tory and really is Pennsylvania's offering to American mineralogy, as this is undoubtedly the finest collection of minerals in the United States and ranks among the two or three finest of the entire world. All the choicest specimens of the Spang collection were merged in the Bement collection by the purchaser and it is now known as the Morgan-Bement collection. Biographical notice of these two eminent collectors will appear later.

The listing of the mineral localities according to counties and then according to townships is very useful to those studying the minerals and their occurrence, and at the same time gives precise data where to look for the minerals themselves.

The bibliography of Pennsylvania's mineralogical literature is remarkably complete and there is an admirable index.

GEORGE F. KUNZ

SPECIAL ARTICLES

A POCKET DISSECTING SCOPE

THIS new dissecting device was designed for the purpose of providing a simple and efficient instrument for examining small megascopic objects such as are encountered by the general nature lovers and students in plant and insect systems. And also to provide a small compact instrument of this kind that could be easily folded and closed up and conveniently carried in the student's pocket.

Fig. I shows a simple sectional elevation of the pocket scope in working adjustment.

Fig. II gives a view of the instrument folded and closed.

The device when adjusted for work, Fig. I, is operated by holding it in the left hand, the forefinger resting upon the knurled surface (b) of the slidable and revolvable tweezer (5), and the thumb upon the tiltable focusing block (4). By a conjointed motion of the finger and thumb thus placed it is surprisingly easy, when the lens is held under the eye, to keep the object (f) in focus while it is being picked by means of a needle held in the right hand, or, revolved by the forefinger of the left hand to secure views of the object (f), from all angles.

A forward and backward movement of the thumb pressing upon the tiltable block (4), lowers and raises the lens (1). Thus focusing is made easy.

A movement of the forefinger at right angles on the knurled surface (b), revolves the tweezer in its socket (6), thus bringing to view the various portions of the object (f).

The tweezer rod (c), being slidable as well as revolvable in its socket (6), the object (f) can be easily adjusted laterally under the lens (1).

Section (7) is a hollow tube permanently closed at each end, to one of which is attached the lens and its operatives (1, 2, 3, 4, 5, 6). This section (7) is separably and invertibly insertable into section (8), (8) being an open hollow tube inwardly shouldered at each end to limit the extent of insertion of (7) and (9).

Section (9) is a tool box composed of a hollow tube closed at one end and containing tool sockets for holding dissecting instruments (10) at the other. This box is invertibly insertable into (8).

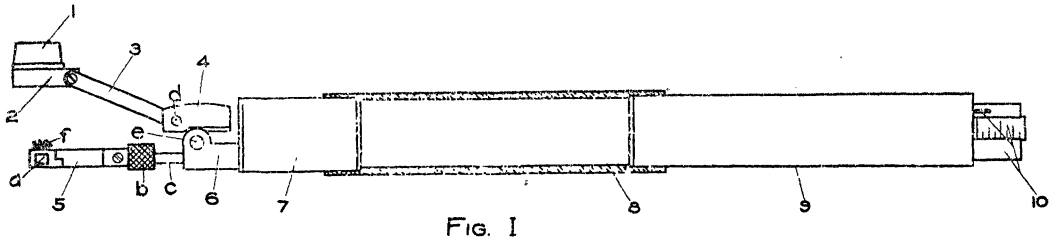

FIG. I

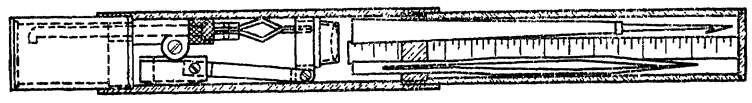

FIG. II

To change the instrument from the working adjustment, Fig. I, to the pocket adjustment, Fig. II, the lens (1), and its bar (3), is placed horizontally, then (7) is reversibly inserted so as to conceal the lens and its operatives in section (8).

Section (9) in like manner when reversibly inserted encloses the exposed tool handles (10), within the other end of section (8).

The instrument thus folded and closed, Fig. II, may be carried in the student's pocket.

The pocket scope comprises five distinct advantages for nature lovers and general taxonomists.

1. Quick general observation is easily obtainable by adjusting the lens as in Fig. I, and pushing the tweezer backwards in its socket so as to clear the space under the lens, and then using the body of the instrument, sections 7, 8, 9, as a handle.

2. Detailed observation is made easy and delightful by placing the object to be examined within the grasp of the tweezer jaws where it can be held firmly in an easily shiftable position for dissection.

On one jaw of the tweezer is a shallow cup (a), on the face opposite (a) is a fine sharp needle point.

The cup may be used when examining spores or small seeds, the needle point may be used for holding small insects, etc.

3. The right hand is free for picking the object and recording the facts observed.

4. The dissecting instruments are pleasingly accessible at the rear end of the scope (10).

5. When the dissecting or observation is completed the scope may be easily closed up and conveniently carried in the pocket.

ELMER GRANT CAMPBELL
PURDUE UNIVERSITY

A SIMPLE RECORDING SPIROMETER

IN carrying on various metabolism experiments in our laboratory we have had occasion to make a large recording spirometer which is so simple in construction and easy to manipulate that we are describing it, hoping that other workers may benefit thereby.

The outer tank consists of a large garbage can with inlet (I) and outlet (O) tubes one inch in diameter each provided with large stopcocks. The inlet tube has two vents (1 and 2) which facilitate emptying the air without disconnecting the breathing tube.

The float tank is made of thin sheet zinc and holds about 110 liters. A thermometer (T) records the temperature of the expired air.

We have made use of a much more simple plan than any spirometers we know of, to compensate for the additional weight of the float tank as it rises.

The Tissot type is cumbersome and should the tank fill rapidly complete compensation may not occur owing to the size of the siphon tube. The eccentric pulley type throws the line of support off center unless prevented by additional pulleys.

Our support consists of a roller sprocket chain. The weights, W and w, exactly balance the float tank when it is submerged. The large weight is made of water pipe which is closed at the lower end. This makes possible the addition of shot until a correct balance is obtained. As the tank rises its additional weight is compensated by fewer links on the tank side and added links on the weight side. Weight is thus