The pollen of one of the plants showed an unusually rapid response in the form of a very sudden rise in its hydrostatic pressure. That plant was Scabiosa atropurpurea which belongs to the Dipsaceae. Instantly almost, or before any measure of time could be made, when the pollen of this plant was placed in distilled water it instantly put out 4 tubes about the length of the diameter of the pollen grains. No further change took place no matter how long they were left undisturbed in distilled water. On the average 96 pollen grains in each 100 put out tubes suddenly in the way just described. For rapidity of response in this way the pollen of Scabrosa excells all other pollen thus far investigated. To be sure pollen grains will often burst in a short time when placed in distilled water and the contents, as is well known, will be forced out more or less rapidly but none of them do so with the almost instantaneous action of Scabiosa. Nor do they maintain a tube form characteristic of the usual germinating methods in pollen. This sudden endosmotic action shown by the pollen of Scabiosa is an illustration of how quickly a membrane may be permeable even if only a slight amount of liquid enters. No change in the wall of the pollen as a dissolution had taken place.

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A WARMING NEEDLE FOR ARRANGING SPECIMENS IN PARAFFIN.

BY

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The arranging of specimens in paraffin in the box of whatever kind used, must be done quickly and orderly before the cooling process begins. When the paraffin begins to chill in the box it becomes opaque due to air. At the same time when an ordinary needle is used that is not warmed to the same temperature or above the temperature of the paraffin in the embedding box the paraffin chills on the needle and accumulates on it with each attempt to such an extent that it must be cleaned continually or it is useless. This difficulty I have overcome by the use of what I have termed an electrical needle.

The needle itself consists of a No. 10 copper wire about 19 cm. long, a small silver wire would be better, and is tapered to a point at the end which is to touch the specimens to be arranged. The other end is fastened to the electric wires. Beginning at this end the copper needle is wound with No. 22 enamelled resistance wire to within 3 cm. of the point of the needle. This small wire is connected with the direct electric current and both the needle and enamelled resistance wire wrapped together with tape to a distance of 6.5 cm. from the point. This needle was connected to the current with four 100 watt electric lamps in arranged multiple series which gave the necessary amount of heat. I found by experiment that the needle arranged as described acquired within about one minute 52 to 55 C. which is sufficient to keep the paraffin melted. If a higher or a lower temperature than 52 C. was desired then lamps having a greater or a less resistance

can be put in the series for this purpose. The needle was attached to an electric wire about 2 meters long and could thus be used at any point about the work table or hung up out of the way when not in use. The use of a warming needle of this kind is much more convenient than the old method generally used and more rapid.