

Recently, however, transmission has been achieved for the first time by the following method. Hybrid maize plants showing severe dwarf symptoms were ground in a meat mincer, the sap squeezed through a cheese cloth and then centrifuged for 5 min. at 3,000 r.p.m. The supernatant fluid was injected by means of a 1 c.c. tuberculin syringe into the stalks of 3-week-old hybrid maize seedlings (Neve Yaar hybrid 22, single cross) grown under insect-proof conditions. The dosage was about 0.2 c.c. per seedling divided into 5 punctures at different sites. A control series was injected with healthy sap in the same manner. Three out of twelve plants injected with diseased sap, in two different series, developed both stem and leaf symptoms (including the rare symptom of split blade) within two months. As this was done in winter, without artificial illumination, it is believed that during summer the development of symptoms should be faster. Infectivity of the sap, when frozen, was retained for at least 24 hr. Since the virus is not transmitted by seed, the reliability of the test seedlings is unquestionable.

Similar cases where mechanical transmission of plant viruses could be obtained by needle inoculation only are those of sugar beet curly top<sup>5</sup> and clover wound tumour<sup>6</sup>. Both these viruses are leaf hopper-borne and, at least in the case of curly top, the virus is believed to exist in the phloem which might be considered inaccessible to ordinary surface rubbing<sup>7</sup>. In the case of the maize rough dwarf virus it may be inferred from Biraghi's studies<sup>8</sup> on the pathological anatomy of the disease that the virus tends to inhabit the phloem, though its natural vector is still unknown.

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<sup>1</sup> Fenaroli, L., *Notiz. malatt. piante*, **3**, 38 (1949).

<sup>2</sup> Harpaz, I., Minz, G., and Nitzani, F., *FAO Plant Prot. Bull.*, **7**, 43 (1958).

<sup>3</sup> Grancini, P., *Maydica*, **3**, 67 (1958).

<sup>4</sup> Harpaz, I., *Hassadeh, Tel Aviv*, **39**, 607 (1959) (in Hebrew).

<sup>5</sup> Severin, H. H. P., *Phytopath.*, **14**, 80 (1924).

<sup>6</sup> Brakke, M. K., Valler, A. E., and Black, L. M., *Brookhaven Symp. Biol.*, No. 6, 137 (1954).

<sup>7</sup> Bennett, C. W., *Bot. Revs.*, **6**, 427 (1940).

<sup>8</sup> Biraghi, A., *Ann. Sper. Agric. (N.S.)*, **6**, 1043 (1952).

## BIOLOGY

### Black Marlin in British East African Waters

RECENTLY I stated that only the striped marlin (*M. audax*) had been caught by the East African Marine Fisheries Research Organization, and records of the black marlin in these waters were of doubtful value<sup>1</sup>.

Since that communication I have taken two black marlin while using a longline 10 miles off the Tanganyika coast at latitude 8° S.; the fish were of standard length 2,130 and 2,325 mm. and weight 125 and 135 lb. respectively. On capture and comparison the differences from the striped marlin were most obvious—a very low dorsal fin, deep body, steeper head profile and 'rigid' pectoral fins. Proportional measurements confirmed the field observations and an examination of the morphology of the

pectoral girdle showed it to be similar to that described by Morrow<sup>2</sup> as diagnostic for the black marlin. Colour was as follows: in life, upper two-thirds of body and fins blue-grey and lower third of body white, the join between the two colours being distinct; on death, the colour fades rapidly and the body and fins become grey, a little darker above. There are at no time any signs of the vertical stripes or brilliant cobalt blue coloration of the striped marlin.

Morrow (personal communication) reveals that his Pemba specimen of marlin weighed 159 lb. at 2,151 mm. and not 259 lb., as reported in his paper on East African fishes<sup>3</sup>, and thus the record is validated as that of a black marlin.

In a recent paper on marlin taxonomy, Morrow<sup>4</sup> examined the pectoral girdle of the remains of Playfair's type specimen of *H. brevirostris* from Zanzibar and found it to correspond exactly to that of the black marlin<sup>2</sup>. Thus the position of this fish is clarified, the original proportional measurements and later examinations of the type specimen being insufficient for exact identification as stated earlier<sup>1</sup>.

The black marlin is rare in this area, only two having been caught hitherto by this Organization, as compared with eighty-four striped marlin.

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<sup>1</sup> Williams, F., *Nature*, **183**, 762 (1959).

<sup>2</sup> Morrow, J. E., *Bull. Bingham Oceanogr. Coll.*, **16** (2), 88 (1957).

<sup>3</sup> Morrow, J. E., *Ann. Mag. Nat. Hist.*, **7** (12), 819 (1954).

<sup>4</sup> Morrow, J. E., *Bull. Mar. Sci. Gulf and Caribbean*, **8** (4), 359 (1958).

### A Chimæric Duck with the Head of a Chick

IT is well known that the chick embryo fails to produce detectable antibodies against various foreign antigens, so providing a favourable environment for culturing viruses and transplanting various tissues of



Fig. 1. A duck embryo with the grafted head of a chick, after 28 days of incubation