tation of the Miocene Eoliths or not, we must give him first rank and accord to him the full priority of the discovery of indisputable flint work of man in Tertiary time. It is too early to draw all the theoretic conclusions regarding the antiquity and ancestry of man which may be deduced from these discoveries, but in the present reviewer's opinion, they vastly extend our conception of a truly human and pre-human type of Dawn Man rather than of an ape-man ancestry of our race.

H. F. O.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A PHOTOGRAPHIC PLATE THAT PENETRATES DESERT HAZE

GEOLOGISTS and others who have occasion to take photographs of distant mountains in the arid regions have often been afflicted by the presence of the blue haze that obscures the details of features more than a few miles away. This is presumably caused by the fine dust which the desert winds keep more or less continuously suspended in the atmosphere.

Ordinary photographic plates and films give but poor results under such conditions. The photograph generally shows much less of detail than the eye itself can see, and hence one is apt to be disappointed. By the use of ray filters or color screens, some improvement may be effected, but at best it falls far short of satisfaction.

By using panchromatic films and orange or red ray filters, very much better pictures can be obtained. Cut films or plates of this type are now rather generally used by the more experienced and painstaking photographers of mountain scenery. Unfortunately they are not yet available in the form of roll-films.

Further steps were taken some years ago by Messrs. Burns, Shane and Wright at the Lick Observatory (Mt. Hamilton, California), who, for the purpose of photographing distant landscapes, used plates treated with Krypto-cyanine, a dye which confers sensitivity to a narrow range of color near the red end of the spectrum. The plates have, of course, the usual sensitivity to blue and violet light, but, with the aid of a ray filter which excludes those colors, one may photograph a scene entirely by deep red light. In this way the blue rays, scattered by the dust particles, are eliminated, and a sharp clear picture may be obtained even at a distance of 25 miles and more. Even minor details stand out with a distinctiveness that is remarkable; and it is just such details that are generally the concern of the geologist.

With the addition of a suitable ray-filter (deep yellow or red) the red sensitive plates generally require, under normal conditions, an exposure of about one second, with stop f. 8 to 11.

It must be admitted that there are some objectionable features about the photographs thus obtained. The sky appears black; but if there are clouds present their whiteness relieves that appearance. Again, dry grass, and certain kinds of trees and shrubbery take on a whiteness that suggests a new fall of snow. However, these drawbacks may be considered of secondary importance, provided the chief need is for clear pictures through a hazy atmosphere. By means of these plates it is possible to obtain photographs that show details which the eye itself can not see at the time.

It was the sight of a remarkable photograph of the Sierra Nevada, taken by Mr. Wright from Mount Hamilton, that first drew the writer's attention to the red sensitive plates. The fact that Half Dome and other details of the Yosemite gorge could be clearly recognized although 115 miles away showed clearly that the ever-present blue haze had been definitely neutralized.

ELIOT BLACKWELDER

STANFORD UNIVERSITY,
CALIFORNIA

MODIFIED WATER REGULATOR FOR SMALL TANKS

IN the annual report of the department of oceanography of the University of Liverpool (London, 1925), H. C. Chadwick describes a new device for regulating the outflow of water from small aquaria. Since this device is quite practical and since its description is found in a publication (*Transactions* of the Liverpool Biological Society) of relatively small circulation in the United States, it may not be out of place to reprint Mr. Chadwick's original account in this journal.

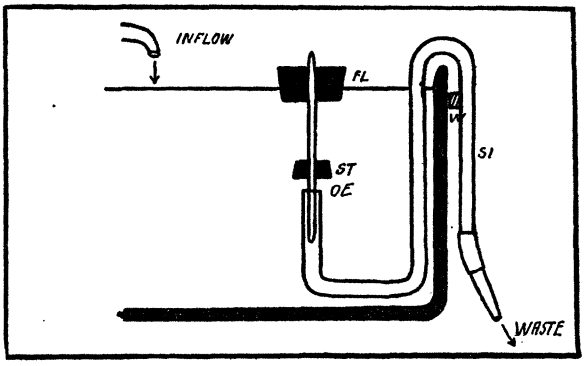

FIG. 1. Chadwick's Tank Water Regulator

The apparatus (Fig. 1) consists of a length of glass tubing 6 mm. in internal diameter, bent as shown in

figure. The open end (OE) of the tube was ground on a fine carborundum stone, so as to be exactly at right-angles to the bore of the tube. FL is a good sound cork 1¼-inch in diameter and ¾-inch thick, rendered impervious to water by prolonged immersion in melted paraffin wax. Through a central hole is inserted a piece of glass tubing 4½ inches long and having both ends completely closed. It slides easily up and down in the vertical portion of the siphon SI. About an inch below the cork float, and sliding tightly on the tube so that its position may be varied, is a slice cut cleanly and exactly at right angles from a rubber cork (ST). To bring the apparatus into action it is immersed in the water of the tank (about 5 inches deep) and held in position by a wedge of cork (W) as shown in the figure. The water is drawn through the siphon (SI), and the longer end of the tubing carrying the cork float and the rubber stopper is dropped into the open end (OE), so that the stopper rests upon and closes it. Water is supplied to the tank, and as its surface level rises the rubber stopper is lifted from the aperture, thus allowing a rapid flow through the siphon. This slowly lowers the surface level until the stopper again rests upon the aperture and obstructs the flow. The waste aperture being only 2 mm. in diameter the siphon remains full until the stopper is again lifted. It has been found by experiments that the cork float should have ample buoyancy, so as to easily counteract the suction of the outgoing current.

The main shortcomings of this device are (1) that the glass rod to which the float and stopper are attached is entered into the siphon, thus impeding the free outflow of the water; and (2) that there is no way of preventing small organisms from being sucked into the siphon and thus lost.

These shortcomings, however, are readily removed in the following manner.

1. Instead of using a glass rod, a short glass tube (Fig. 2A, TU), somewhat wider than the siphon, is

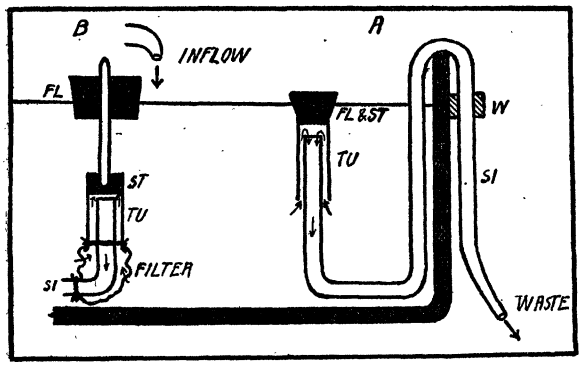

FIG. 2. Modified Tank Water Regulator

employed. At one end of this tube a large cork is inserted to serve as a float (FL & ST). To the inner end of this cork, a rubber gasket is attached in order to obtain a perfectly flat surface to close the open end of the siphon. The tube is now filled with water and placed over the inner end of the siphon in the manner shown in figure 2A.

2. The large float suggested by Chadwick is used in combination with the device described in the previous paragraph (Fig. 2B). However, the glass rod connecting the large float and the stopper should not be made to enter the siphon but should end inside the stopper. A tube of silk cloth (FILTER) should be tied to the lower end of the short glass tube (TU) and to the siphon, not tightly stretched, but in such a manner that the movements of the stopper are not obstructed.

The important points to be observed in making this apparatus are: 1. the tubing for the siphon should not be too wide gauged. 2. the open end of the siphon and the stopper should fit perfectly. 3. the float should be sufficiently large to overcome the suction in the siphon.

Finally, it may be added that instead of a one-sided wedge (W) to support the outer shank of the siphon, a pierced cork is more practical.

TAGE SKOGSBERG

HOPKINS MARINE STATION,
PACIFIC GROVE, CALIFORNIA

SPECIAL ARTICLES

SOME DEVONIAN PLANT LOCALITIES OF CENTRAL AND WESTERN NEW YORK

DURING the past few years a systematic investigation of possible plant localities in the Devonian outcrops of central New York has been in progress. As a result of these investigations plant material with preserved structure has been found in at least half a dozen localities, and there are good prospects of additional discoveries in localities yet to be investigated.

In 1924 Professor L. C. Petry[1] reported and briefly described a specimen from the Genundewa limestone on the west side of Canandaigua Lake at Cheshire, New York. This specimen showed mesarch primary wood strands at the margin of the pith, in contact with secondary wood in which the pits on the radial walls were segregated into groups of five to thirty-five each. These groups are arranged opposite each other in adjacent tracheids so that when the wood is viewed in radial section a characteristic cross banding is observed. To forms bearing these characters Zalessky[2] has assigned the generic name *Callixylon*.

1 Petry, L. C., "On Fossil Plants showing Structure, from the Upper Devonian of New York." Paper read before the American Association for the Advancement of Science, Washington, D. C., 1924.

2 Zalessky, M. D., "Etude sur l'anatomie du Dadoxylon Tchihatcheffi Goeppert sp." Mem. du Comité Geol. de Russe. Nouvelle Série 68: 29, 1911.