

at about the time of the maximum temperature cools the outside air.

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May 26, 1941.

ANALYSIS OF THE OIL OF *ZIPHIUS*
CAVIROSTRIS (GOOSE-BEAKED
WHALE)*

IN July 1940, a member of the Ziphiidae, identified as *Ziphius cavirostris* at the Fisheries Department, Colombo, was washed up alive on the west coast of Ceylon at Ratmalana. Specimens of this animal have been reported previously¹⁻⁶ but no analysis of the oil of this very rare Cetacean appears to have been carried out. It was therefore considered of

the facilities afforded to me in the Laboratory of the Fisheries Department.

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June 26, 1941.

* (From the Laboratory, Fisheries Department, Ceylon.)

¹ Longman, *Proc. Roy. Soc.*, 1919, Qld. **31**, 90, pl. iii and iv (near Maryborough, S. Qld.)

² Olivier, *Proc. Zool. Soc.*, 1922, p. 576.

³ Dammerman, *Treubia*, 1926, **8**, 336, pl. iii (N. coast of Java).

⁴ Vinciguerra, *Ann. Mus. civ. St. Nat.*, Genova, 1927, **52**, 232 (Ligurian Sea).

⁵ Scott and Lord, *Proc. Roy. Soc.*, Tasmania, 1928, p. 156 (Preservation Island, Tasmania).

⁶ Hale, *Rec. S. Austr. Mus.*, 1931, **4**, 312 (New Ireland).

⁷ Hilditch, *Fats and Waxes* (1927).

	Sp. Gr.	Ref. Ind.	Sap. No.	Sap. Eq.	Iodine abs. %	Free F. A.		Non-sap.
						Acid No.	As Oleic acid	
<i>Ziphius</i> Head oil	0.904 ^{29/29°}	1.568 ^{29°}	235-240	234-238	26	1.2	0.61%	14.7%
Body oil	0.926 ^{29/29°}	1.384 ^{29°}	113	496	50	20	10.1%	8.3%
Dolphin ⁷ Jaw oil	0.925 ^{15/15°}	1.452 ^{26°}	270-290	195-205	32	2.4	1.2%	fairly high
Body oil	0.927 ^{15/15°}	1.471 ^{26°}	187-220	255-300	100-127	2.12	1.6%	..
Specim Whale(?) Head oil	0.878 ^{25°/27°}	1.459 ^{25°}	140-144	390-405	60-76	3.8	15.5%	39.43
Body oil	0.876	1.462 ^{15°}	122-130	430-460	88-93	2.4	1.2%	33.44

interest to record the analytical characteristics of the oil from this mammal.

The only sample of "body oil" obtainable was from a piece of blubber which had been left in an open dish for three days and from which the oil had drained away. Unfortunately rancidity had set in. The values obtained are given below; and for comparison, the analytical characteristics of Dolphin oil are also provided.

I must thank the Director of Fisheries for

A LONG-GLUMED MUTATION IN RICE

GENERALLY speaking the cultivated varieties of rice, *Oryza sativa* L., possess minute outer glumes measuring from 1.5 to 3 mm. Even the wild rice, characterized by complete shedding of grain, has very small glumes. However, there are certain varieties of *O. sativa* whose glumes are longer, extending up to the upper limits of lemma and palea. In certain of such varieties the glumes are even longer than the spikelets. These are

mentioned by Roschevitz¹⁰ as *Oryza sativa* L. var. *longiglumis* Roshev., in contrast to a distinct species, *O. grandiglumis* (Doell.) Prod., in which the outer glumes are as large and wide as the lemma and palea.

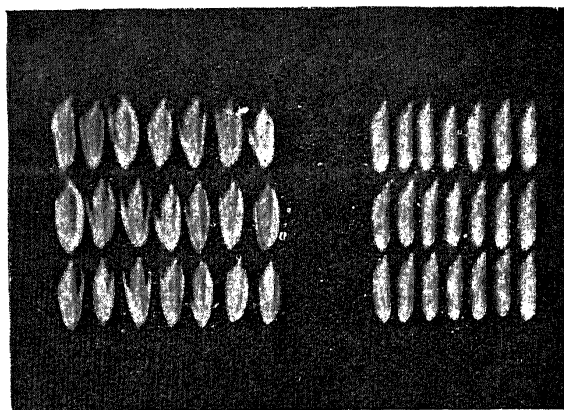
Among the varieties of *O. sativa* the character of long glumes, although morphologically distinct, has not been utilized uniformly by various workers who have made attempts at classification of the innumerable varieties of common rice. Thus, to mention some, Kikawa,⁶ Graham³ and Beale¹ do not utilize the character in their classification of rice, while Tanaka,⁶ Hector and Sharangpani⁴ and Kashiram and Chetty⁵ have used long outer glumes as one of the characters for classification.

Inheritance studies so far reported show that the long-glumed condition is usually recessive. Okada,⁷ van der Stok¹¹ and Parnell *et al.*⁸ each reported dominance of short glumes and a monogenic segregation 3 short : 1 long-glumed plants. Chao,² however, found a 15:1 ratio of the two types of plants respectively. In contrast to these results Ramiah *et al.*⁹ reported a 1:2:1 ratio of short, intermediate and long glumed plants respectively. These authors illustrate the middle class from almost a short-glumed to a long-glumed condition in which the glumes are of varying lengths, but do not exceed the length of lemma and palea. In the third category the glumes extend out over the spikelet, like the original long-glumed parent. Since the F_1 is intermediate, it is rightly concluded by them that the character of long-glumes is partially dominant.

In the Bombay Province, out of many hundreds, only two varieties with long-glumes, Pankhali-Kamod and Rakkibhatta, are known to us. The former is grown in Gujarat and is scented, while the latter comes from Karwar in the southern portion of the Province.

During the crop season of 1940, while making individual plant selections from a bulk sample of an early local Kolamba variety, a plant with long glumes was observed. Since all other plants from the variety had the usual short

glumes, the off-type plant was either a mechanical mixture, a natural hybrid or a mutation. From the shape of its grains, it was clear that no mechanical mixture of such an off-type plant could occur as there is no such variety of Kolamba in existence. This also rules out the possibility of a natural cross. Therefore, it appeared a case of a mutation (Fig. 1).



Long Glumed

Normal

FIG. 1

Twenty seeds from the off-type plant were grown in a pot during the winter of 1940 to observe the breeding behaviour of the long-glumed Kolamba plant. Of these, 18 plants showed spikelets with long glumes, while two plants did not put forth any panicles. It is, therefore, certain that long-glumed condition in this new type of Kolamba arose due to mutation.

Kolamba is one of the most important, fine-grained variety in the northern districts of Konkan, which is the predominant rice tract of the Province. The Agricultural Department in Bombay has released a number of superior strains from this variety. Some of these are replacing even the coarser early and mid-late varieties. Since Kolamba strains are entirely green in vegetative parts, there is no outstanding discriminating character, except differential flowering, which helps to distinguish them from local coarse varieties. If such a conspicuous character as long glumes could be introduced without impairing any of the agricultural characters of the improved Kolamba strains, it would greatly help to rogue the

fields and will also assist in keeping an accurate record of the areas under improved strains of this variety.

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June 25, 1941.

¹ Beale, R. A. *Agric. Res. Inst. Pusa Bull.*, 1927, 167, 1-14.

² Chao Lien Fang, *Genetics*, 1918, 13, 133.

³ Graham, R. J. D., *Mem. Dept. Agri. Ind. Bot. Ser.*, 1914, 6, 209.

⁴ Hector, G. P., Sharangpani, S. G., *et al.*, *Ind. Jour. Agri. Sci.* 1933, 4, 1.

⁵ Kashiram and Sarvayya Chetty, C. H., *Ind. Jour. Agri. Sci.*, 1934, 4, 618.

⁶ Kikawa, S., *Imp. Uni. of Tokyo*, 1912, 3, 1.

⁷ Okada, K., *Rept. Jap. Agri. Assoc.*, 1910, 354, 1.

⁸ Parnell, F. R., Rangaswami Ayyangar, G. N., and Ramiah, K., *Mem. Dept. Agri. Ind. Bot. Ser.*, 1917, 9, 75.

⁹ Ramiah, K., Jobitharaj, S., and Dharmalinga Mudaliar, S., *Mem. Dept. Agri. Ind. Bot. Ser.*, 1931, 18, 229.

¹⁰ Roschevitz, R. J., *Bull. App. Bot., Genetics and Plant Breeding (Russian)*, English Summary, 1931, 27, 119.

¹¹ Stok, van der J. E., in *Handbuch der landwirtschaftlichen Pflanzenzüchtung*, by C. Fruwirth, Berlin, 1923.

THE STRUCTURE OF THE CHROMOSOME

WHILE our understanding of nuclear structure has made rapid strides of advance, there still remains a sharp cleavage of opinion on the question of the structure of the chromosome. Undoubtedly a large measure of this difference is due to the peculiar temptation of some cytologists to deny the validity of visual observation. With improved methods of fixation and staining, Professor Gates and his students have, in recent years, gathered overwhelming evidence in support of the view that the somatic anaphase chromosome is bipartite. Dr. Darlington¹ faces this mass of observational evidence with a bubble theory which in reality is a revival of a conception prevalent in 1911 that anaphase and telophase chromosomes developed vacuoles or alveoli in passing into the resting condition,

Observations on the satellites during somatic mitosis have yielded further crucial evidence in support of the double nature of the somatic anaphase chromosomes. In root smears of *Crocus sativus* stained with decolourised basic fuchsin, Gates and Pathak² found during telophase, one of the three satellite chromosomes bipartite with a split satellite.

In the course of my investigations on the somatic chromosomes of the Liliaceous genus *Muscari*, I have found in root smears, cases in which the satellites of one of the anaphase chromosomes was split, demonstrating unmistakably its double nature. One such anaphase is figured here and the long arm of one chromosome can be seen to bear a split satellite at its end, the threads diverging widely apart. This chromosome has a prominent secondary



FIG. 1

Root smear of *Muscari moschatum*

Anaphase showing one of the long chromosomes with a split satellite. $\times 3600$.

constriction in the long arm. The split condition of the satellites does not appear often as it depends on critical fixation and the orientation of the chromosome.

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June 14, 1941.

¹ *Nature*, 1938, 141, 371.

² *Ibid.*, 1938, 142, 156.