cylinder, I, forming the aleurometer properly so called, is placed, when operating, in a copper sheath, L (Fig. 15), which is placed in an ellipsoidal vessel, M (Figs. 10 and 11), that performs the role of a stove, and that is filled to a certain height with neatsfoot oil heated by a spirit lamp, N, placed underneath. The sheath, L, which is wholly immersed in the oil, has a flat bottom, and is closed above with a cover, J' (Fig. 15), which may be taken off and put on at will to permit of the introduction and removal of the aleurometer, as seen in Fig. 10, or of the introduction of a thermometer, T (Fig. 15), that marks from 50° to 200° C.

The entire apparatus is inclosed in a thin copper jacket, O, containing apertures in the upper part of its circumference, and united with a circular copper base that carries a spirit lamp, N.

While the paste is being prepared as described above, the oil bath is heated up to 150°. Then the gluten is inserted in the receptacle, K, and the aleurometer is placed in the vessel, M. As the capacity of the cylinder, I, and of its receptacle, K, is limited to the dimensions indicated, only 7 grammes of the gluten are taken, and with this a small ball is formed which is rolled in dry powdered starch to prevent it from sticking to the sides of the instrument, which itself has been slightly oiled. After the introduction of the cylinder containing the gluten into the oil the temperature of the latter is kept up for ten minutes, and then the lamp is extinguished. The apparatus is then left to itself for ten minutes longer, and after the height to which the diaphragm has risen has been ascertained, the diluted gluten is taken from the aleurometer.

Mr. Boland explains that the gluten, under the influence of the water that it contains, and which is disengaged in the form of steam through the orifice, *o*, dilates and rises and solidifies, moulding itself as it does so against the inside of the cylinder. In its expansion it traverses, first, the empty space of 25 degrees that separates it from the diaphragm, *j'*, and acquires enough force to raise the latter several times its maximum of dilatation, expressed by the 50 degrees brought to light above the cover or screw cap, J.

It may happen that the gluten does not reach the rod—that is to say, that it does not possess 25 degrees of dilatation. This would indicate that the flour whence it was derived was unfit for making bread.

ROBIN'S APPRECIATOR (Fig. 17).

In his treatise on baking, Mr. Boland says: "One of the most intelligent bakers of Paris . . . has found that gluten acquires solidity in cold water, softens in hot water, and loses its consistency in water about to boil; that mineral acids convert it into a material that he compares with bitumen; that vegetable acids dissolve it more or less; and, finally, that it may be totally dissolved by leaven when the latter has passed the limit of alcoholic fermentation and a formation of acetic acid has occurred. The apparatus devised by him (Fig. 17) to determine the quantity of gluten contained in flour is based upon the solubility of this substance, and of the albuminous matter in diluted acetic acid without touching the amylaceous matter. It is nothing else than a very sensitive areometer, whose divisions make known at first glance the number of 2-kilogramme loaves that a 157-kilogramme bag of flour will furnish, provided, always, that the gluten is of good quality."

Mullein as a Remedy for Coughs.

Dr. Quinlan, of Dublin, who last year read a paper at the British Pharmaceutical Conference on the hemostatic properties of the *Plantago lanceolata*, has recently investigated the properties of the common mullein, *Verbascum thapsus* (*British Medical Journal*, January 27, p. 149). This plant has long been used in Ireland as a domestic remedy for consumptive cough, and Dr. Quinlan has made a series of experiments with a view to determine if it really possesses the valuable properties attributed to it. He finds that when boiled in milk the patient takes the decoction readily, and experiences a physiological want when it is omitted. Its power of checking phthisical looseness of the bowels and the relief afforded to coughing were very marked, so that the patients took hardly any other cough mixture. In early stages it appears to have a distinct power of increasing weight, but in advanced cases Dr. Quinlan remarks that he is not aware of anything that will do this except koumiss.

Cleaning Watches with Benzine.

A correspondent of the *Watchmaker and Metalworker* tells how he cleans watches with benzine. The method may be useful for other fine work. He says: I immerse the parts in benzine and dry in boxwood sawdust. This gives the gilding a fresh, new look which I have not been able to get by any other process. The movement must be entirely taken down. The dial screws may be screwed down tightly and left, but all parts united with screws must be separated, so that there will be no places where the benzine can remain and not be at once absorbed by the sawdust.

I have a large alcohol cup, which I fill about half full of benzine, taking down my movement and putting the larger pieces in the fluid. The scape wheel, balance, and delicate parts I treat separately, that they may not be injured by contact with the heavier pieces. I then take the pieces one at a time, and tumble them into the sawdust. In a few seconds they will be dry, when I pick them out and lay in a tray, using brass tweezers, which do not scratch. I treat all the parts in this way except the mainspring, when a slight use of the brush and clean chamois will remove all dust. Of course, the holes must be cleaned with a pointed peg; and I wipe out the oil sinks with chamois over the end of a blunt peg, but it is not often necessary to clean the pinions with a peg; they will come out of the sawdust bright and clean.

The mainspring must not be put in benzine unless you want it to break soon after. The fluid seems to remove the fine oily surface which a spring gets after working for a time, and which is very desirable to retain; so I clean my springs by wiping with soft tissue paper. If they are gummy I put on a little fresh oil to soften, and wipe off, being careful not to straighten out the spring.

THE MASDEVALLIA CHIMÆRA.

The *Masdevallia chimæra* is one of the most fantastic productions of the vegetable kingdom. In looking at this strange flower one sees the colors of a nocturnal bird, the form of a large spider in the middle, with two small piercing black eyes.

This flower is a native of the deep, humid valleys of New Granada. B. Roezl discovered it in the valley of Cauca, in 1872, and since that time it has been found successively by

THE MASDEVALLIA CHIMÆRA.

G. Wallis, Klabosch, and other collectors of ornamental plants.

The *Masdevallia chimæra* was described for the first time in 1872 by M. H. G. Reichenbach, but incorrectly. The description has been corrected since, but it is none the less true that the history of the flower is still full of contradictions. The plant which was described in 1873, in the *Illustrated Horticulturist*, under the name of *M. chimæra* was not the one which M. Reichenbach described under this name, but is apparently another species—the *M. nycterina*. The various illustrations of *M. chimæra* which have appeared in some botanies differ considerably from each other in the coloring, and even in the form of the flowers; it appears that this species is really polymorphous. Roezl has even disputed the identity of the plant described by M. Reichenbach with the one discovered by him, to which he persists in attributing much larger dimensions and several particular characteristics. Recently the *Gardeners' Chronicle* published a description of this flower, which is similar to the one described by Roezl.

The *Masdevallia chimæra*, which we illustrate, flowered in the month of November, in the collection of M. F. Massange de Louvrex, Chateau of St. Gilles, Liege. It is very much like the one described and illustrated by M. W. G. Smith in the *Gardeners' Chronicle*, and it presents all the characteristics attributed to this species in the recent description by the learned orchidologist of Hamburg.

The culture of these plants is not difficult, but certain conditions are necessary. The most important is the quality of the water, which must be free from lime, pure, and fresh. The air should also be pure as that of the mountains. The temperature should not be raised either day or night. As to the soil, the less earth there is, the better it will be. Living moss is sufficient, with good drainage of pieces of broken crocks and charcoal; there may be added some fragments of fibrous earth.

The plant is developed in compact bunches of leaves, thick, and of a relative length of 0·20 m.; the flower stems, slender and also lengthened (0·10 m.), creep in the moss, and are terminated by a very large flower (0·20–0·25 m.), which blossoms under the leaves, unless it is supported by a light prop. The flower cup is very open and deeply divided into three diverging lobes, whitish, but abundantly speckled with small, unequal, and irregular spots of dark pink, and all bristling with hairs, scattered but abundant, white or rose colored, according as the surface from which they proceed is one or the other color.

The lobes are directed, one upward, the other two downward. All three form an angle a little twisted, especially the upper one. They are prolonged in a long, smooth horn (0·08–0·10 m.), which is rose colored, straight, or a little curved. The two petals are very small (0·003 m.). The lip formed in the inferior petal of the flower is relatively large (0·014 m.); articulated at the base; of a pale pink; it has two converging crests in the middle part; the border has the form of a marine trumpet, raised at the edge, curved internally, and cut into teeth; the extremity large; the bottom has three projecting crests; column very short, curved, pale yellow; ovarium bent upon the peduncle, thick, soft, and of a brown color.—*La Nature.*

Ball Bats.

Probably the largest manufactory is that of Spalding, at Hastings, Mich., where 100 men are employed. Half a million bats are supposed to be the demand for the present year. The *Northwestern Lumberman* says:

Ash is the staple bat wood. The ash bat is universally preferred and used by professional players, and gives the best satisfaction. In the matter of weight, strength, and durability, bats of that wood seem best adapted to the wants of the batter. A proportion of fancy, and necessarily higher-priced, bats are made of cherry. Including the different woods and various sizes, there are 22 styles of bats made for the trade, ranging in price at retail from 10 cents for a juvenile article up to $1.50 for an æsthetic cherry bat.

The Hastings factory will use in the neighborhood of 350,000 feet of ash, 250,000 feet of basswood, and 50,000 feet of cherry lumber this season, which means about 25,00 gross or 30 car loads of bats, and the demand may be such as to increase the output. Another bat factory at South Bend, Ind., will consume about 125,000 feet of lumber, and one at Grand Rapids, Mich, 75,000 feet more.

The bats made in the East are said to represent about 10 per cent of the total product, and are mainly of a cheap order, many of them being made from pine and oak. Including everything, the estimates made place the amount of lumber consumed in bat making at from 900,000 to 1,000,000 feet. Giving the industry the benefit of the doubt, and figuring the average of two feet to a bat, the figures given at the start are reached—500,000 bats.

The best kind of lumber is required in making good bats, and the stocks of the raw material are kept two years in advance, in order to have them thoroughly dried. Kiln drying is avoided, principally on account of the waste entailed by the method. If made from the kiln dried material, a great many bats would check, and they would have to be thrown out. Hence the precaution is taken of having the lumber in exceptionally good condition as to seasoning and quality before using it in manufacture.

Taking into consideration the prices of the medium and higher grade bats, together with the mere cost of two feet of lumber and the simple work of turning out the bats, it might strike the casual observer that there was considerable money in making bats. Yet, if in the business, a man might find there was less profit than seemed to be the case. The lumber must be good, and must be carried for a considerable time, while it requires good machinery and careful workmanship on as nice a job as turning out a first-class bat.

At the Hastings factory a large number of croquet sets and fishpoles are also turned out, which consume 1,500,000 feet of lumber. Mallets and balls are made of maple, handles of ash, and boxes of basswood. About 1,000,000 feet of maple are used, something over 300,000 feet of basswood, and the remainder is chiefly heart and lance wood for jointed fishrods.

Hay is King.

The statistics of the United States prove that it is among the foremost crops raised in this country, if not the very first. At the present time there are estimated to be, in the United States, 40,000,000 sheep, 40,000,000 cattle, and 20,000,000 horses. In two-thirds of the country these animals require to be fed from three to five months, and they will consume an aggregate of 90,000,000 tons, which, at $5 per ton, represents the enormous sum of $450,000,000. Is not hay, therefore, king?—*Wesley Redhead.*