

paratyphoid-A infection in India and in other endemic areas is not yet known and may well be much higher than that estimated for Bombay. There can be little doubt that the phage-typing method used as an epidemiological tool will prove to be an indispensable aid to the ultimate control of this infection.

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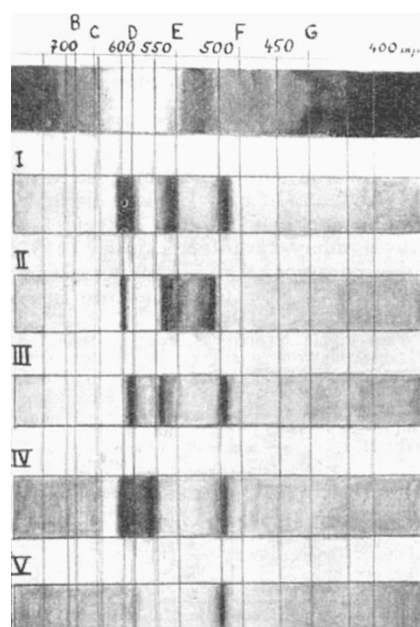
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Nature of the Pigment of *Aplysia depilans*

By heating an aqueous solution of the actual excretion of the Mediterranean sea-slug *Aplysia depilans*, the violet pigment is separated from its protein part. The colour of the aqueous solution varies conformably with the pH, from blue (pH 1-2) to garnet red (pH 8-12.0).

The chloroform solutions of this pigment exhibit maxima at 6100, 5350, 4975 and 3800 Å. (spectrum I), and they yield violet, red and green zones upon a column of powdered sugar. The violet pigment is absorbed in the top of the column, while the red is absorbed in the middle part, and the green pigment, travelling faster, at the end of the column.

Elution with chloroform-ethanol mixture (2:1): the chromatographically separated violet pigment exhibits maxima at 5860, 5290, 4925 Å., and its zinc complex salt at 6280, 5927, 5440 and 5040 Å. (III). The red pigment shows maxima at 5910, 5315 and 5007 Å. Its zinc complex salt shows maxima at 5950, 5500 and 5015 Å. (II). The third greenish-blue



pigment shows no absorption maxima in the visible range, but an extinction of colour in the violet and red regions of the spectrum. Unfortunately, because of its very low concentration, we could not distinguish absorption bands.

The ethanolic solutions of all three pigments separated show intensive red-brownish fluorescence. The chloroform solutions of the actual pigment, as well as the solutions of the three pigments separated, become dark blue when treated with a stream of dry hydrogen chloride. This blue chloroform-soluble pigment exhibits maxima at 5950, 5475 and 4927 Å. (IV), and gives with zinc acetate a reddish-brown fluorescence with maximum at 5982, 5495 and 5055 Å. and simultaneous extinction in the red and violet regions. After several hours, the blue pigment becomes greenish, and its spectrum shows an intense extinction in the red to 5583 Å., with only a maximum at 4955 Å. (V); its zinc complex salt exhibits maxima at 6255 and 4983 Å.

The Gmelin reaction of these compounds is negative or very atypical. This fact, in combination with the red fluorescence, suggests that they are porphyrin in nature¹. They do not behave like bilichromes².

Details of this work will be published in the *Bulletin of the Academy of Sciences, Athens*.

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Peculiar Stratified Shape of Typhoon Waves

WHILE M.V. *Tancred* of the Barber Line was riding out the typhoon of early October 1954 in Kobe Bay, we were able to observe a unique shape of typhoon wave which, so far as we know, has not been described. The vessel was hove-to with two anchors down facing the incoming gale (133 km./hr.) and the waves with crests up to 10 and 15 ft. were passing neatly along her side. From the rail we were struck by the peculiar appearance of the wave-slopes facing the wind.

On many of these there were a number of well-defined steps, carved so to say into the water just like the steps of a ladder, starting from the trough of the wave up to about half its height. Although the waves were moving quickly the steps remained steady, extending parallel to each other for one or two metres in length. There were at times as many as twenty of these nicely successive steps cut into the body of the wave. We tried to photograph them; but the very poor visibility and the fast motion of the waves resulted only in a blurred print.

Were these steps carved in the wave slopes by high harmonics of the period of the typhoon squalls? These higher harmonics have been registered by sensitive modern microbarographs, and they might have something to do with the quite peculiar screaming of the wind, often reported by seamen during the squalls of tropical storms. Strangely enough, this peculiar whistling has never been noticed in the squall line of extratropical storms.

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