handled, and in ten minutes blood pressure had fallen to 98 mm., and in 20 minutes to 56 mm. Hg. In 40 minutes there was still 31.6 vol. per cent. CO_2 in the arterial blood.

In another experiment the intestines were exposed and aerated (not handled). The CO_2 content of the blood was maintained by connecting a long tube to the trachea. After one hour and a half, blood pressure had changed but one mm. Hg and the animal was in good condition. The intestines were then handled, and in ten minutes the blood pressure fell from 122 to 60 mm. Hg. The CO_2 content was 45.1 per cent. In 25 minutes the blood pressure was 46 mm. Hg, the CO_2 content normal, and the dog in shock to such a degree that the sciatic nerve could be dissected out without the administration of ether, the animal making no movement whatever. In these experiments on the abdominal cavity the primary factor concerned is unquestionably the manipulation of the intestines, and not any diminution of CO_2 caused thereby. It will be remembered that in the similar experiments of aeration of the intestines, reported by Henderson, the intestines were "handled gently." We have been unable to find that he notes any mention of aerating the abdominal cavity beneath a celluloid membrane with air as a control experiment.

His control experiment, in which he did not secure shock, was merely aerating the abdominal cavity beneath a celluloid window placed in the abdominal wall with a stream of air plus CO_2.

The present experiment shows that aeration of the intestines without the addition of CO_2 does not produce shock.

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A note on the transmission of spirochætes.

By JOHN L. TODD.

Leishman and other authors have shown that the anal and coxal excretions voided by ticks (*Ornithodoros moubata*), capable of transmitting spirochætes (*Spirochæta duttoni*), are infective and that susceptible animals inoculated with these fluids develop a spirochætal infection. It has been asserted that animals upon which infected ticks have fed will not become infected, unless

these fluids are voided while the ticks feed, and it has been suggested that the infection is transmitted by the flowing of the fluids into the wounds made by the mouth-parts of the ticks in feeding. Spirochætes had not been seen in these fluids and it was suggested that they existed there in a coccoid form.

On several occasions, coxal and anal fluids, excreted by infected ticks, coming from Uganda and British Central Africa, have been examined. In every instance the fluid was taken while the ticks fed upon an uninfected animal. The fluid collected was free from blood and, in two instances, coxal fluid was collected apparently free from anal excretion. On six occasions, after the fluid had been centrifugalized, spirochætes were found in it; their morphology is not distinct from that of *Spirochæta duttoni*. Spirochætes were found in the fluid that apparently contained no anal excretion.

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Experimentally fused larvæ.

By **A. J. GOLDFARB.**

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When the eggs of *Toxopneustes variegatus* were subjected to a 5/8 molecular NaCl, after the removal of the fertilization membrane, considerable numbers were subsequently fused together. I have counted as many as forty percentum, in the optimum solutions, of agglutinated and fused pairs, triplets, etc. Few of these reached the pluteus stage of development due to the early death of all fusions of more than three eggs, and to the large mortality of even the double embryos.

The plutei contain at least three characteristic tissues, namely, body wall, archenteron, skeleton. The first two of these behaved essentially as described by Driesch in various European species, and by the writer in the American species *Arbacia punctulata; i. e.*, the body walls or the archentera of plutei derived from separate eggs were united either incompletely or so completely as to give little or no evidence of the original dual character of the larvæ.