Die Binnengewässer Mitteleuropas. By AUGUST THIENEMANN. Bd. I, 1925, 255 pp. Published by E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart. Brochure Mk. 16.00, bound Mk. 17.50.

THIS is the first volume of a series of seven which will deal with the physical, chemical and biological features of the inland waters of central Europe; it presents the hydrobiological characteristics of these inland waters and thus serves as an introduction to the six volumes which are to follow.

The book is divided into five sections in which the following types of water are discussed: (a) Underground waters, (b) cold fresh-water springs, (c) flowing waters, (d) standing waters and (e) thermal and brackish waters. The introduction is devoted to a discussion of the nature of limnology. This is followed by fifty-seven pages relating to the first three sections, 138 pages to the fourth and twelve pages to the fifth. More than half of the text, therefore, deals with the various phases of limnology. The ecological features of the different types of aquatic habitats are especially emphasized.

The underground waters are characterized by the absence of light and this affects the green plants adversely but certain forms of algae are able to thrive with minimal amounts of light. The absence of light also affects the animal population, giving rise to a special group of organisms with degenerate eyes. Two other important factors are the relatively low but constant temperature of the water and the scarcity of food.

Spring waters also have a low but constant temperature throughout the year, and they are frequently very deficient in dissolved oxygen. They possess a distinctive fauna which is allied to the blind forms of the underground waters on the one hand and to some forms found in standing waters on the other hand. Several forms found in springs do not attain as large a size as they do in other waters.

The chief factor in flowing water is the current; it affects the variety as well as the shape of the organisms. In the Rhine River, for example, the number of species of fish is greater toward the mouth where the current is slow than toward the source where the current is swift. Also the body form of fishes regularly populating flowing water is different from that of fishes which normally occupy standing water. Some of the inhabitants of swift-flowing streams possess structures for attachment to the substratum so that they will not be swept away by the current.

Lakes, ponds, pools and bogs are considered under the title of standing waters, but the chief part of the section treats of lakes. The temperature, transparency, color and chemistry of lake waters are discussed in some detail. This is followed by a consideration of the different depth regions of lakes in relation to the organisms living therein and of the effect of physical and chemical factors on the vertical and horizontal distribution of these organisms. The different types of lakes are also considered.

The fifth section deals with thermal and brackish waters in relation to their biota.

An excellent bibliography covering twenty pages is given at the end of the book.

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MADISON, WISCONSIN

SCIENTIFIC APPARATUS AND LABORATORY METHODS

THE RING METHOD FOR SURFACE TENSION MEASUREMENT

SOME data which have been published and some more recently obtained in this laboratory by the use of the ring method for determining surface tensions are not entirely in agreement with some of the assumptions which have been made concerning this method. Since many workers consider the ring method to be entirely reliable and recommend it as the only method by which the surface tension of colloidal solutions can be accurately measured, it is of importance to again emphasize the fact that the ring method as it is at present being used is not as reliable as is being assumed.

Cantor[1] has shown that to obtain reliable data the ring should be kept rigid and the force required for detaching the ring from the liquid should be applied on the liquid and not on the ring, and has further shown that the diameter of the wire which is used for making the ring should be so small as to be negligible in comparison with the other dimensions which come into consideration. Sondhaus[2] who first introduced the ring method for surface tension measurements observed that too small a ring must not be used. All the rings which he used were much larger than any which are now used and some were twenty centimeters in diameter. A study of the data which he obtained in measuring the surface tension of distilled water with platinum rings, which were 4.6 and 6.1 centimeters in diameter, shows that the results which were obtained with the larger ring are usually 2 or 3 per cent. higher. Edser[3] has more recently observed that when a ring made of platinum wire which is 0.3 millimeters in diameter is used, the results obtained are about 8 per cent. too high.

A few of the experiments made with the use of a du Nouy tensiometer in measuring the surface tension of water are illustrated in Figure 1. Letting

[1] *Wied. Ann.*, 47 (1892), 399.

[2] *Ann. der Physik. Chem.*, 8 (1878), 266.

[3] Fourth Report on Colloidal Chemistry (Brit. Assn. Adv. Sci.) (1922), 284.