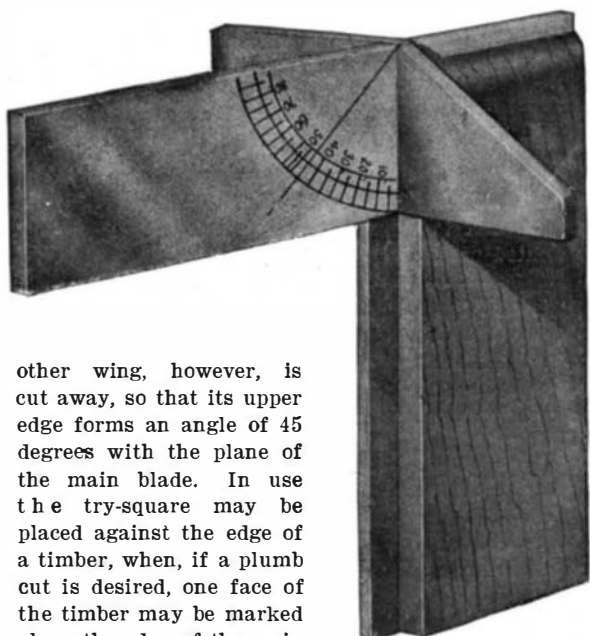


**A UNIQUE NON-REFILLABLE BOTTLE.**

A non-refillable bottle has recently been invented, whose chief claim to distinction lies in the fact that it has no mouth, but is assembled and filled through an opening in the bottom, which is thereafter closed in such a manner that it cannot be opened again. A pair of small apertures are provided in the side of the neck, through which the contents can be poured out. The bottle is first blown in the form shown at the left in the engraving, with no openings in it whatever. In the neck of the bottle are two bosses of thin glass, while the bottom is formed with a recess. The upper wall of this recess is broken away to effect an opening into the bottle, and this leaves an inwardly-extending annular flange with rough or broken edges. The bosses on the neck are also broken off, to form the apertures through which the contents of the bottle may be poured out. A metal cap is fitted over the neck of the bottle and held in place by crimping the edges over a shoulder in the glass. A cork ring between the cap and the bottle neck serves to seal the apertures. The opening in the bottom of the bottle is large enough to admit the mechanism which is fitted into the neck. This mechanism is clearly illustrated in one of the views, which shows a section of the neck. It comprises a tube, in the upper end of which a ball valve is seated. The lower end of the tube is enlarged to receive a member in which a second ball valve is seated. This member is securely fitted into the bottle neck by means of a cork collar. The bottle may now be inverted and filled, after which the opening in the bottom is closed by a glass stopper. The stopper is provided with an annular recess, in which a cork collar is fitted. The collar bears tightly against the annular flange of the opening, and swells over the broken edge. The exterior face of the stopper lies flush with the bottom of the bottle, so that it cannot be pried out, and being of glass, it cannot be easily drilled out. In use, the metal cap of the bottle and the cork collar are removed from the neck; then when the bottle is tilted the ball valves are unseated, permitting the liquid to flow through recesses past the lower valve, then through the tube, and out of the apertures in the neck of the bottle. These apertures are so placed that it would be impossible to tamper with the valves by inserting a wire into the neck of the bottle. The mechanism is simple and inexpensive, and does not require an expert to assemble it. The complete bottle costs but a fraction more than an ordinary one. The inventor of this bottle is Mr. L. A. Robertson, 638 East 139th Street, New York, N. Y.

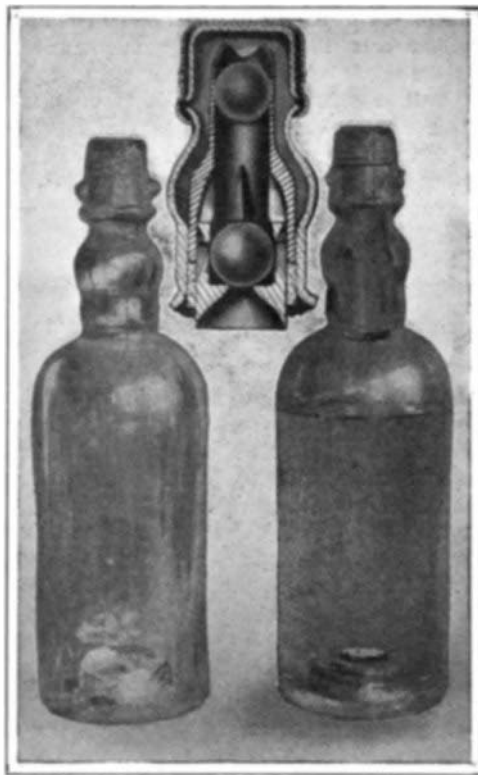
**AN IMPROVED TRY-SQUARE.**

Illustrated in the accompanying engraving is an improved try-square of such design as to enable the marking of two faces of the work simultaneously. Furthermore, it permits of marking the timber for a square or plumb cut, and also for a beveled cut. In general, the new square resembles the standard type, consisting, as it does, of a stock at one end of which a blade is attached, projecting at right angles thereto. On the stock a central tongue is formed, which extends longitudinally of the stock. The thickness of this tongue is the same as that of the blade, so that its faces lie flush therewith. A similar tongue is formed on the end of the stock by the projecting edge of the blade. Thus far the description applies equally well to the standard square. The improvement, however, consists in a short blade, which fits at right angles to and across the main blade, and is seated in the recess in the stock, so that its outer face lies flush with the edge of the stock. The short blade thus forms two wings lying on opposite sides of the main blade. One of these wings is square, so that its upper edge lies in the plane of the upper edge of the main blade. The

**AN IMPROVED TRY-SQUARE.**

other wing, however, is cut away, so that its upper edge forms an angle of 45 degrees with the plane of the main blade. In use the try-square may be placed against the edge of a timber, when, if a plumb cut is desired, one face of the timber may be marked along the edge of the main blade, and the other face of the timber along the

edge of the square wing. If a bevel cut is to be made, the timber is marked along the inclined edge of the other wing, while the other face of the timber is marked, as before, along the edge of the main blade. When the try-square is used in the ordinary way, the wings will not be found to offer any inconvenience, but will assist in keeping the stock square with the edge of the timber. The main blade is provided on

**A UNIQUE NON-REFILLABLE BOTTLE.**

each face with a graduated arc which can be conveniently used as a protractor. The inventors of this try-square are Messrs. James Collie and Charles Beauchene, of Lake Linden, Mich.

**Proposed Excavation of Herculaneum.**

The recent great eruption of Mount Vesuvius drew the attention of the entire civilized world to the region in which the great volcano manifested its activity. It is, therefore, with exceptional interest that we hear of the proposed completion of the excavation of Herculaneum, buried under the first great historic upheaval of Vesuvius in 79 A. D. Prof. Charles Waldstein, Professor of Fine Arts at King's College, Cambridge, England, has long entertained the idea of a complete excavation of the buried city, and has at last succeeded in perfecting an agreement with the Italian government for the carrying out of the project. Prof. Waldstein has obtained the active co-operation of King Victor Emanuel of Italy, as president of the organization, and has, furthermore, had the assistance and support of Emperor William, King Edward, and President Roosevelt. Prof. Waldstein is an American, though holding the professorship of Fine Arts at Cambridge. He began the preparatory work of forming his organization for the purpose of laying bare the hidden secrets of Herculaneum some two years ago, when the project aroused considerable interest throughout Europe and America. Despite political opposition to the scheme in Italy, where it seemed at first that the attitude of the Italian government was one of unwillingness to permit any other country to take part in work of this character, the concession has practically been obtained, and the work will doubtless be inaugurated in the near future.

The excavation of Herculaneum will be a gigantic enterprise, totally different, in regard to the amount of labor necessary, from the excavation of Pompeii, which was buried at the same time. As early as 1738 attempts to excavate Herculaneum were made by King Charles III. The work, which had hardly proceeded further than the initial stages, was continued under the direction of the Italian government in 1866. Since that time practically no further progress has been made. The work has always been attended with the greatest difficulty, for the reason that the modern town of Resina, with 20,000 inhabitants, is located over the ruins of the ancient buried city, and, therefore, it has usually been found necessary to abandon the research work after a short period of excavation.

As Prof. Waldstein observed in his lecture at the White House, in December, 1904, the difference in the present status of the buried cities of Pompeii and Herculaneum is due to the fact that the former was covered to a depth of only about 15 feet, while Herculaneum, on the other hand, in many places was buried to a depth of 80 feet. Herculaneum, of distinctly Hellenic foundation, was a far more representative home of Greek art and literature than Pompeii, for the latter was a purely commercial city. The slight excavation which so far has been carried out at the site of Her-

culaneum has produced vast numbers of specimens of art and literature, one villa alone yielding 1,750 papyri. Some of the bronzes recovered are in a far more beautiful state of preservation than the majority of those from Pompeii. The latter city, though much influenced by Hellenic culture, was never a real center of Greek civilization, such as Herculaneum, and, doubtless, the excavation of the latter will bring forth priceless treasures of the literature and art of antiquity.

**Prize Competition for Scientific Research.**

The Academy of Sciences of Copenhagen recently decided to award the following prizes for research in different branches of science: Astronomy—gold medal of the academy and the sum of 400 crowns for the detailed study of Faye's periodic comet, the observations of the return of the comet to be made the basis of the calculations during the period of 1873-1896. Communications are to be handed in before October 31, 1908. Botany—Gold medal of the academy and the sum of 400 crowns. A sufficiently large selection is to be made of the microscopic vegetable organisms which are found in the sandy soil or mud on the Danish coast. The research is to distinguish between the specimens and determine which of them are of native origin and which have been brought by the sea or in any other way. A special prize of 800 crowns is to be awarded for a research as to the method of determining the proportion of dry substance and starch contained in the potato. The method is to be a simple and practical one, and give exact results. It is to be based upon the careful and thorough examination of the amounts of these substances in different specimens under test. The experimenter is to study the degree of precision with which it is possible to calculate these proportions by determining the densities or by other easily-applied methods, and he is to indicate the best processes for taking samples and for the ulterior treatment. The paper is to contain a critical account of preceding work in the same field. It is to be handed in before October 31, 1908. The above manuscripts can be written in Danish, French, Swedish, English, German, or Latin, and are to be anonymous, accompanied by a sealed envelope with the name and address. They should be sent to Prof. Zeuthen, secretary of the academy, Copenhagen.

**SAFETY CAN LIFTER.**

In canning certain kinds of food, it is customary to place the filled jars or cans in a kettle of water, and place the latter on the fire. Then when the water has come to a boil, the jars are sealed. The task of removing the jars from the boiling water without scalding the hands is rather difficult. To render this task safer, Mrs. Emily A. Austin, of Bethel, Sullivan County, N. Y., has invented the can lifter illustrated in the accompanying drawing. The device is extremely simple, consisting merely of a base plate on which the can rests, a standard, and hinged to the latter a bail, which is adapted to be swung over the neck of the jar. The standard consists of a pair of wire legs bent to form an eye at the top, which serves as a handle, and a pair of eyes at the sides, to form bearings for the bail. The latter, which is of horseshoe shape, is formed with a handle bent upward, so that by raising the handle the bail can be swung up clear of the top of the can. In this raised position it may be held by slipping the handle over a hook at the top of the standard. In use the base plate is passed under the jar or can, and the handle is unhooked, permitting the bail to fall over the neck of the jar. The jar may then be easily lifted out of the kettle, and thereafter removed from the holder by raising the bail. The entire operation is performed without touching the jar with the hand.

**SAFETY CAN LIFTER.**