

the temperature to 59°, no further changes occurred. On cooling down again to room temperature, a photograph was obtained identical with that at 59°; no A or B spacing reappeared. In the case of stearic acid, starting with a film which showed only the B-lines at room temperature, after heating to 55° only the C-lines were observed. In the case of capric and lauric acid, only the C-modification was found at room temperature, which remained unchanged when heating at some degrees below the melting temperature.

Thus the even fatty acids seem to have only monotropic modifications of which the C-modification is the stable one.

In the accompanying diagram (Fig. 1) the spacings observed are plotted against the number of carbon atoms of the corresponding molecule. So far there seems to be no simple relation between the spacings of the even and the odd acids.

Our results seem to confirm some suggestions already given by Garner (Garner, Madden, and Rushbrooke, *Jour. Chem. Soc.*, 1926; 2491).

I have to thank Mr. J. A. Prins for much helpful advice during the course of the work.

In conclusion, I wish to express my thanks to Prof. P. E. Verkade, of Rotterdam, for supplying several pure fatty acids, and to Prof. W. E. Garner, of London, who put some pure heptadecylic acid at my disposal.

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The Nuptial Pad of Kammerer's Water-bred Alytes.

SOME time ago a friend of mine who was interested in my amateurish experiments on frogs took some pictures which he intended for publication. He found it necessary to bring out some of the natural markings with ink so that they would reproduce better in print. I am wondering if the marking of Kammerer's specimens which led to his suicide might not have an equally simple explanation.

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KAMMERER'S untimely death has confronted us with three problems, seeming intrinsically interwoven, but, as it appears now, distinct enough to be dealt with separately: they are—

(1) The motives of his suicide; (2) the mystery of the 'doctored' specimen; (3) the validity of the original experiments on the nuptial pads in Alytes.

The first question is chiefly psychological, the second criminal, while only the third concerns biological science proper. Whilst we can conjecture the motives of Kammerer's weariness of life (see *Monistische Monatshefte*, 11, 401, Nov. 1926; R. Wettstein, *Neue Freie Presse*, Dec. 16, 1926), we are at a loss as to the person who may have injected specimens with Indian ink or with what intention this may have been done. It seems not impossible that Mr. W. C. Kiplinger's suggestion is correct and that the injection was intended to enhance a faded appearance in order to get a good photograph, although the existence of other doctored specimens does not seem to be in favour of this version. A picture was taken in September 1922, not in the Biologische Versuchsanstalt, but in the photographic studio Reiffenstein, of the well-known specimen, and only from thence onwards do the mis-statements begin. On the other hand, up to 1919 the descriptions and figures of

nuptial pads in Alytes given by Kammerer do not fit in with this specimen. We are therefore able to exempt any one who died before 1919, or had no contact with the Institute after that year, from any suspicion at having made the injection; for example, Dr. F. Megússar, who was killed at the Wolhynian front on Aug. 3, 1916 (see *Archiv für Entwickl.-mech.*, 42, 222; 1917).

We have been able to collect five proofs that in his original papers Kammerer was not hampered by the doctored specimen which has invalidated his remarks on the same subject in his books "Inheritance of Acquired Characteristics" (1924) and "Neuvererbung" (1925). By comparing dates and photographs we can now formulate these proofs even before the new experimental evidence which Kammerer's collaborators in Moscow are trying to get is available: the proofs are as follows:

(1) In Kammerer's original papers the nuptial pad in Alytes is described and pictured as being "on the dorsal side of the thumb and on the thumb-ball" (1909, p. 516, fig. 26a), "on the dorsal and radial side of the first fingers" (1919, p. 336), and "across the thumb-ball on the whole internal side of the fore-arm to near the elbow" (p. 337, tb. x, fig. 2), in accord with the general appearance of nuptial pads. Even in 1923, when Kammerer showed a lantern slide of the critical specimen before the Zoological Society of London, he did not mention the disposition of the nuptial pad on the whole palm of the hand (see Bateson, *NATURE*, Dec. 22, 1923, and letter to Przibram). It was not until the photographs of this specimen were used in his books (1924, p. 53, fig. 9 to the right; 1925, fig. 9, facing p. 20) that Kammerer mentions and defends the untoward position of the pad in the palm and on the outer border of the last (fourth) finger.

(2) The photograph in his original paper (1919, tb. x, fig. 2), taken by E. B. Congdon (see *ib.* p. 369) in Kammerer's and my presence in 1913 (letter of Congdon, professor at the Chulalongkara Medical School, Bangkok, Jan. 8, 1927), shows a narcotised Alytes with nuptial pads on the radial side of hand and arm.

(3) The drawings by Kaspar of microtome sections (Kammerer, 1919, p. 370, tb. 11, figs. 7, 9), and the photos thereof by Prof. H. Joseph (*ib.* tb. 10, fig. 4), relate to skin taken in 1913 (see *ib.* p. 331) from the hands of Alytes in Kammerer's presence by Olga Kermauner, sister of Prof. Kermauner, of the University of Vienna, now married to Mr. Critikos. This lady histologist herself prepared all the slides and remembers having been struck by the difference in those of the water-bred Alytes as compared with the normals from the beginning (letter by Mrs. Olga Critikos, 914 Leland Ave., Chicago, Dec. 15, 1926).

(4) Comparing the known forms of nuptial pads in other species as to their horny spicules (Lataste, Meisenheimer, Harms, Kändler, etc.) with these drawings and photos of Alytes, there seems to be full specificity of these structures. Even the sections of *Bombina maxima*, the nearest approach to Alytes, can easily be distinguished from the photographs and drawings which Dr. Noble (Museum, New York) has sent me. The species *B. maxima* was not known to Kammerer and has never been kept alive at our Institute (see list of animals, *Zeitschrift biol. Technik u. Methodik*, 3, 163; 1913, p. 214).

(5) The histological features of Kammerer's sections of nuptial pads in Alytes are furthermore identical with those of a specimen found in *Nature* by R. Kändler (*Jenaische Zeitschrift*, 60, 175; 1924, tb. x, fig. 12) with rudimentary nuptial pads. The stratification and relative nuclear sizes of the said sections