only show its effects suddenly, at a certain developmental stage.

One point here deserves mention. In two specimens of *G. chevreuxi* tested, slight darkening occurred, but starting only *after* sexual maturity; in an insect like Drosophila it could not have developed at all! Thus many apparent absences of a character may merely be due to extreme slowness in its development. Captain Diver informs us that similar phenomena are to be observed in the banding of Helix spp. It is also worth noting that the recessive "red" character is, at least in almost all cases, not due to an *absence* of black, but only to its slower deposition.

We here get a definite relation between Mendelian factors and the rates of a process which is continuous throughout most of the animal's life. We believe the line of thought thus raised to be a fruitful one for very various genetic problems, and hope that others may be induced to test its wider application.

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Oceanographical Expeditions to the Black Sea in 1924 and 1925.

THE first study of the Black Sea was undertaken by the General Hydrographic Administration of Russia in the years 1890 and 1891. This expedition discovered the peculiar character of this sea.

After thirty-five years, oceanographical views and methods have developed to such an extent that it was necessary to send a new expedition to study the oceanographical conditions of this sea basin.

The same General Hydrographic Administration of the Navy of U.S.S.R. undertook this work. As a first step, a cruise, repeated four times every year, along the meridian of the south cape of the Crimea, was established. Data were thus collected for the study of the seasonal variations of the oceanographical elements in 1923–25.

For the general study of the oceanographical conditions, two special expeditions, in June–July of 1924–1925, were organised, both under my supervision. In 1924 the eastern part of the sea was studied, 1200 nautical miles being covered with 28 stations. In 1925 both eastern and western parts of the Black Sea were explored. During a 36 days' cruise, 2300 nautical miles were traversed with 72 oceanographical stations, 35 of which were in deep water. A total of 4250 observations were taken, amongst which more than 2000 gas analyses were carried out on board. Deep-sea soundings were made and sections of deep-sea deposits were obtained about 60 cm. long.

The material collected during the last expedition is now being examined, but the four seasonal cruises and others have given data which lead to some conclusions on the oceanographical conditions of the Black Sea. The salinity increases from the surface to the bottom from 18 per mille to 22 or 23 per mille at 2000 metres. The seasonal variations disappear at 100 m. The density has a similar vertical distribution, being about 11·2 at the surface, and reaching 17·4 at the bottom. Seasonal variations also were not met deeper than 100 m. The surface density in any case cannot exceed that at 200 m.; because of this, convection currents do not descend deeper than 200 m.

The vertical distribution of temperature has a peculiar character. The seasonal variations are observed only in the layer of 100 m. deep. At the depth of about 200 m. a layer of constant temperature is observed—about 8°·7 C. From this depth to the bottom the temperature increases, and in the bottom layer it reaches 8°·92 to 8°·95 C. Near the shores the vertical distribution of temperature is more complicated.

These oceanographical conditions lead to a special vertical distribution of dissolved gas. Oxygen cannot penetrate deeper than the convection currents. In the open sea it reaches 150-160 m. only; near the shores, 200 m. or a little more. The deep layers below 200 m. contain hydrogen disulphide. In the open sea at the depth of 150 m. this gas is present to the amount of about 0·5 c.c. in a litre, at 0° C. and 260 mm. of atmospheric pressure. The quantity increases with depth and in the bottom layer, at 2000 m., it is 6·8-7·0 c.c. per litre.

Near the shores each of the surfaces, such as isothermobaths, isohalines, isopykns and those of the vertical distribution of gas, lies deeper than in the middle of the sea. This fact was observed in 1890–1891 also; most probably it is due to the dynamical influence of offshore winds, and of those of the opposite direction, which blow in the coastal parts of the sea, causing the water to descend, or to be raised, thus increasing the vertical convection.

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The Biological Conditions of the Black Sea observed in 1923–25.

THE observations in coastal waters, and also those made during the seasonal cruise and with the oceanographical expeditions in June–July 1924 and 1925 of the General Hydrographic Administration, lead to the following conclusions.

The Black Sea, from the oceanographical point of view, being formed of two sheets of water, namely, superficial layers of low salinity, and underlying water of great thickness and greater salinity, the conditions of life are determined by these conditions.

In the open sea the limit of life is found at the depth of 150-160 m. and sometimes at 125-110 m. Nearer the coasts this limit is deeper—sometimes about 200 m. The pelagic zooplankton is richer in the layers between the surface and 50 m. of depth; it is very uniform through the whole sea. From the depth of 50 m. to its inferior limit, the zooplankton is less rich. Near the shore it is more abundant, and in the middle of the sea its quantity varies greatly.

The seasonal variations of the zooplankton are very marked in the upper layers, and nearly disappear at the depth of 100 m.

The vertical distribution of the phytoplankton is under the control of some other causes as well as the temperature, such, for example, as the vertical distribution of light and some chemical components in the sea water, as also the hydrogen-ion concentration.

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The Line Fluorescence of Cadmium Vapour.

IN a previous communication (NATURE, August 1, p. 170) I gave a preliminary account of the study of the band fluorescence of cadmium vapour. In the further investigations leading to the results presented, special care has been given to the removal of possible impurities in cadmium vapour. In order to remove completely the gases adsorbed by the walls of the quartz bulbs in use, the bulb, joined to the pumps, was heated in an electric furnace to about 900° C. for