

Femur stout and broad distally with two prominent rows of hairs. Tibia cylindrical and narrow. Femoro-tibial articulation di-condylic. Tarsus four-jointed, basal three joints piceous and small and distal joint very long and stout with two strong claws.

Abdomen.—Abdomen consists of nine distinct segments. The abdominal terga form a row of imbricate plates. All the plates except the ninth are channelled by a mid-dorsal sulcus. The posterior plates have their posterolateral areas more rounded. Ventrally the sternal plates are roughly rectangular and each is provided with four longitudinal ridges each carrying a row of soft spines. The pleurites are squarish plates carrying the spiracles. The pleurites of the penultimate segment are 'eburated' (Gorham, H. S., 1880) and form the photogenic area. The last abdominal segment carries the anal brush.

Internal Anatomy.—Immediately beneath the tergal plates is an extensive sheet of adipose tissue, below which is the massive ovary extending into the thorax and even into the cervix. The alimentary canal lies considerably flattened under the ovary. The long narrow oesophagus runs from the pharynx to a small sac-like pouch which leads into an elongated depressed and almost empty mid-intestine, whose walls carry longitudinal folds. The mid-intestine is followed by the coiled intestine. Four Malpighian tubules occur. Below the alimentary canal is the long chain of ganglionated double ventral nerve cord. The thoracic and abdominal ganglia are similar in size. The pro-, meso- and metathoracic ganglia supply the three pairs of legs. The metathoracic and first abdominal ganglia are close to each other. First five abdominal ganglia are very distinct, placed uniformly apart and supply the spiracles. The remaining abdominal ganglia are crowded and very close to each other. Below the nerve cord is another layer of fat.

Dept. of Zoology,
Madras Christian College,
Tambaram,
May 10, 1943.

J. SAMUEL RAJ.

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FLUCTUATION IN THE WEIGHT OF A PLANT

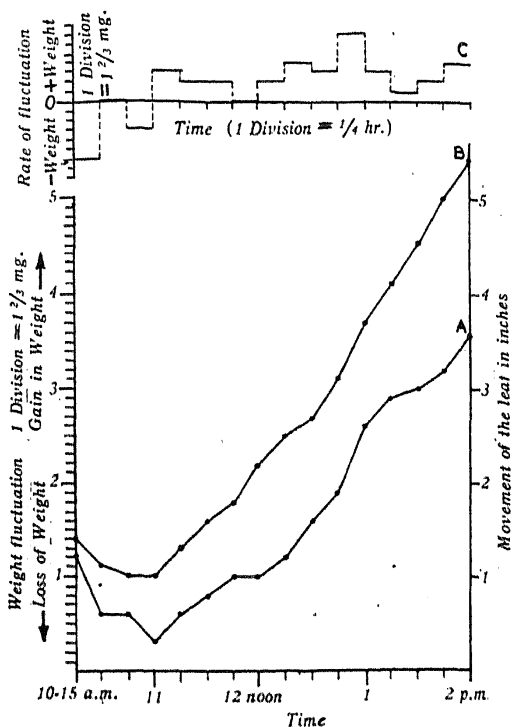
ALTHOUGH extensive work has been done by Miller (1925) and others¹ on the increase in the weight of a plant at intervals of a week or more, still no reference is noticed on the fluctuations in weight at short intervals. In his papers on leaf movements the author^{2,3} has mentioned that this movement is brought about by the variation in the turgidity of the plant body, indicating a fluctuation in the water content of the plant. Further work done in this line denoted a relationship between the direction of leaf movement and the fluctuation in the weight of a plant, whether the plants were exposed to natural light or artificial light. The author's observations on *Lycopersicum esculentum* are mentioned in the following note.

The potted plants, about twenty days old, were selected for observation. Since the leaf movement and weight fluctuation could not be studied from the same plant at the same time the two aspects had to be studied from different plants exposed to similar external conditions. The plant for the study of weight was removed from the pot, and its root system was carefully washed before the plant was weighed. The weight of the plant was 1.253 gm. The solution for the plant was prepared from the manured soil in which the plant was growing, and was thoroughly aerated. The plant was suspended from the beam of a balance but enabled the root system to be within the soil solution in a trough free from the balance. This enabled the free movement of the beam and the connected lever. By a suitable arrangement the level of the solution was maintained constant. Actual recording was started about an hour or more after setting up the experiment. The recording was done between 10-15 a.m. and 3 p.m. (new time), with the plants exposed to the sky light from the northern window, but not to direct sun. The room temperature, which was 77° F. when the experiment was started, showed a rise of 2° F. in the course of six hours, the first perceptible rise being after 12 noon. Readings were taken at intervals of 15 minutes with the help of levers magnifying 15 times. The three graphs A, B and C are drawn to a magnification of 75.

The weight curve (A) shows that the plant was losing weight till about 11 a.m., and that after this there was a continuous increase in weight. The graph for the leaf movement (B) indicates that the leaf also changes its direction of movement about the same time, the upward and downward movement of the leaf thus coinciding with the oscillation in the weight of a plant. Graph C explains the rate of change in the weight of a plant.

The above observations prove that although the plant shows an increase in weight from day to day, still it will be losing weight during certain hours of the day. The movement of the leaf directly signifying a variation in the turgidity of the plant-body at regular intervals, may also be taken to be an indirect expression of the fluctuating weight of the plant

mostly due to the variation in water content. In conclusion it may be stated that this highly



Graphs to explain weight fluctuation in a plant.
(*Lycopersicum esculentum*)

- A. Graph to show variation in weight. × 75
- B. " " " leaf movement × 75
- C. " " " rate of variation in weight × 75

interesting feature happens to be a normal occurrence in the daily life of this plant.

A paper dealing with this aspect in several plants will be published later.

Department of Botany,
Intermediate College,
Mysore, C. V. KRISHNA IYENGAR.
May 12, 1943.

- 1. Miller, E. C., Unpub. data, *Kans. Agr. Expt. Sta.*, 1925.
- 2. Krishna Iyengar, C. V., *Jour. Mys. Univ.*, 1942, 3, 23-38.
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THE BLOOD GROUPS OF THE DOMS

DR. D. N. MAJUMDAR (*Man in India*, Dec. 1942) has again raised the question of illegitimacy among the Doms (*Current Science*, April 1942) as found by him through blood groups, without adducing any new relevant data whatsoever. Since it is known that theoretically exceptions to the laws of Bernstein might

result from mutations and the chromosomal aberration, known as non-disjunction, it is desirable that the detailed data be published, so that no room is left for any of the above causes. Attention may here be drawn to the exceptions of Bernstein's laws found by other workers (Wiener, 1935) and it would be worthwhile to examine Dr. Majumdar's results in the light of these known exceptions.

Bose Institute,
Calcutta,
March 9, 1943.

S. S. SARKAR.

Wiener, A. S., *Blood Groups and Blood Transfusion*, 1935.

THE paper under reference (*Man in India*, December 1942) is a detailed account of the Doms and their Blood Groups which was briefly inserted in *Current Science*, April 1942.

I did not 'raise any question of illegitimacy among the Doms' but merely stated facts. The cases that could be detected were not more numerous than could be explained by illegitimacy. The people who were examined and whose bloods were of doubtful affiliation in the majority of the cases, themselves affirmed my suspicions.

Every serologist working in Blood Groups, is expected to know the theoretical limitations of Bernstein's laws but where such obvious evidence exists, I think, there is no necessity of assuming chromosomal aberration or mutation. Snyder has pooled (1929) the extant data on the subject collected by a large number of different investigators. Out of 1,600 offsprings in 571 unions between individuals belonging both to Group I in Jansky's classification, 27 were found to belong to one of the remaining groups. This was not considered by Lancelot Hogben as due to chromosomal aberration or mutation but he traced these to illegitimacy and occasional failure of test. (cf. Lancelot Hoben, *Genetic Principles in Medicine and Social Science*, pp. 68-90.)

The relevant data can only be published on two conditions being fulfilled, viz., (1) space made available in some scientific journal, (2) immunity against legal proceedings being guaranteed. As both the conditions are difficult to satisfy immediately, I am afraid Mr. Sarkar will wait. Mr. Sarkar knows that the entire blood group data (about 5,000 samples already tested) collected in connection with the anthropometric survey of the U.P. will very soon be published in the Report under preparation and if he can wait, he would be able to pronounce his verdict on the 'relevant data'.

Anthropological Laboratory,
Lucknow University,
March 22, 1943.

D. N. MAJUMDAR.