

AN IMPROVED INK WELL.

The illustration represents, in perspective with a broken-out section, an ink well that is not easily tipped over, which is designed to prevent dipping the pen too deeply into the ink, and to hold the ink in the well proper always clean and free from sediment. The improvement has been patented by Mr. John Black, of Trafalgar Street, Nelson, New Zealand. The main reservoir has a raised bottom, in the front side of which is a depression with tapering inner and outer walls, adapted to receive a removable double-walled well, having perforations near its bottom through which the ink flows slowly from the reservoir.

**BLACK'S INK WELL.**

On the outside of the removable well is a vertical groove, admitting air to the reservoir, and by regulating the thickness of the top flange of the well the height to which the ink rises in it may be determined. Above and back of the well is a recess to provide room for the fingers in dipping the pen, and in the top is a transverse groove to receive the pen when not in use. It is apparent that the removable well is kept fully supplied as long as any ink remains in the reservoir, and the point of the pen is protected from settlings.

CALIFORNIA SUN DRIED PRUNES.

California has given us an enormous supply of fruit, which by recent improvements is able to reach Europe in good, wholesome condition. Our engraving, which is from the Illustrated London News, shows the process of drying prunes. Wide strips of linen are laid on the ground, and on them are placed the newly picked fruit. The hot sun accomplishes the drying in a short while, and then the prunes are carefully packed for traveling, and are transported from the fields to be relished in all parts of the world. From recent statistics it appears that California produces at least 26,000,000 pounds of raisins annually. There are more than 200,000 acres in California under vines, and these yield nearly 15,000,000 gallons of wine.

Incinerated Leaf of Deutzia.

At the annual exhibition of the Department of Microscopy of the Brooklyn Institute, held in January, Mr. Geo. M. Hopkins, of the SCIENTIFIC AMERICAN, exhibited a beautiful preparation of Deutzia leaf, which seems to have the merit of novelty. The leaf was reduced to white ashes, leaving the star-like hairs in situ. Some of the hairs were blackened by the carbon of the leaf, others were white, with pearl colored nodules ranged along the rays of the star, like so many real pearls.

Mr. Hopkins' method of preparing this object is as follows: A small piece of the dried leaf is placed upon a thin, flat copper plate, and another flat copper plate is laid upon it to keep it straight. Strong pressure is not required. The plates are now heated slowly over a flame until they become red hot; they are then allowed to cool, and the upper plate is removed. The piece of leaf is found to be carbonized and considerably shrunken. Without replacing the upper copper plate, the lower plate with the carbonized leaf is again brought to a red heat, and lastly the flame is brought into actual contact with the leaf, thus removing the last trace of carbon, leaving nothing but the stars and the white ash.

The object is very tender, but it may be handled

with proper care and may be mounted dry. If it is desired to secure the stars separate from the ash, one or two incinerated leaves may be placed in a small metallic box and shaken up until the leaf is disintegrated, when the stars may be picked out.—The Microscopical Bulletin.

Microscopical Analysis of Steel.

At a recent conference, held under the auspices of the French Society for the Encouragement of National Industry, M. Osmond described a method for the microscopical analysis of steel. The method proposed comprises, in addition to the preliminary process of preparing the polished surface, three operations: (1) Polishing in bass-relief on parchment with a very small quantity of English rouge mixed with water; (2) etching and polishing on parchment with a mixture of calcium sulphate, in precipitate, in a suitable vehicle; and (3) etching with tincture of iodine and nitric acid. These three operations enable one to recognize in the steel five constituents. These five constituents are associated in combination to form the complex edifice of the structure of steel. M. Osmond examined four types of steel, possessing a known proportion of carbon, to discover the manner in which these combinations varied. As a result of that investigation, M. Osmond states that the thermic treatment of the steel leaves in the structure of the metal, when cooled, characteristic indications sufficiently precise to form a useful guide in the manufacture of steel, and also to enable consumers to determine the quality of the metal supplied to them.

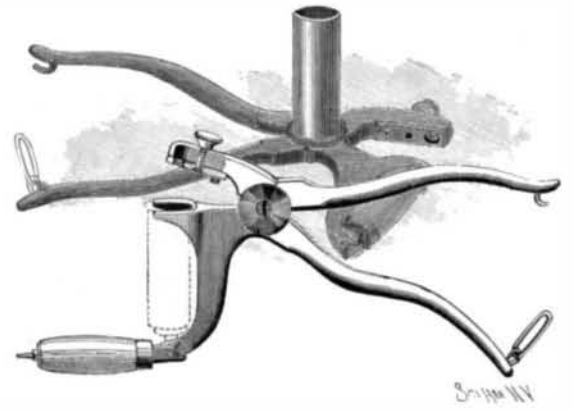
Suppression of Bone Black.

Bone black in beet sugar making and refining is, says the Sugar Beet, rapidly becoming obsolete. Manufacturers at first hesitated to believe that any other process for the clarification of saccharine juices could give equally satisfactory results. Facts as they now stand show that most of the sugar experts have been convinced that mechanical filtration means greater economy and an equal clarification. Most European refiners do not use more than 10 pounds bone black per 100 pounds sugar worked, and within the next few years, as a certainty, even this will be abandoned.

Of all the excellent methods for suppressing bone black Dr. Soxhlet's may be considered the best. There are some features of it that resemble the Casamajor process; it acts mechanically and has no decolorizing effect upon the sirups filtered. The facts seem to show that the product obtained is so pure that no other manipulation is necessary but graining in pan. The filtering medium consists of a thoroughly washed powder made out of fossils, to which is added an equal

A RELOADING TOOL FOR CARTRIDGES.

The illustration shows a simple tool, patented by Mr. D. A. Ripley, for preparing shells for shot guns and other arms, in applying caps and removing them, removing the primers from the shells after they have been fired, and quickly adjustable for use in applying new primers or caps to the shells. The improvement is being introduced by Mr. W. P. Lewis, of Center Belpre, Ohio. A recessed shell base at the joint of the tool provides for the convenient placing of the shell to be reloaded, as indicated. The lower jaw has a forked upper portion, and a depending curved arm in which is pivoted the shank of a shell holder and guide, which is swung outward to receive the shell, and turned up, as indicated by dotted lines, when a

**RIPLEY'S CARTRIDGE RELOADING TOOL.**

cap or primer is to be ejected by the punch on the outer end of the holder. On the under side of the upper jaw is held a swivel plate, by means of a screw and thumb nut, the plate having near one end a hole registering with a hole in the jaw and also with the punch. On this plate is also a boss, slightly larger than the primer or cap of the cartridge shell, the boss being concaved on its under side and adapted to push the cap or primer to its seat, the plate being turned around for this purpose, and adjusted, by means of the screw and thumb nut, with the boss beneath the hole of the upper jaw and above the primer hole of the cartridge. The shoulder of the shell being thus recapped rests on the arms of the fork of the lower jaw as the handles are pressed together. To hold the handles closed when the tool is not in use, one handle has a hook and the other an engaging link.

Importance of Systematic Exercise.

It has always seemed to us a grave mistake that physicians in general have not studied the subject of exercise much more thoroughly and systematically, and thus direct their patients more carefully and intelligently. Many physicians simply say to their patients that exercise will be of benefit, but go no further than this. Directions of this meager and superficial nature are of no real value whatever.

A variety of exercises is probably the best way. We must try and get exercises which will interest and stimulate the mind. It seems to us that the very best single sport is fencing. It can be done in all seasons of the year; it is excellent for both sexes, young and old. This exercise is very absorbing and stimulating, and can be much better regulated and systematized than sparring, wrestling, bicycling, and many other sports, which are not entirely mechanical.

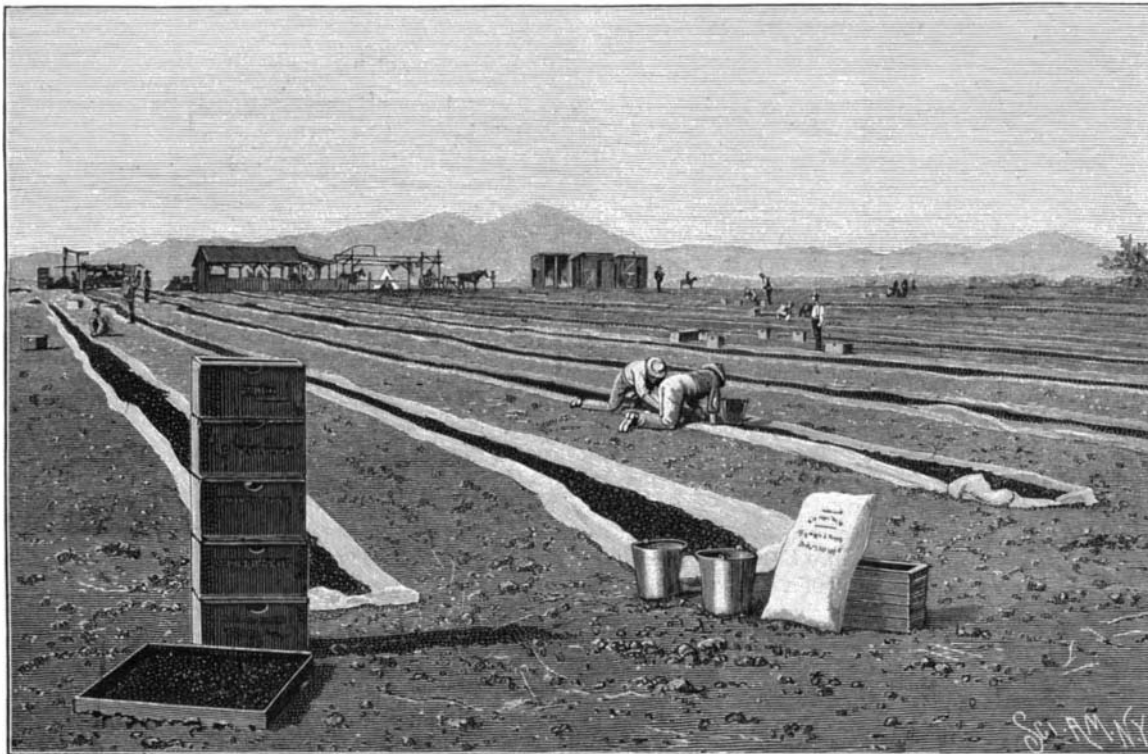
In fencing, we learn self-reliance, agility, grace, and rapidity of thought; and it is comparatively free from

many of the dangers we meet in sparring, wrestling, etc. It brings a large number of muscles into play, and makes them supple and extremely quick.

Pupils are taught to fence with both arms equally well; the chest always being thrown well forward. It can be carried on in well ventilated rooms or out of doors in moderate weather.

The fact that fencing can be so well regulated and systematized makes it an ideal exercise from a medical standpoint.—Med.-Surg. Bulletin.

A SCIENTIST has recently declared that the average speed of the transmission of the shock of an earthquake is 16,000 feet per second.

**PRUNE DRYING IN CALIFORNIA.**

quantity of fine sawdust. The raw sugar is melted and cold water added, so that the consistency is 65 degrees Brix. To this must be added 0.1 per cent of the fossil in sawdust mixture; the whole is then forced through a filter press. The first filtrate has a troubled appearance, but after that the sirup filters clear for at least 15 hours.

The masse cuite obtained by this method should have purity of 99.6, equal to that of any product obtained by a bone black method. It is interesting to note that the economy by this method is not only in the saving of bone black, but a considerable reduction in sugar losses that occur in the old method of filtration.