more satisfactory than one which was wet when introduced into the dish. The water on the needle would promptly unite with the surface water in the dish, and several specimens would then be lifted from the dish in nearly every case, unless previously puffed away with the breath. But by wiping the needle, the individual plant desired can often be lifted out even if others are so near as to nearly touch the selected plant.

The dehydration dishes within the crystallizing pans proved very satisfactory, and permitted the continued cultivation of the particular strain under observation for a considerable period.

FREDERICK H. BLODGETT
TEXAS AGRICULTURAL AND MECHANICAL COLLEGE, COLLEGE STATION, TEXAS

TWO METHODS OF ORIENTATION OF SMALL OBJECTS IN PARAFFIN

THE following method is applicable to all objects which are sufficiently small to admit of embedding in watch crystals. It has been found practical and easy and is given here in the expectation that it will be of assistance to others.

Watch crystals of the Syracuse type with flat bottoms are employed. On the bottom, parallel lines about 2 mm. apart are ruled with a diamond. These are then scraped out with a coarse needle, the sharp edges being broken off and the lines widened to form open grooves. The watch crystals should be washed to remove the small particles of glass and are then ready for use. The watch crystals are prepared for embedding by coating the interior with a film of glycerin as usual, but care must be taken to rub the glycerin into the lines. When infiltration is complete, the watch crystal containing the objects is removed from the oven and the bottom slightly chilled by contact with cold water. It is then placed on the stage of a binocular microscope and the objects oriented with a warm needle, so that the plane of section desired shall be parallel with the lines and normal to the bottom of the watch crystal. As soon as the paraffin on the bottom has cooled sufficiently to hold the objects in place, the entire mass is cooled with water in the usual manner. In orienting the objects it is found that the lines on the bottom of the watch crystal show more distinctly by transmitted than by reflected light. The block when removed shows on its lower surface minute parallel ridges which enable accurate and easy orientation when mounted on the object carrier of the microtome. The block should of course be placed in the microtome with the ruled surface upwards and then arranged with the lines parallel with the edge of the knife and the surface at right angles to the direction of motion, that is horizontal in the ordinary vertical type of Minot microtome, vertical in the horizontal type.

A second method, or variation of the method given above, is to rule the parallel lines on the watch glass with a "china-marking" pencil. These lines, even though the glass is thoroughly coated with a glycerin film, will come away with the paraffin block and may be used as orientation lines. This method may also be used for numbering or otherwise marking paraffin blocks.

JAS. A. NELSON
BUREAU OF ENTOMOLOGY, WASHINGTON, D. C.

THE AURORA BOREALIS

TO THE EDITOR OF SCIENCE: The display of the aurora borealis mentioned by your correspondent, Mr. Thomas Byrd Magath, in SCIENCE, No. 1186, as seen at Fairport, Ia., on the ninth of last August at about 8.45 (Central time?) was also observed by the writer and others from a yacht anchored at Thimble Islands (Stony Creek), Conn., at about nine, 75th meridian time, of the same evening. The display was quite brilliant, although the streamers did not reach much above 50° in altitude. The region of greatest brilliancy was about N. 25° W., true.

On August 14 at about the same time a more brilliant display was seen at Stonington, Conn. (Lat.41° 19′). The illumination reached much further to the eastward and the streamers were higher. At times masses of pale light detached themselves from the general illumi-

nation and rose with a quivering flame-like motion almost to the zenith where they disappeared, to be succeeded by others in turn. These waves appeared to be about 10° to 30° in a horizontal direction and perhaps 2° in the vertical direction. The display was observed by us until about ten and we were told by a fisherman who was out all night that it lasted until nearly three in the morning.

On August 25, at Clinton, Conn. (Lat. 41° 17′), we observed a still more brilliant display at 8.40. There was an arch of greenish-white light whose center bore nearly north, true, the portion of sky enclosed by the luminous arch being entirely dark. Streamers of considerable intensity were observed and the light from the arch was sufficient to illuminate the whole bay, rendering objects 300 yards away distinctly visible. At times above the greenish-white light, light varying from pale pink to deep red was observed, but chiefly on the eastern side of the meridian and high up, at least 75°. Suspecting that the latter phenomenon might be an illusion due to a complementary after-image of the brighter display lower down, we examined it carefully with the light from the rest of the display cut off for a considerable time but could not see that this made any difference. The display was observed until 9.40, when it had not ceased.

Are not these phenomena, *i. e.*, the dark segment below the bright arch and the pink color, unusual in such low latitudes?

Charles A. Mead

Carteret Academy,
Orange, N. J.

SCIENTIFIC BOOKS

Experimental Pharmacology. By Dennis E. Jackson, Ph.D., M.D., Associate Professor of Pharmacology, Washington University Medical School, St. Louis. St. Louis, C. V. Mosby Company. 1917. Pp. 536, with 390 illustrations. Cloth. Price $4.

Scientific text-books may be conveniently grouped into two classes: the majority have for their object the adequate, concise and clear presentation of the principal facts and data concerning the subject they deal with, in logical order and with a due regard to their relative importance. Such works are generally impersonal in character and introduce the author's views only incidentally in connection with the sections dealing with the particular lines of work in which they have been interested. Another class of text-books, however, may be characterized as distinctly "individualistic" in style and seem to have for their purpose primarily the exposition of the author's methods and views, relegating all other matter to a secondary place. Such a presentation of the subject is perhaps a natural one for the pioneer in a new domain of science and may be exemplified in case of pharmacology by Schmiedeberg's well-known little book, but when a science has once reached a high development, as is true of the pharmacology of the present day, this form of treatment in any hands but those of a great master is apt to become somewhat one-sided and provincial.

Within the last few months we have seen the publication in this country of two text-books on pharmacology which well exemplify the two classes just mentioned. Sollmann's "Manual of Pharmacology and Laboratory Guide"—the recent new edition of his older work, greatly amplified, revised and rearranged—is an excellent example of scientific exposition belonging to the first or "impersonal" class.

Jackson's "Experimental Pharmacology," on the other hand, is certainly "individualistic" in character, and must be put in the second class described above. It is not an ordinary "text-book" of pharmacology but is preeminently *Jackson's* text-book of pharmacology. The personality of the author is patent on almost every page of it; and therein are expressed both the merits and the demerits of the work. On the one hand, even a superficial examination of the treatise reveals, as is well known, that the author is a master of technique and the descriptions of various devices and experiments originated or improved by him are, in so far as they are new, illuminating and useful. On the other hand, the author unfortunately, in exactly the same manner as he treats new and original manipula-