

the vitamin B group, and in respect of this vitamin the diets cannot be regarded as satisfactory.

A main criticism will always be the costs of the diets, which naturally vary greatly according to season and locality. It is not often that a palatable egg can be purchased for a penny. Cheese at 6d. per lb. is not everywhere procurable, and minced meat at 6d. per lb. is not likely to be of good quality, but consist mostly of gristle and fat. Still, the diets show that for a weekly expenditure of 5s.-6s. 6d., a man can procure a well-balanced diet.

The caloric value of these diets is based upon the daily consumption of an adult man, which has been assessed at 3000. Diet as consumed is not the same as diet as purchased since allowance has to be made for waste, such as bone in meat and fish, outer leaves of vegetables, etc. This waste is commonly reckoned at 10 per cent. The

caloric values of the diets is given as 3400 as purchased. This gives a figure of 3060 as consumed. This does not thus vary appreciably from that adopted by the Ministry of Health following a report on dietary investigations of which an account was given in NATURE of June 13, 1931 (vol. 127, page 897). There is no doubt, however, that many families can exist upon a smaller calorie intake, down to 2500 calories, depending upon their manual work.

The allowance of first-class protein of 50 gm. a day appears to be a higher allowance than that of the Ministry of Health. The minimum quantity has been assessed at 37 gm. a day. The Army ration in peace time contains 62.7 gm. of first class protein. There can be no serious objection to taking the mean figure of 50 gm. a day, especially when a family including children is taken into consideration.

#### August Weismann, 1834-1914

THE name of August Weismann, the famous professor of zoology in the University of Freiburg-im-Breisgau, the centenary of whose birth falls on January 17, will always be remembered as that of one who exercised a profound influence on the progress of biological doctrine and speculation. As a teacher of zoology Weismann achieved a far-reaching reputation; and by the students who worked under his direction, among whom, it may be remembered, was the late Prof. Gilbert Bourne of Oxford, his instruction was estimated at the highest value. But it was as an investigator and explorer of the methods of evolution that his influence was most widely felt, especially perhaps in Great Britain.

It was Weismann who first detected the true significance in the development of the insect wing of the rudimentary larval structures noticed by previous observers. His work on the embryology of the Diptera, and especially of *Corethra*, led him to the recognition of the origin of the appendages of the adult insect in hypodermic downgrowths to which he gave the name of *Imaginalscheiben* (imaginal discs or folds). Linked with this came his discovery of the remarkable phenomenon of histolysis, which he supposed to be of more general occurrence than later observations have shown to be the case. The importance of Weismann's work in this department was early recognised by Darwin, who contributed a prefatory notice to the "Studies in the Theory of Descent". This was the book through which, owing to the good offices of Prof. Meldola, Weismann's biological theories were chiefly brought to the notice of men of science in Great Britain. To the "Studies" may be attributed the impulse which started Prof. E. B. Poulton on many of those lines of investigation which have led in his hands to such fruitful results.

The outstanding claim of Weismann to the attention of biologists, however, was his bold challenging of the supposed effect of Lamarckian

factors in heredity. This view, at the time of its publication, was no less than revolutionary. The opposition that it aroused, at first strong and sustained, has never completely died down; at the present day, however, the votaries of Lamarckism are comparatively few in number. To this result the developments of Mendelism have contributed in no small degree, but the first effective attack on the transmission of somatic modifications was delivered by Weismann. His elaborate scheme of 'biophors', 'determinants' and 'ids' has not stood the test of later investigation; there is no doubt, however, that his postulate of 'determinants' foreshadows in many respects the present-day conception of 'genes'. Moreover, in his theory of intra-germinal selection, by which he sought to reconcile the old antagonism of preformation and epigenesis, he may be said to have anticipated in some measure the modern doctrine of the interaction of genetic factors in ontogeny.

Weismann was led in course of time to modify to some extent the somewhat exaggerated view that he took of the inaccessibility of the germ-plasm; but the distinction now generally drawn between the genotype and the phenotype is evidence of the virtual stability of the position first definitely established by him. It would be interesting to know, were it possible, what his attitude would be in face of the developments that have followed on Mendel's discovery of the segregation of the gametes.

Weismann, with his tall figure and pleasant demeanour, was a striking and attractive personality. He was not averse from discussing the relations between science and philosophy, though he was fully aware of the limitations that exist on both sides. His general position may be briefly summarised in his own words, translated by Meldola as follows: "The mechanical conception of Nature very well admits of being united with a teleological conception of the Universe." F. A. D.