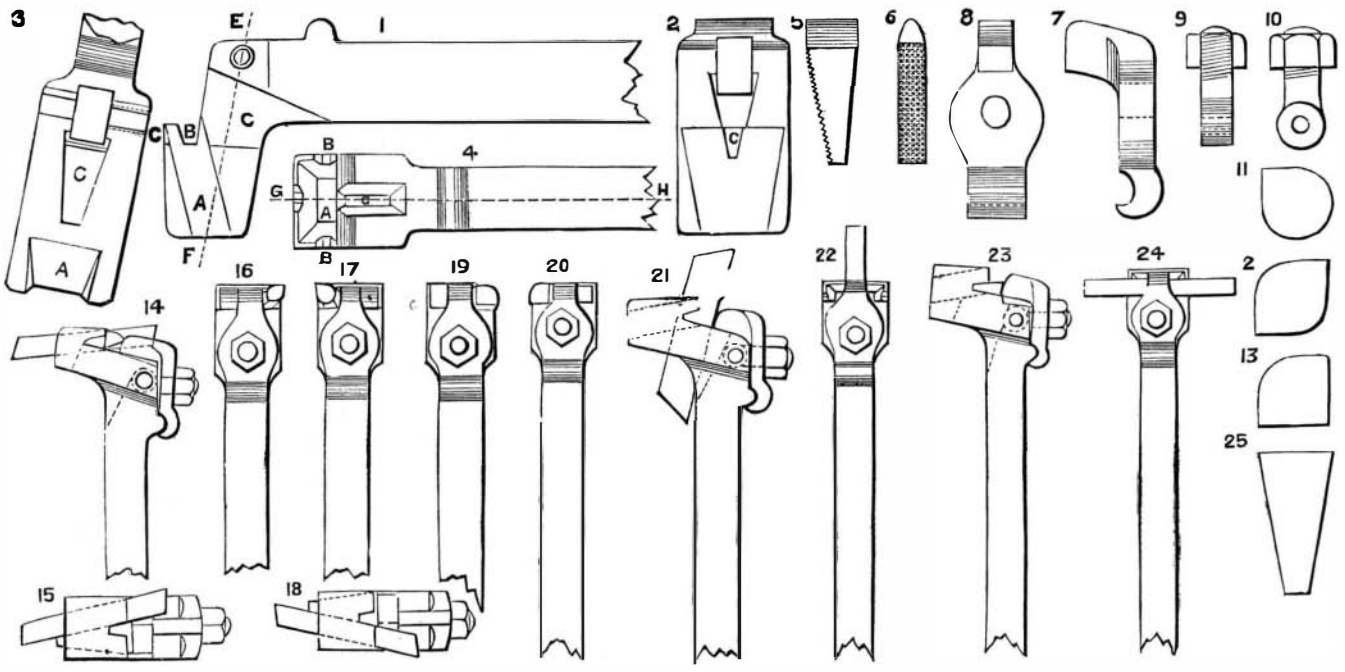
IMPROVED TOOL HOLDERS AND CUTTERS.

The forms of tool holders and cutting tools shown in the annexed illustration are the subject of a patent to Messrs. New and Matthews, of Nottingham, England, and Mr. W. H. Berry, of the same place. They speak for themselves, says the *English Mechanic*, and require but little description. The tool holder is adapted for holding securely in a rectangular tapered slot a right hand or left hand cutting tool at suitable and fixed cutting angles (such tools being secured firmly by a serrated wedge and clamps held down by a swivel bolt and nut), also for holding in suitable tapered slots a straight tool and a cross tool cutting on either side at right angles. These tools are secured firmly by clamps held down by swivel bolt and nut. This holder is adapted for using the patentees' special sections or round or square steel. The invention further consists of three special sections of steel, and may be made to any size required. These sections of steel can be formed into uniform, angular, or round-nosed tools for right or left hand cutting. From these special sections a variety of tools suitable for various cutting purposes can be produced, which are particularly adapted for the rectangular tapered slot in the holder. From the same uniform bar of steel, tools can be cut in suitable lengths, and then, without being forged, ground to a proper cutting angle for the several purposes required. Further, the novel shape of these special sections, when placed in the new holder, gives a positive and fixed angle for cutting.



MESSRS. NEW, MATTHEWS, & BERRY'S TOOL HOLDERS AND CUTTERS.

Fig. 1 is a side elevation of tool holder in section (on line, G H, 4). A is a rectangular tapered slot; B is a tapered slot at right angles to the lengthway of the holder; C is a tapered slot parallel with the lengthway of the holder; 2 is an elevation of the tool holder; 3 is an elevation in section (on line E F, 1), showing the tapered slot, C; 4 is a plan of tool holder, showing the rectangular tapered slot, A, and tapered slots, B B and C; 5 is a front elevation of serrated wedge, and 6 is a side elevation of it; 7 is a front elevation of clamp, and 8 is a plan of it; 9 is a front elevation of swivel bolt and nut, and 10 is a side elevation of the same; 11, 12, and 13 are the special sections of steel particularly adapted for the tool holder to be held in the rectangular tapered slot, A, 1; 14 is a side elevation of the right hand tool for cutting out corners, 15 is a front elevation, and 16 is a plan of it; 17 is a plan of a left hand tool for cutting out corners, and 18 is a front elevation of it; 19 is a plan of a right hand round-nosed tool; 20 is a plan of a left hand round-nosed tool; 21 is a side elevation of a straight tool, and 22 a plan of it; 23 is a side elevation of a cross tool; and 24 a plan of it. The tapered slots, B and C, in 1, are adapted for holding cutters severed from a bar of steel of uniform section, but thicker upon one edge than the other, as shown in section in 25. The patentees claim the constructions of the tool holder, as described and illustrated, and the three special sections of steel, particularly adapted for the rectangular tapered slot of the new tool holder. 11, 12, 13, and 25 are full size, as shown; the others are half size.

PHARMACEUTICAL APPARATUS.

BY OCTAVIUS COMBER.

It has been frequently urged upon the Council of the Pharmaceutical Society of England to provide in their rooms a set of apparatus suitable for the use of retail establishments for the making of all such pharmaceutical preparations as may reasonably be expected by a chemist of the present day. Whether it is the duty of the Council to act the part of an educating body, either for students or mature pharmacists, I leave for the present (although I have a very decided opinion on the subject), my object on the present occasion being to assist those who may be in the same difficulty which I have felt. Having no set of apparatus to guide me, I should have been glad of information. I therefore send a short description of what I have found to answer my purpose, with a drawing of the apparatus.

A is a copper boiler holding about 12 gallons, fixed in a wrought iron jacket and heated by a ring gas burner. I used copper for the boiler, because, being made thinner than iron, the water is brought to a boil much more rapidly; it does not foul so soon, and is altogether better adapted for the purpose. I chose gas as a heating power, not that it was so cheap as coal, but from its being clean, free from smoke, and at once lighted, lowered, or put out, as occasion may require.

The boiler is supplied with water direct from the main by merely turning on the tap, B. The boiler is provided with steam gage, C, which blows off at 5 lbs. pressure, also with a water gage, D, and with a suitable arrangement for blowing out the boiler whenever it becomes foul by deposit of lime, etc. H is a galvanized iron tank, provided with a tin worm, so that all waste steam may be condensed as distilled water; those who are accustomed to use distilled water for all dispensing purposes, making tinctures, infusions, decoctions, indeed all pharmaceutical preparations, will fully appreciate this part of the arrangement. The whole of the pans, etc., being copper tinned, all the condensed steam is available as distilled water. The pan, E, holds 16 gallons, and is adapted for decoctions, etc.; its evaporating power is about 2 gallons per hour. The pan, F, holds 6 gallons, and being fitted with a suitable head and worm, is used for all the distilled medicated waters, such as dill, cinnamon, peppermint, etc., also for recovering the spirit from extract of colocynth and such like preparations. It distils about 1 gallon per hour. G is fitted with an earthenware still (holding about 3 gallons) with head and worm of the same material, fixed in an oval jacket. This is only used for aromatic spirit of ammonia, for which purpose it is well adapted; being the furthest from the boiler the steam power is less, and there is but little risk of the luting being displaced, especially if the carbonate of ammonia is added at several times in small quantities.

The amount of gas used is about 50 feet per hour, costing in London somewhat less than 6 cents; but by saving the condensed steam, sufficient distilled water will be obtained to more than pay the heating. If the full steam of the boiler is turned into the worm, H, about 4 gallons of water per hour are obtained. Two gallons of aromatic spirit of ammonia may be run over during the day, in conjunction with other preparations. I would add that it is well to cover the top of the boiler, and the sides of the pans and pipes, with felt, which effectually prevents a considerable loss of heat by radiation.

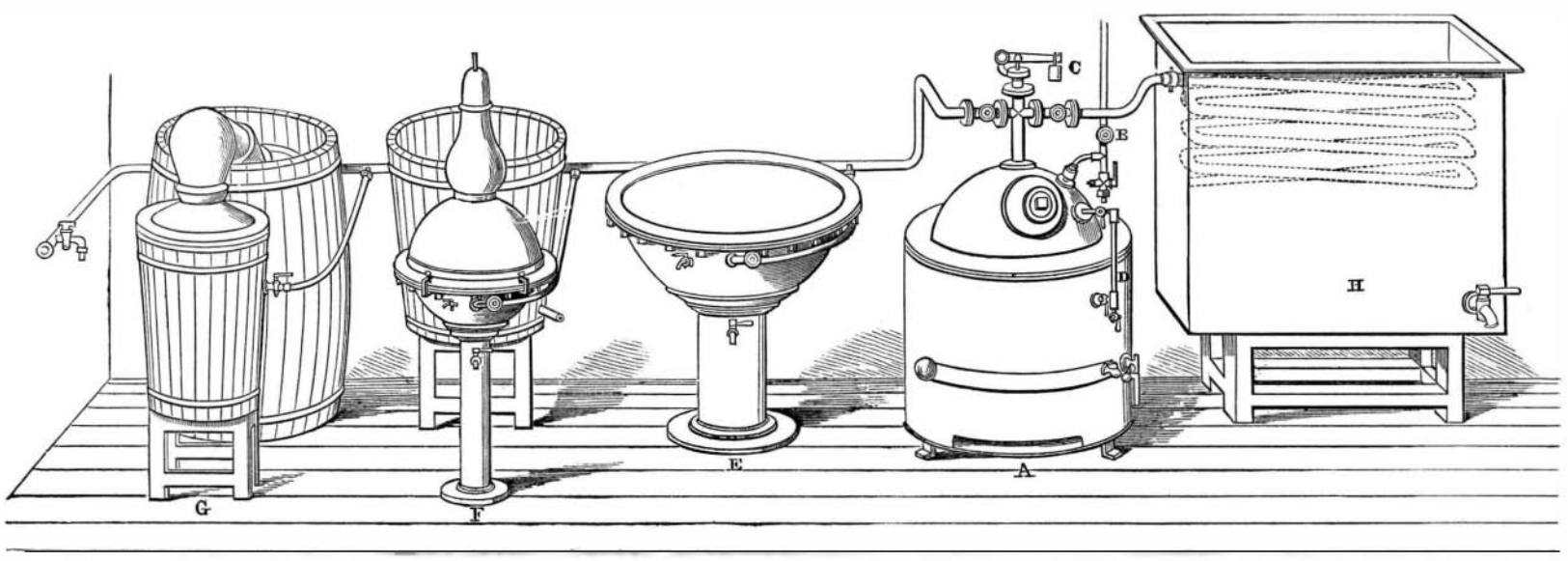
In the Dock Warehouses of London.

A writer in the *British Trade Journal* has been exploring the vast warehouses of the East and West India Docks of London, where the cargoes of whole fleets of vessels are stored, pending the sale of the goods to wholesale merchants. One particular building examined was set apart for the most valuable articles of importation, such as drugs, ivory, feathers, etc., and about which a large variety of curious and interesting information was gathered.

In the drug department one sees such costly articles as vanilla, musk, ambergris, and the various kinds of essential oils undergoing manipulation. Each package of musk is carefully sorted, and every individual pod subjected to close scrutiny, for Ah Sing has a peculiar knack of deftly introducing different foreign substances into the pods and closing them up again. Some mysterious compound, known as Chinaman's earth, is a favorite adulterant of this highly priced natural perfume. Ambergris, a peculiar secretion of the sperm whale and the base of many scents, was not a great number of years ago accounted worthless, but as much as five guineas an ounce has since been paid for it. Essential oils occupy an important place in the drug warehouse.

We noticed a large vat for the reception of cassia oil, capable of holding 200 gallons. This oil has to be turned out of its original packages and bulked, or mixed together, buyers being chary of investing in an article which exhibits very unequal quality. Proceeding from the drug warehouse, we ascend to the department devoted to ivory and tortoiseshell. The greater proportion of the former produce which reaches the London market finds its ways to this warehouse. Every separate tusk is examined here at the hands of men whose long familarity with the business enables them to detect the slightest imperfection. Each tooth bears on its surface a record of its own defects, which are expressed by certain cabalistic characters well understood by the trade. The dealer is able to place perfect reliance on these descriptive marks, and they, perhaps more than his own judgment, determine his biddings. Of the ivory of commerce, that hailing from the Gaboon is considered the best. It has a peculiar transparency, and, keeping its color well, is used for carving articles of a superior description. The largest tusks are those from Egypt and Zanzibar. One was pointed out to us from the latter place which weighed 128 lbs., this being, however, a tooth of quite exceptional size. Its defunct possessor would no doubt have proved an immense acquisition to a menagerie, for he must have been a very giant among giants. Every now and then a parcel of antediluvian ivory is forwarded from Siberia for sale. A passing glance at the tortoiseshell department reveals a good stock of that remarkable product. The cleats or pieces of shell which bind the plates together on the reptile's back were at one time valueless, but, strangely enough, now find a market in Japan as the material for the native jewelry.

Another floor of the warehouse introduces us to a rather



SIMPLE PHARMACEUTICAL APPARATUS.