

while, the first need is for greater efficiency in the commercial production of dyes in actual demand, and the second for the conservation of resources during an abnormal period. That is work for which men of business training are of greater value than men of scientific attainment, and the moment would not appear opportune for any change in the constitution of the board of directors.—*The London Times*.

SCIENTIFIC BOOKS

The Laws of Life: Principles of Evolution, Heredity and Eugenics. By WILLIAM M. GOLDSMITH, A. M., Ph.D. Boston, The Gorham Press, p. 441.

A LARGE, well-written and useful volume dealing particularly and most successfully with the problems of heredity in man and the conclusions based on our solutions of these problems.

Very many topics are treated by the author, in general sanely and accurately, with a wealth of illustrations and apt quotation. Much of this material ought to be part of the common knowledge of educated men and women, though at present this is far from the case. The main elements of eugenics especially should become as much a part of everyday knowledge as the causes of the succession of seasons—or even the multiplication table.

In the discussion of evolution, Dr. Goldsmith gives scant recognition to the theories and discoveries of Darwin. The conception of the formation of species largely, by abrupt mutation and Mendelian hybridizing, is not borne out in nature, and in nature our species exist. A species of animal or plant is a definable type of organism which has run the gauntlet of the ages and has *endured*. The extrinsic facts and factors of evolution should not be ignored or minimized. We know nothing of evolution *in vacuo*, and the even flow of life is modified, obstructed or split by conditions of environment. Separation and selection are elements in the formation of every species, the one preserving adaptations, the other permitting, by new conditions of selection, the persistence of variations.

In spite of the researches of mechanistic experimenters, our author does not believe that all phenomena of life can be summed up in terms of chemistry or physics. It may be that he takes too much pains to reconcile religious conceptions with the facts of nature. Science deals with truth so far as we can understand it, and it is one of its basal principles that we can never know the answer to any question until we find it out.

DAVID STARR JORDAN

STANFORD UNIVERSITY, CALIFORNIA

SPECIAL ARTICLES

THE REST PERIOD OF SOLANUM TUBEROSUM IN RELATION TO AVAILABLE NITROGEN

EXPERIMENTAL evidence has been secured that the slow growth of potatoes planted during their rest period may be due in part to the deficiency of available nitrogen in the tubers.

On September 28, 1922, seed pieces, 25 grams in weight, from tubers in the resting condition were planted in pure silica sand. One half of the cultures were treated with a complete nutrient solution containing equal molal (.007 mol.) proportions of the following salts, KNO_3 , MgHPO_4 and CaSO_4 . The other half were treated with a solution of the same total molal concentration, but which was altered so as not to contain nitrates, the KNO_3 being replaced by KH_2PO_4 . Six weeks later tubers which had passed through their rest period were planted in the same kind of medium. These cultures were treated like those above, *i.e.*, half received a complete nutrient solution and the other half a solution containing no nitrate. The cultures of both series, resting and non-resting tubers, that received a complete nutrient solution appeared above ground during the first week in December. The cultures from resting tubers that did not receive nitrate appeared above ground a week later than the cultures of the same series that received nitrate. An examination before the appearance of the first sprouts showed, however, that the time of sprouting was approximately the same in both cases. All the cultures of this series produced single sprouts. The outstanding feature of this series, however, was the rapid development of the sprouts in the cultures that received nitrate as compared with those that received no nitrate. At the end of several weeks the difference was still more striking, the cultures that received nitrate were large and healthy plants, while those that received no nitrate were barely above ground. The cultures of the second series, non-resting tubers, differed from the above in that four to six sprouts developed instead of one. There was no significant difference in the dates the sprouts appeared above ground due to the presence or absence of nitrate, and, furthermore, the plants grew equally well during their early growth phase whether or not they received nitrate.

It is evident that on germination the physiological condition of tubers planted during the rest period is not the same as in normal non-resting tubers. The results obtained suggest that the breaking of the rest period in potatoes may depend at least in part on the