added through the sperm, and on testing the testes of adult green frogs during the breeding season, I found tyrosinase to be present, although the coloration was slow to develop (72 hrs.). It is possible that all of the tyrosinase in the ovary was used up in the production of the egg pigment, and that the oxidase for the tadpole is introduced by the male. It is well known that oxidative processes proceed much more rapidly after fertilization and perhaps we may find that in other instances this is due to the entrance of an oxidase with the sperm. Evidences of oxidase action have been found in all of the fertilized amphibian eggs that I have examined, including eggs which contain no pigment.[1] It is also possible that the "poisonous complex," to which Loeb (*Arch. Entwick. Organ.*, 31, p. 658) ascribes the death of the unfertilized egg, is destroyed by the entrance of an oxidase (perhaps a *specific* oxidase) with the sperm.

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On two different types of melanin.

By **ROSS AIKEN GORTNER.**

[*From the Laboratory of Biological Chemistry of the Station for Experimental Evolution, The Carnegie Institution of Washington.*]

In investigating the nature of the melanin molecule, I have found that the pigment which is present in black wool is readily soluble in dilute sodium hydroxide, and that it is apparently a protein. To pigments of this nature I have given the name of melano-protein to distinguish them from both the unpigmented proteins and those other melanins, the nature of whose molecule is as yet unknown. The melano-protein which I have obtained from black wool contains no ash, showing that ash is not a part of this pigment, and also proving that this melanin does not contain iron. In some of the preparations of pigment from black wool where less precautions were taken to insure the absence of all contaminating mineral matter, a low percentage of ash was ob-

[1] In collaboration with Dr. Banta, of this station, I have recently had occasion to test fertilized eggs of *Rana sylvatica, Rana pipiens, Ambystoma punctatum,* and *Spelerpes bilineatus.*

tained (0.10 per cent.–0.20 per cent.) but this ash appeared as white particles and was probably silica.

When I undertook to prepare a melanin from black rabbit hair and black feathers I found that the pigment was very *insoluble* in dilute (0.2 per cent.) sodium hydrate, and it was only after long boiling, in some instances nearly a week, that solution was effected. Of course this procedure altered the nature of the melanin molecule, but the fact that was of chief interest was that the resulting product contained between 2 per cent. and 3 per cent. of ash *and that this ash was chiefly iron oxide.* I have recently observed that there are probably at least two pigments in the darker colors of horse hair, one of these being a melano-protein with a very low ash content, and the other containing approximately 3 per cent. of ash *which is chiefly iron oxide.*

These pigments have been prepared in such a manner as to preclude any iron entering through contamination, and inasmuch as other pigments, *prepared by exactly the same process*, contain no iron, or at most only traces, we must conclude that *in some instances melanins may contain iron as a part of the molecule*, but that all melanins do not contain iron. Perhaps in this instance the oxidase acted on the hemoglobin, or some other iron complex, instead of oxidizing a protein containing no iron.

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A five-year pedigreed race of Paramæcium without conjugation.

By **LORANDE LOSS WOODRUFF.**

[*From the Sheffield Biological Laboratory, Yale University.*]

The unicellular organisms afford a natural means of approach to the problem of fertilization, and the study of data, from a long series of careful experimental studies on these forms by various investigators, has pointed to the conclusion that the most important function of conjugation in the life history of the Protozoa is a satisfying of an inherent periodic physiological need of living matter, resulting in a renewal of the vigor of the cell. This "dynamic" view of fertilization has gradually assumed a com-