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

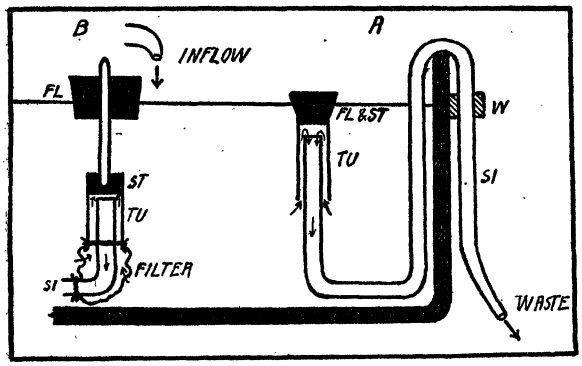

FIG. 2. Modified Tank Water Regulator

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.

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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.

At Seneca Point, about five miles south of this locality, and in the Genundewa horizon, several more pieces of preserved wood have since been found. These specimens were enclosed mostly in nodular masses of grayish limestone and associated with the pteropod *Styliolina fissurella*. In the same locality, but in the Genesee shale immediately below, several excellent specimens have been found. Some of them represent complete woody cylinders but devoid of cortex and phloem, and range from one fourth inch to two inches in diameter. In some of these specimens the mesarch primary wood has been preserved and most of them show the grouped arrangement of the pits. These wood fragments were found in concretions of dark, dense limestone which are very abundant in the Genesee shale. However only a small per cent. of these concretions contain recognizable plant remains.

Directly across Canandaigua Lake from Seneca Point and in the Genundewa horizon more material was found. No preserved primary wood was found in these specimens, but in many cases the secondary wood was in good condition. The pits on the radial walls of the xylem cells are grouped in the same manner as described above.

On the west side of Cayuga Lake some well preserved plant material was found in a rock fall in the gorge just below the main falls of Taughannock Falls State Park. The secondary wood, which shows the grouped pitting, is in the best state of preservation of any material yet examined. The primary wood is in poorer condition. The exact horizon from which these materials came has not been determined, but the concretions within which they were enclosed closely resemble those of the Genesee shale. The Genundewa limestone is not recognizable above the Genesee shale in this locality.

During the autumn of 1926 several fragments of preserved wood were found in an outcrop of the Ithaca shale on the Cornell University campus. They consisted of both roots and stems, the largest being about three fourths of an inch in diameter. While the preservation in these specimens is rather poor, the nature of the primary wood and the pitting can be determined in some cases. A feature of interest in one of these specimens lies in the fact that the horizontal banding due to the grouping of the pits is not constant throughout the stem, but can be observed in only a few places. The majority of the tracheids show continuous pitting of the *Dadoxylon* type. These fragments did not occur in concretions as did the others but were in a bed of solid limestone of rather localized extent. Associated with the plant remains were numerous large brachiopods. This horizon is about five hundred feet above the Genundewa horizon where, or near where, most of the other material was found.

Mr. A. E. Alexander, a student at Cornell, has recently submitted a specimen from the Ludlowville shale, Spring Creek, Erie County, New York. In this specimen the wood structure has been preserved with marcasite. This material being perfectly opaque, the structure can not be studied in thin section. Consequently its exact nature has not been determined but the tracheids show two or three rows of alternately arranged hexagonal pits which are not grouped after the *Callixylon* fashion.

With the exception of the last the localities above described cover an east and west range of about fifty miles across central New York. The vertical range is about five hundred feet. They all belong to the lower part of the upper Devonian, and in every locality mentioned (except the last) *Callixylon* seems to be the predominating plant type. The locality in Erie County belongs to the middle Devonian.

The fragmentary nature of this material suggests that it was not deposited *in situ*, but represents pieces of drift wood which floated some distance before being buried and preserved. It is generally agreed that the Genesee shales, where some of the material was found, were deposited in a rather stagnant sea, and the material itself apparently represents dry land vegetation. No preserved cortex or phloem has been found in association with any of the material.

Some of the materials show faint suggestions of growth rings. In no case are they well marked and in many specimens there is no evidence of them at all. Where they do occur the cells we assume to be the summer wood have a slightly smaller radial diameter than the adjoining spring wood. In case of a stem which has been slightly crushed flattening of the cells seems to occur to a greater extent along the region of the ring.

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EFFECT OF ULTRA-VIOLET LIGHT UPON DIGITALIS PURPUREA[1]

DURING the summer of 1927, an opportunity arose to test the influence of shorter rays of light upon a common medicinal plant, Digitalis purpurea or "Foxglove." In a five-section greenhouse, the center section was built of a special glass which transmits a considerable portion of the spectrum in the ultra-violet region.[2]

It was thus possible to develop the seedling plants

[1] Paper read before the Botanical Society of America, December 28, 1927.

[2] Acknowledgment is due The Vita Glass Corporation, of New York, for their cooperation in making this study.