nary, and a final chapter discussing the more general questions growing out of the story related in the preceding part of the book.

Naturally in such a limited compass much must be omitted—a bare catalogue would occupy much more space—and Professor Seward has had to select, partly with a view to continuity in the narration. This is done with a skill and a lack of dogmatism which is in pleasing contrast to some of his more youthful work. The illustrations also are one of the noteworthy features of the book. Tables of geological and geographical distribution, together with maps—both distributional and paleogeographic—are added to the chapters devoted to the botanically more important periods. In all the reader is furnished with an easy and satisfactory guide which will enable him to delve as deeply as he may wish into the technical literature. Nothing that has been written on the subject approaches the present book as an introduction to professional study in paleobotany, especially in its broader and more cultural aspects.

A few slips have been noted, such as calling the Black Hills a spur of the Rocky Mountains, the locating of Staten Island off the west coast of North America, the "salt lakes in the Newark series" and the placing of the Albian stage first in the Upper and then in the Lower Cretaceous, but it is perhaps carping to mention such very minor blemishes in a work which is so exceedingly well done as a whole.

There are a number of geological concepts that are taken for granted which are open to question, particularly in the section devoted to geological cycles—a belief that has appealed to many geologists, but which is wholly subjective. Nor are the folding of strata and the elevation of mountains interchangeable terms. There is also a lack of appreciation of continental sedimentation, other than lacustrine, particularly in connection with the discussions of the Old Red sandstone, the Gondwanas, Triassic, Wealden, etc., and a too easy acceptance of red beds as indicative of arid climates. Although he does not accept it, the author might be said to flirt with the Wegener hypothesis, although, as has been frequently pointed out, its acceptance raises more difficulties—distributional and climatic, not to mention geophysical—than it solves.

It may well be doubted if there is the implied change in floras at the Paleozoic-Mesozoic boundary, and although it is perhaps wholly a matter of opinion the reviewer has grave doubts regarding the relatively late appearance of the first land floras. Paleobotanists are at present in about the state of mind on this question as were paleozoologists a couple of generations ago regarding the similar question of the time of appearance of marine life.

Despite these criticisms, the verdict must go to the author, for they are more than counterbalanced by the pleasing character and meritorious qualities of the book as a whole.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN INEXPENSIVE LIGHT SOURCE FOR A PORTABLE MICROSCOPE

WE have devised an inexpensive portable light source for a high and low power portable microscope. There are certain obvious situations in which this apparatus is of value. (a) During a surgical operation fresh frozen microscopic sections made from tissue removed while the operative procedure is in progress can be passed around among spectators and students in an amphitheater and give a vivid picture of the disease which the surgeon is trying to combat. (b) The apparatus furthermore lends itself admirably to teaching histology, pathology or biology, when occasion arises requiring a demonstration to a class of a certain feature or features in a microscopic preparation. (c) There is also possible application for the apparatus when one is doing blood or spinal fluid cell counts in a home. (d) Botanists and entomologists in field work have a need for such an apparatus.

The essential features of the apparatus are a small portable microscope, such as the Spencer Lens Company demonstrating microscope, No. 96, and a light source. (Fig. 1a). The light source is composed of a lamp and reflector from a flash light, a hinge-topped metal case, containing two standard dry cells and a rheostat switch which allows two different degrees of light, bright and dim. (Fig. 1b).

The lamp house is fastened to the base of the microscope with two screw clamps. (Fig. 1a). The flash light lamp is dissembled from the usual tubular handle and the outer collar with screw threads is soldered to the hinged lid of the lamp house. When the lid is closed, the center of the lamp makes an electrical connection, with a base plug by spring contact. (Fig. 1b). The dry cells are held in place by spring contact carriers which convey electrical energy to the rheostat switch. Resistance for this switch is formed by about 3 feet of fine annealed wire wrapped on a wood pulp spindle and insulated from the metal housing by sheet mica. The inside of the lamp housing is lined with paste board as an insulating medium.

Parts of the apparatus that will deteriorate can be bought in any electrical goods store.

The apparatus with the self-contained light source

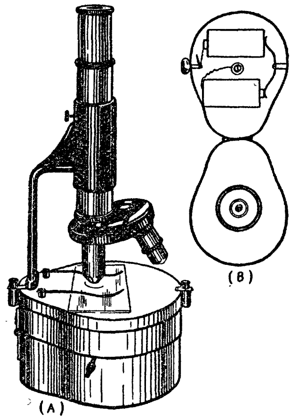

FIG. 1a. Assembled apparatus with the microscope in position on the lamp house. The hinge for the cover and screw clamp holding it in position are illustrated. The switch key is revealed well down on the side of the lamp house.

FIG. 1b. A diagram illustrating the internal construction of the apparatus. In this sketch the lamp house is opened with the hinged top lid turned down. The flash light and its center contact are shown on the inside of the lid. In the base are the two standard dry cells with their electrical connections and contact clamps with the rheostat switch and center spring contact for completion of the electrical circuit to the lamp.

is especially useful because one can view microscopic sections from any position in a room or teaching amphitheater regardless of relationship to window or other light source.

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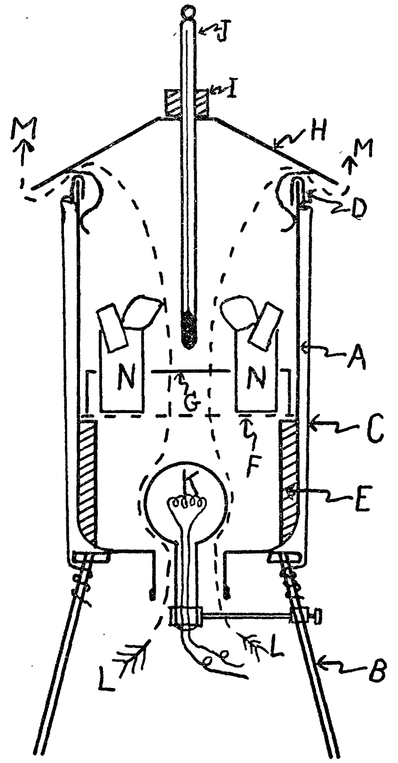
APPARATUS FOR RAPID DRYING OF SOLUTIONS

IN determining the solubility of strontium nitrate, samples of the solution were dried in ordinary weighing bottles. As the water evaporated off, a crust was formed over the top which cut down materially the rate of evaporation. Splashing resulted when heated in an oven at 100° C. At 70° in a closed electric drying oven as long a time as two weeks was required to dry a sample. An electric oven with circulating air not being available, the simple apparatus shown in the figure was devised. It consisted of material found in any laboratory. A was a 4 litre wide mouth salt bottle. The bottom was removed by placing sulfuric acid in it to a depth of one centimeter and adding a little water. The heat developed broke the bottom out. It was inverted on tripod B and firmly held in place by means of four copper guy wires C having hooks made of bent nails at D. An annular ring of plaster of Paris was constructed at E using a cylinder of thin sheet aluminium to hold



it in place. A wire gauze F was placed over the plaster to support the bottles NN. A frame of copper wire G was placed 1 cm above F. This kept the bottles from tipping over. The wire gauze permitted a free circulation of air through the apparatus. The roof H was made of a piece of a tin can. There was a space of one cm between the top of the bottle and the roof to permit the exit of air. It extended far enough beyond the sides of the bottle to prevent the access of dust. I was a rubber stopper supporting the thermometer J. K was an electric light bulb supported at such a height that air could pass freely through the mouth of the bottle. Smoke from a lighted cigarette followed the path indicated by the dotted lines L–M. A 150 watt Mazda lamp maintained a temperature of 110° C.; a 100 watt lamp, 70° C. At the latter temperature, 15 ml samples of a 40 per cent. solution of strontium nitrate (approximately saturated at room temperature) evaporated to dryness in 24 hours. This compares with the two week period in the closed oven.

A narrow strip of filter paper placed in the solution and extending above the surface of the solution facilitates evaporation without splashing. It, of course, should be dried, before being weighed with the empty bottle, in the same manner as the evaporated sample is dried before the final weighing.

Various alterations suggest themselves. A heating coil supported on a mica frame in the mouth of the