year, with a much larger proportion of females where the nutritive conditions are better or extend over a longer period, as indicated by the size attained during the first year, it is assumed that the sexuality of the animal is closely correlated with its nutrition. The observation that males are more frequent among closely clustered groups than among isolated individuals may likewise be indicative merely of different nutritive conditions at the critical period of sex differentiation, and is not considered proof that the early male phase is retained because of the hormonic influence of a neighboring individual.

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AUTOLYZED LIVER THERAPY IN PERNICIOUS ANEMIA

FRESH beef liver from slaughter house was ground and $\frac{1}{50}$ Normal HCl added in the proportion of 2,000 gms minced liver to 5,000 cc $\frac{1}{50}$ Normal HCl. Chloroform was added as a preservative. This mixture was placed in an incubator at 37° C. and allowed to undergo autolysis for an average period of 10 days. Portions of this autolyzed liver preparation after partial concentration under reduced pressure were fed by mouth to 3 otherwise untreated cases of pernicious anemia, showing classical clinical features with symptoms indicating cord changes, typical blood picture and achlorhydria. Reticulocyte responses characteristic of the treatment of pernicious anemia with potent material varying from 10 to 16 per cent. followed the oral ingestion of the equivalent of 500, 750 and 800 grams of liver, respectively, in the three cases studied.

The following figures summarize the finding in Case II of the reticulocyte response to autolyzed liver.

Date	Reticulocytes per cent.	Grams autolyzed liver fed
June 3, 1932	1.0	60
4	.5	150
5	2.0	300
6	1.0	300
7	1.5	
8	3.0	
9	7.0	
10	13.0	
11	9.0	

Riddle and Sturgis[1] report that the equivalent of approximately 3,000 grams of liver when fed in single massive doses by mouth in the form of Lilly's Extract No. 343 was required to induce a maximal reticulocyte response.

A comparison of the amounts of liver reported in the literature necessary to invoke a maximal reticulocyte response with the amounts of liver used above suggest that autolysis may increase the potency of the liver preparation.

This is of interest in relation to the recently reported findings of the influence of gastric juice and extracts of stomach on beef and liver.

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A NEW METHOD FOR THE DEMONSTRATION OF ANTIGEN-ANTIBODY COMBINATION

THE method for demonstration of antigen-antibody interaction is as follows:

A rabbit sensitized to some animal protein (blood serum, egg albumin, etc.), receives an intradermal injection of 0.25 cc of undiluted bacterial filtrate of ascertained skin-preparatory potency.[1] Twenty-four hours later the rabbit is injected intravenously with the same animal protein. From four to five hours later there appears severe hemorrhagic necrosis at the prepared skin site. The lesion is characteristic of the phenomenon of local skin reactivity to bacterial filtrates[2].

Inasmuch as the necessary state of sensitization can be obtained by a single injection of a protein and one-week incubation period is sufficient, the method offers the advantages of speed and simplicity. The readings are reliable and clear-cut, since the incidence of positive results is high (*i.e.*, with some proteins about 85 per cent. of rabbits tested after a single sensitization) and since the severe hemorrhagic necrosis makes the reaction unmistakable. The test is highly sensitive (*i.e.*, dilution 1:10.000 of human serum elicited the necessary sensitization) and strictly specific unless repeated sensitizing injections are made. Because anaphylactic shock in rabbits is difficult to elicit, the test injection of animal protein has no lethal effect on these animals.

It is also possible to elicit a severe reaction in prepared skin sites of non-sensitized rabbits receiving separate (one half hour apart) intravenous injections of antigen and antibody (*i.e.*, passive transfer).

The test is to be clearly differentiated from the

[1] Matthew C. Riddle and Cyrus C. Sturgis, *Am. J. Med. Science*, Vol. 180, page 1, July, 1930.

[1] G. Shwartzman, Proc. Soc. Exp. Biol. and Med., 26, 843, 1929; *J. Inf. Dis.*, 44, 232, 1929.

[2] G. Shwartzman, *J. Exp. Med.*, 48, 247, 1928.

Arthus phenomenon in view of the following important features: (1) Single sensitization is sufficient; (2) the reaction is obtained when rabbits are not ready as yet for the Arthus phenomenon; (3) the skin preparation with certain potent bacterial filtrates[3] is essential—inflammatory substances are incapable of eliciting the preparation; (4) the reaction is limited to the prepared skin site; (5) the antigen-antibody combination has to take place in the blood stream.

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SYRINGOPHILUS BI-PECTINATUS A QUILL MITE OF POULTRY[1]

DURING the summer of 1930, five chickens were presented for examination which showed a condition not previously observed at this laboratory. These fowls were presented with the following history and symptoms: A peculiar molt in the flock had been noticed for about one year. The loss of feathers involved over half of the body in most cases, and in many all the feathers were lost. About 75 per cent. of a flock of 1,500 birds were affected with this condition. Aside from the loss of feathers, the birds were apparently in good physical condition.

When the birds were examined, it was found that many stumps of quills remained and had the appearance of being broken. The interior of the quill contained a yellowish-gray or brownish powder, in place of the normal white transparent pith. This material was examined with the aid of a microscope and found to contain a large number of mites which were identified as the *Syringophilus bi-pectinatus*.

This mite was first reported by Heller,[2] who found them in the quills of chickens and pigeons. He stated that up to 90 per cent. of all the chickens of the province Schleswig-Holstein that were examined by him were found to be parasitized. Norner[3] presented a thesis on this mite in which he gave a detailed description of the parasite, together with methods of preservation and staining. The only report of the finding of this mite in the United States is by Hancock.[4] He found it on the feathers of the black flycatcher (*Phoenopepla nitus*) and described it as a new species, *Picobia villosa*. Trouessart[5] claimed that this supposedly new species was actually identical with *Syringophilus bi-pectinatus* Heller. In the same year (1895) Hancock accepted the view that his species was the *Syringophilus bi-pectinatus*.

Since September, 1930, this mite has been found in five widely separated flocks of chickens in Ohio. It has also been found in the turkey and the golden pheasant.

This mite has an oval body provided with numerous stripes and furrows, which run both horizontally and longitudinally. They are parallel to each other and consist of a thickening of the epidermis. The posterior end is rounded. The head is long, especially in females. On each side of the head, lying close to it, is a palpus. The mature mites have eight legs, the first two pairs lying close to the head, the other two behind the middle of the body. The legs are armed with numerous bristles; toward the end there are two short hooklets, bearing two pectinate (comb-shaped) chitinous structures. This double comb is characteristic for this mite and is the reason Heller chose the name *bi-pectinatus*. The body is divided into three segments, a head, thorax and abdomen.

The female mite may attain a length of 0.74 to 0.84 mm; a width of 0.16 to 0.2 mm. The length of the male is 0.56 to 0.6 m; the width is 0.17 to 0.19 mm. The nymphs reach a length of 0.3 to 0.5 mm. and a width of 0.13 to 0.15 mm. The larvae have a length of 0.23 to 0.31 mm. and a width of 0.09 to 0.13 mm. The average length of the ova is 0.26 mm. and their average width is 0.16 mm; the ova taper toward the poles.

Trouessart[6] states that this mite enters the quill at its upper umbilicus, which remains widely open during the whole period of development and is not closed until the quill is fused to the shaft. The mite makes its exit from the inferior umbilicus after death and desiccation of the feather.

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[3] G. Shwartzman, *J. Exp. Med.*, 51, 571, 1930.

[1] The College of Veterinary Medicine, The Ohio State University, in cooperation with the Ohio Agricultural Experiment Station, Reynoldsburg, Ohio.

[2] A. Heller, "Die Federspulmiben die Schmarotzer," pp. 186–188. 1880.

[3] C. Norner, "Syringophilus bi-pectinatus," Oesterr Vierteljahrssch. f. wiss. Veterinarkunde," 57: 91–148, 1882.

[4] Joseph L. Hancock, *The American Naturalist*, 29, 382–384 and 866–867, 1895.

[5] E. L. Trouessart, *The American Naturalist*, 29: 682–684, 1895.

[6] E. L. Trouessart, "Sur les Acariens qui vivent dans le tuyau des plumes des Oiseaux," Comptes Rendus de l'Acad. des Sciences, p. 1130, 1884.

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