

- Streams*, G. P. Putnam's Sons, New York, N. Y. 1930. 464 pp. \$3.50. Very well illustrated handbook of aquatic plants and animals.
- Needham, J. G., and Lloyd, J. T., *The Life of Inland Waters*, Comstock Pub. Co., Ithaca, N. Y. 1937. 438 pp. \$3.00. Well illustrated descriptive information on aquatic plants and animals.
- Needham, J. G., and Needham, Paul R., *A Guide to the Study of Fresh-Water Biology*, Comstock. 1938. 88 pp. \$1.00. A field manual designed to accompany the above book.
- Needham, Paul R., *Trout Streams*, Comstock. 1938. 243 pp. \$3.00. Very good chapters on stream conditions and animals, especially insects.
- Pearse, A. S., *Animal Ecology*, McGraw-Hill, New York, N. Y. 1939. 654 pp. \$5.50. A general text including a long chapter describing fresh-water conditions and animals.
- Shelford, Victor E., *Animal Communities in Temperate America*, Univ. of Chicago Press, Chicago, Ill. 1913. 376 pp. \$4.00. General treatment of ecology, with detailed description of stream communities.
- Ward, Henry B., and Whipple, George C., *Fresh Water Biology*, John Wiley & Sons, New York, N. Y. 1918. 1121 pp. \$7.00. Extensive identification manual, with general discussion of fresh-water conditions.
- Williams, Samuel H., *The Living World*, Macmillan, New York, N. Y. 1937. 726 pp. \$3.60. A general college text, including a well illustrated chapter on conditions and organisms in fresh water.

## Biological Briefs

KIENAST, MARGATE. *War on Creeping Poison*. Nature Magazine 34: 434-437. October, 1941.

The effects of poison ivy have been known and publicized since the records of Captain John Smith; yet with a concerted drive the weed could be almost eradicated within a short while. Sensitivity to its irritating oils is sometimes inborn and at other times may develop after years of immunity. In order to produce the characteristic burning, itching skin eruption, the oil must make direct contact with the skin, either directly from the leaves or in the smoke from burning plants. To be eradicated, the plant must be cut off as close as possible to the ground, repeating the process two or three times until the underground stems no longer send up new shoots. Sodium chlorate, sprayed on the leaves or scattered as dry salt on the ground, will destroy it. Where there is no danger of poisoning domestic stock, arsenicals may also be employed as sprays. To oxidize the irritant, vanishing cream containing 10% sodium perborate should be used on the skin before exposure. After possible contact with the plant, skin and clothing should be thoroughly scrubbed with soap.

BEEBE, WILLIAM. *Animal Doors*. Bulletin of the New York Zoological Society 44: 114-116. July-August, 1941.

Doors to exclude enemies from the animal home may be a portion of the animal itself or may be manufactured. The head of a boring beetle stops up the opening to its tun-

nel in a tree, while the hermit crab effectively blocks the openings of a great variety of borrowed mollusc shells with its large claw. A modified collarbone serves the box turtle as a door, while the armadillo uses its head, and its relative, the South American pichi-ciago, stops up its burrow with its scaly posterior. The trap-door spider compounds the door to its home of successive layers of sand and silk. The mormot upon hibernation blockades its burrow with stones and moss. Tube worms and topshells exhibit exquisite opercula, marvels of intricate sculpture when viewed under enlargement.

COE, JOHN EDWIN. *Hydroponics and Auxins*. School Science and Mathematics 41: 629-637. October, 1941.

The minerals necessary for nutrient solutions in soilless plant culture may be grouped into the macro-elements, which include nitrate, phosphate, sulfate, potassium, calcium, and magnesium, and the micro-elements boron, manganese, zinc, copper, and iron. Nitrates assist in the formation of proteins and hence favor foliage growth but retard ripening, while phosphorus hastens root growth and ripening. Potassium is essential to stem growth, photosynthesis, and assimilation. Calcium stimulates protein formation and root growth and strengthens cell walls. Magnesium, iron, and copper are necessary for chlorophyll formation; boron and silicon, for seed development. Control of acidity and total concentration of the solution, as well as maintenance of proper con-

ditions of temperature and insolation, are likewise necessary. Hydroponic methods are being used commercially to increase size and yield in fruits and vegetables; recently, the growth of oriental drug plants no longer available by import and the sprouting of grains for fodder have been instituted.

The growth-accelerating substances of plants, or auxins, control plant activities. They may be grouped as the vitamins, of which A, B<sub>1</sub>, C, E, and G are essential; the hormones, which control development of plant organs; the heteroauxins such as phenyl acetic acid and indole butyric acid which when applied hasten rooting and counteract dormancy, and colchicine which induces polyploidy; and the inorganic auxins including ethylene gas which yellows citrus fruits and initiates root growth. Honey contains auxins powerful enough to cause ever-green seeds soaked in it to germinate within a day instead of the normal period of several years.

RUTH SHERMAN STEIN.

### *The Teacher as a Leader*

When you first leave the city,  
Roads lead many ways.  
Unless you're under guidance  
You may end in a maze.  
Your search for greater knowledge  
May lead through paths unknown  
And train some ardent students  
To go their way alone.

When you approach the city,  
As all roads lead to Rome,  
Not one, but many methods  
Will guide the student home.  
If you are but the leader,  
Your strength and courage show;  
Whichever path you follow  
As you lead, the students go.

RUTH A. DODGE.

# Amount and Nature of Biology Teaching in Secondary Schools: Data from a Questionnaire

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*(Continued from January)*

## CHANGES AND CONDITIONS RELATING TO BIOLOGY IN THE CURRICULUM

*Units of biology added to or dropped from curriculum during past 10 years.* The unfortunate wording of a question intended to provide data concerning recent gains or losses of units of biological science in the school curriculum considerably weakens the value of the replies obtained on this subject. "During the last 10 years the total amount of biological science taught in our school has been: — increased, — decreased; — unchanged. The chief changes were — —." Their specification of changes (when this was done) showed that very many teachers regarded an

increased *enrollment* of pupils (which is of course quite general) as warranting their checking in the space for "increased." But others who checked "increased," probably for the same reason, failed altogether to state the nature of the changes; thus some, probably many, of this group of replies wrongly recorded a school as having recently increased the number of units of biology taught. The question was properly understood by fewer than the 1,649 teachers whose replies are recorded in Table 2. The replies which record "decreased" amounts of biology offered do in fact represent the recent loss of units from the school curriculum in practically all cases; per-