Preliminary examination would indicate a new species of cordaites for which I propose the name *Cordaites Missouriense.*

The destruction of central pith preceding induration and subsequent compression have destroyed the structural evidence which would have otherwise been presented by the central elements of the stele. It is hoped that, preceding a more extensive description of this form which I will submit soon, evidence as to the nature of the primary wood and pith might be found.

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CLIMATIC CHANGE IN JAPAN

A PRELIMINARY report by Jimbo[1] indicates that recent changes in vegetation, and presumably in climate, near Mount Hakkôda in Japan correspond to those already established for Europe[2] and North America.[3] The results of stratigraphic studies of fossil pollen in peat are summarized by the author as follows:

> Pollen of *Abies,* which were found in a larger number in the upper layer, could scarcely be seen in the lower layers, while those of *Fagus* and of *Quercus* were abundant in the lowest layer, decreasing remarkably towards the surface. This fact may be considered as an evidence of predominant growth of *Fagus* and *Quercus* in older times, while *Abies* is dominant in the present time. It may be presumed, therefore, that deciduous forests in this region have been invaded by the montane conifer.

We have thus a new and important link in a chain of evidence almost girdling the northern hemisphere. Without serious exception this evidence points to a recent increase in coolness and humidity following a warm, dry period of three or four thousand years ago. It is interesting to note that on this point microstratigraphy has confirmed inferences based upon floristic study; for the value of floristics as a means of obtaining perspective in ecological work is perhaps not sufficiently appreciated.

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FALL OF A METEORITE IN SOUTH CAROLINA

A NEW meteorite has just come into my possession. The stone, which weighs about twelve pounds, fell July 1, 1933, within a few feet of a church at Cherokee Springs, South Carolina. The fall was very satisfactorily observed by two intelligent men, who state that the stone, which was picked up immediately, was too warm to hold comfortably in the hand, though not hot.

It is roughly rectangular in outline, bounded by rather flat surfaces showing a rather striking absence of the usual pitting. A considerable broken area at one end shows it to be apparently a light gray spherulitic chondrite, with very strongly developed chondrules and conspicuous inclusions of troilite. One or two smaller broken spots show traces of a secondary fusion crust. The primary crust is for the most part intact and more than ordinarily thick. I am proceeding with a full description, which will be completed as soon as practicable.

STUART H. PERRY

THE ADRIAN DAILY TELEGRAM
ADRIAN, MICHIGAN

SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN APPARATUS FOR DEHYDRATING NEMATODES

THERE is in use at the biological laboratory at New York University an instrument designed by the writer for the purpose of dehydrating nematodes which possess very thick cuticula. This structure, characteristic of many species of nematodes, especially the free living types, is very impermeable to dehydrating fluids, and therefore, if the change from an alcohol of a given percentage to one of a higher percentage is not carried out gradually, the nematode collapses. The apparatus to be described carries out these changes very slowly and needs little of the worker's time.

As shown by the figure, it consists of a series of five tubes set at an angle of about 30° onto a piece of glass tubing T about 550 mm long and 4 mm in diameter. All the glass tubes reach a height of about 700 mm above the bend G in the tubing. Each of the tubes is sealed to the tubing T by means of a large bore capillary. The capillary bore from tube 1 to tube 5 becomes increasingly larger; that is, the capillary of tube 1 is smaller than that of tube 2 which is smaller than that of tube 3, etc. The capillary of tube 1 has such a diameter that when the tube which rests on it, if full of water, will deliver the liquid at a rate equal to the rate of flow of water through capillary 2 when tube 2 is filled with water. Similarly, capil-

[1] Tadao Jimbo, "Pollen-analytical Studies of Peat Formed on Volcanic Ash," *Sci. Rep. Tohoku Imp. Univ.* 4th Ser. (Biol.), VII, 1: 129–132, 1932.

[2] G. D. Fuller, "Pollen Analysis and Postglacial Vegetation," *Bot. Gaz.,* 83: 323–325, 1927.

[3] P. B. Sears, "Postglacial Climate in Eastern North America," *Ecol.,* 13, 1: 1–6, 1932.

lady 3 has a bore through which water will flow, when tube 3 is full, at a rate equal to the flow through capillary 2, etc. Since the rate of flow depends chiefly on the height of liquid, exerting a pressure through the capillary, and since the tubes become progressively shorter, it is easy to see the reason for the increase in the bore of the capillaries. The tubing T leads to a cup Y, to the bottom of which is attached a U-shaped tube ending in a piece of rubber tubing, the opening of which can be adjusted by means of a pinch-cock.

To prepare the instrument for use, the following procedure is carried out: the nematodes are placed inside of the cup Y, the pinch-cock Z is turned to shut off the opening entirely, the cup is filled with water to the level L and it is then fitted to the stopper

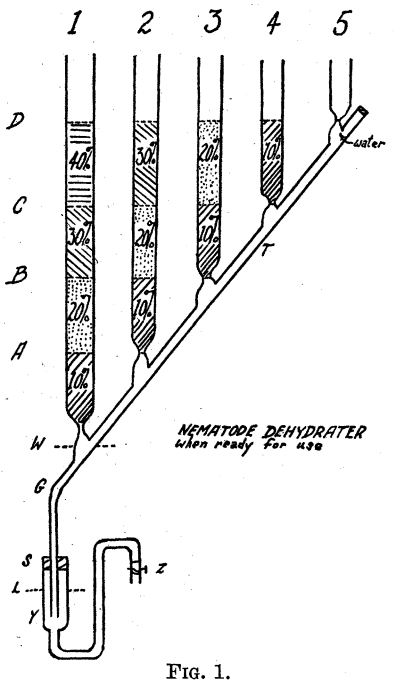

FIG. 1.

S, whereupon water is driven up the tubing to about the level W. Into tube 1 is now poured 40 per cent. alcohol until level A is reached in tubes 1 and 2. Into tube 2, 30 per cent. alcohol is now poured which pushes out the 40 per cent. alcohol from tube 2 and then flows under the 40 per cent. alcohol in tube 1 raising the liquid to the level B. There is now in tube 1 a lower layer of 30 per cent. alcohol upon which rests a layer of 40 per cent. alcohol, while in tubes 2 and 3 there is only 30 per cent. alcohol to the level B. Now 20 per cent. alcohol is poured into tube 3, which forces out the 30 per cent. alcohol from 3 and then rises under the 30 per cent. alcohol in tubes 2 and 1 until the level C is reached in tubes 1, 2, 3 and 4. There is now in tube 1 a lower layer of 20 per cent., a middle layer of 30 per cent., and an upper layer of 40 per cent. alcohol; in tube 2 there is a lower layer of 20 per cent. and an upper layer of 30 per cent. alcohol, while in tubes 3 and 4 there is only 20 per cent. alcohol. Into tube 4 is now poured 10 per cent. alcohol until the liquid in tubes 1, 2, 3, 4 and 5 reach the level D. There is now in tube 1 a lower layer of 10 per cent., a second layer of 20 per cent., a third layer of 30 per cent., and a top layer of 40 per cent. alcohol; in tube 2 there is a lower layer of 10 per cent., a second layer of 20 per cent., and an upper layer of 30 per cent. alcohol; in tube 3 there is a lower layer of 10 per cent. and an upper layer of 20 per cent alcohol; and in tubes 4 and 5 there is just 10 per cent. alcohol to the level D. Into tube 5 there is now poured a little water—enough to drive out the alcohol from tube 5 and to clear out the tubing T. The apparatus is now ready to be used.

The pinch-cock is opened and the liquid drains from all the tubes at once. First the 10 per cent. alcohol flows from tubes 1, 2, 3 and 4, leaving tube 4 empty; next 20 per cent alcohol flows from tubes 1, 2 and 3, leaving tube 3 empty; then 30 per cent. alcohol flows from tubes 1 and 2, leaving tube 2 empty; and finally 40 per cent. alcohol flows from tube 1, emptying it. The rate of flow and therefore the speed with which the nemas are taken up through the dehydrating fluids can easily be regulated by opening or closing the pinch-cock. The process is now repeated, using 50 per cent., 60 per cent., 70 per cent., 80 per cent. and 95 per cent. alcohols.

If the capillaries are made so that each will deliver about 50 cc a minute, the apparatus can be filled in about 7 minutes and need not be touched for the entire length of the run-up. The change from an alcohol of a given percentage to one higher up is very gradual, because the two alcohols, stratified as they are because of their different densities, nevertheless diffuse somewhat at the interface of the layers. If the nematodes are very small, a piece of chamois placed on the bottom of a plaster-of-paris cup, which can be molded to fit inside of the glass cup Y, may be utilized. The nemas, placed on the chamois through which alcohol readily passes, can be easily seen and handled.

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CULTURE OF THE DRONE FLY, ERISTALIS TENAX

Eristalis tenax has been shown to be especially valuable for the study of its reactions to light,[1] because it is uniformly positive and orients accurately in light,

[1] W. L. Dolley, Jr., and H. G. Haines, *Scientific Monthly*, 31: 508, 1930; W. L. Dolley, Jr., *Jour. Exp. Zool.*, 62: 319, 1932.