

future, it would indicate a parallel development of the Magnoliales and the Bennettiales, rather than a derivation of the former from the latter. The group Bennettiales is perhaps best regarded as a blindly ending line which may have gradually died out because real angiospermy could not be attained in that group.

In the end I must express my gratitude to Professor B. Sahni at whose suggestion this investigation was undertaken and who placed at my disposal all the material of living as well as extinct homoxyloous woods, including some sections prepared by himself and Mr. B. P. Srivastava, M.Sc.

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September 21, 1933.

Female Gametophyte of *Argemone mexicana* Linn.

In a communication to the September issue of this Journal, Messrs. Bose and Banerji have criticised some of the work done by the writer on megaspore-formation and embryo-sac of *Argemone mexicana* with these remarks: "His account differs in certain fundamental points from our observations." A careful perusal of their communication, however, shows to me no such points.

The note deals with three main points, the primary archesporium megaspore-tetrad and comparative size of the antipodals and the egg apparatus. I had not seen the first, but from the arrangement of the cells at the tetrad stage of the megaspores, it was concluded that there is most probably a single hypodermal archesporial cell. Bose and Banerji find this presumption to be true. The megaspore-tetrad, I had studied only from one ovary and had found it to be T-shaped. They find not only this arrangement, but the linear one also; the latter is more frequent. It is not the case that they do not find the T-shaped arrangement. What they can very well study now is whether these different arrangements are confined to different flowers or can both arrangements be seen inside the same gynæcium. My observation leads to the first conclusion, but it may be exceptional and not the general rule. The comparative size of the antipodals and the egg-apparatus was studied by me when a good deal of endosperm had been formed. At this stage the antipodals were formed to be 8 to 10

times bigger than the egg. According to the estimates of Bose and Banerji themselves the egg at this stage is about 22μ long and the antipodals 154μ . So there is no great difference between the two accounts, although I found the antipodals to be as big as 200μ or a little more even. I had myself suggested the possibility of the antipodals being much smaller at an earlier stage. This Bose and Banerji really find to be true.

On the whole, what appears to me is that having been working on the subject for a very much longer time and on a much larger amount of material (compared with the two ovaries that I had studied), they have been able to get several more facts—quite a natural thing; and there are no fundamental differences between their observations and mine own.

A. C. JOSHI.

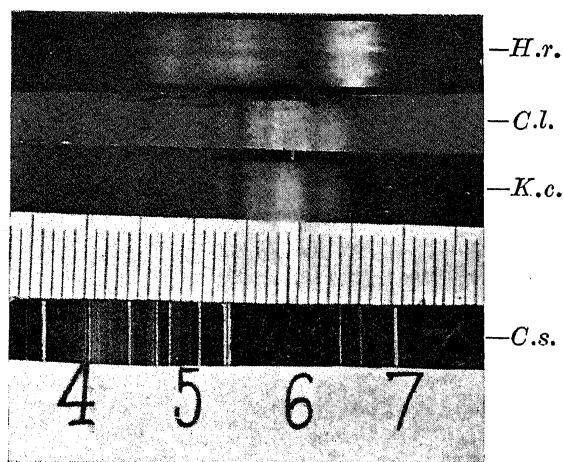
Department of Botany,
Benares Hindu University,
Benares,
October 1, 1933.

Oil-Soluble Vitamins in Some Pulses and Fishes of Bengal.

In the last (September) issue of the *Current Science* we communicated certain facts regarding the presence of Oil-Soluble Vitamin A in some pulses and fishes of Bengal. The accompanying spectrographs are typical of many more which we have been able to obtain. The difficulties of recording successfully the absorption bands at the right moment are many. A reference may be made to the very valuable paper on "Specificity in Tests for Vitamin A"¹ in which some spectrographs are given obtained with Halibut Oil and $SbCl_3$ reagent. In our spectrographs presented here, just below the wavelength scale is placed Cadmium spark spectral lines. Just above the scale is the absorption spectrum of *Cicer arietinum* Oil and $SbCl_3$ reagent. We have examined two varieties of *Cicer arietinum*—(1) Kabuli and (2) Common—and both gave similar spectra. Above this is an absorption spectrum obtained with a sample of *Cod liver Oil* of approved quality. The uppermost one really consists of two halves—the upper half was taken last and given a longer

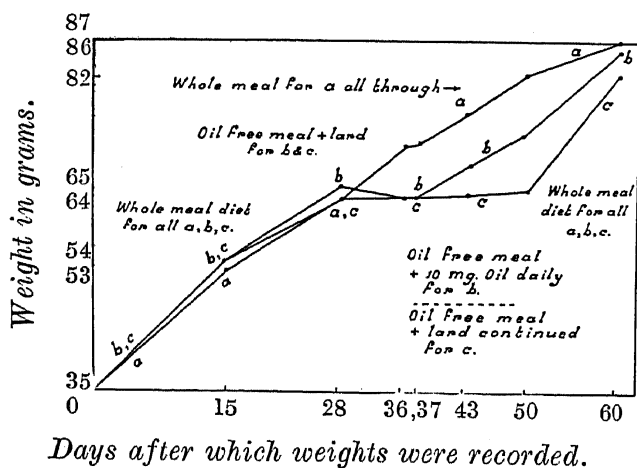
¹ Heilbron, Gillam and Morton, "Specificity in Tests for Vitamin A," *Biochemical Journal*, 25, No. 4, 1346-66, 1931.

exposure while the lower half was taken just half a second earlier than the last with a shorter exposure; these last ones are the absorption spectra of Hilsha Fish Roe Oil (*Clupea ilisha*).



H.r.—Hilsha roe oil.
C.l.—Cod liver oil.
K.c.—Kabuli chhola oil.
C.s.—Cadmium spark.

The final arbiter is the physiological method. The accompanying curves represent the results obtained with a particular litter of rats. The diet in this case was prepared in the Bose Institute Laboratories



and consisted of Kabuli Chhola Meal (*Cicer arietinum*) and made oil free as required. It may be mentioned that similar results have been obtained with B. D. House products. Several litters of rats have given similar (more or less) results. Fat-free diet producing Xerophthalmia and unkempt hair, particularly on the back parts above the hind legs, are soon noticed and have been cured by the application of daily doses of *Cicer arietinum* Oil (and compared side by side with Cod liver Oil and Hilsha Fish Oil). A general weakening of the legs, particularly hind legs, and an increased thirst for water is also observed in rats kept on fat-free diet.

In the particular set of curves which represent the results, all the young rats *a*, *b*, *c*, on the day they were put on whole meal diet, weighed each 35 grams. On the 15th day after the starting *a*, which by the way was kept as control all through on whole meal diet, weighed 53 grams; both *b*, and *c* each weighed 54 grams. From this point *b* and *c* were kept on fat-free (oil free) *Cicer arietinum* diet with lard to replace the oil. From the 28th day the increase in weight stopped and the weight became steady at 64 grams. From the 37th day *b* was given a daily dose of *Cicer arietinum* oil instead of lard and began to show gain in weight, while *c*, which was still kept on oil-free+lard diet showed no change. This was continued till the 50th day, when all the three sets were again given whole meal diet as at the commencement of the observations. Ten days after, on the 60th day, there was gain in weight in all the three and remarkable recovery in *c*.

Further details will be published in due course in the *Transactions of the Bose Research Institute*.

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N. C. NAG.

Calcutta,
October 5, 1933.

Erratum.

Current Science, Vol. II, No. 3, September 1933, page 95, left-hand column, lines 32, 33, 35 and 37—

for " μ " read " $m\mu$ ".