a period of 5 weeks gave titers of 1:48 to 1:384 (and one exceptional titer of >1:1536) and 21 injections over a period of 7 weeks gave titers of 1:48 to 1:3072, the majority being 1:192 to 1:768.

The optimum dose appears to be from 10,000,000 to 30,000,000 sperm per injection. Two of 3 animals injected with 270,000,000 sperm per injection died after the fourth injection. One animal given 21 injections of 90,000,000 sperm each over 7 weeks yielded serum with the low titer of 1:48.

Subcutaneous injections failed to produce agglutinins.

All controls were negative except that one control serum was found to have a titer of 1:96. Also one lot of pooled serum from 18 untreated males used in another experiment contained sperm agglutinins. The reason for these rare agglutinins in sera of untreated animals is unknown.

Absorption tests with some of the sera produced in the above series of experiments have yielded evidence of the existence of an antigen or antigens in the sperm of C57 black mice not present in the sperm of B alb C mice. These tests will be described in detail elsewhere.

Summary. Four or 5 intraperitoneal injections on alternate days of mouse sperm into mice failed to produce more than a very low titer of sperm agglutinins. However, with 21 injections over a period of 7 weeks titers of 1:48 to 1:3072 were developed. Subcutaneous injections failed to lead to the formation of antibodies.

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A New *Salmonella* Type: *Salmonella mississippi.**

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Among a lot of *Salmonella* cultures received from the Mississippi Department of Health was one isolated from a stool specimen of a normal food handler. This bacillus was identical with none of the previously described *Salmonella* types and to it was assigned the name *Salmonella mississippi.* It was a motile rod which in its morphological, cultural, and biochemical characters conformed to the usual pattern of paratyphoid bacilli. Glucose, arabinose, xylose, rhamnose, maltose, dulcitol, and sorbitol were promptly fermented with the production of acid and gas. Lactose, sucrose, salicin, adonitol, and inositol were not attacked. The bacillus fermented d-tartrate, mucate, and citrate but did not utilize l-tartrate. Large amounts of hydrogen sulphide were produced in peptone broth but indol was not formed.

When examined serologically the organism was agglutinated strongly by O serums derived from *S. worthington* (I, XIII, XXIII) and *S. poona* (XIII, XXII). It was agglutinated to a lesser degree by serums which contained agglutinins for antigen I. When tested with single factor serums for antigens XXII and XXIII, agglutination occurred in both. Absorption of *S. worthington* O serum with *S. mississippi* resulted in a complete removal of agglutinins, but the bacillus did not remove all agglutinins from *S. poona* O serum. When an O serum was prepared from *S. mississippi* it was found that neither *S. poona* nor *S. worthington* was able to exhaust it of agglutinins, although when used in combination the organisms left only a slight residual titer in the serum. It is obvious that the O antigens of *S. mississippi* are complex and that the O antigens of the previously described members of the *S. poona-S. worthington* group cannot be fully expressed by the symbols hitherto assigned to

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them. The O antigens of *S. grumpensis*, an undescribed type of Hormaeche and Peluffo,[1] while unlike those of *S. mississippi*, also occupy an intermediate position between *S. poona* and *S. worthington*. In view of the present lack of agreement as to how these antigens shall be designated, and since *S. mississippi* possesses all the O antigens of *S. worthington* as well as additional factors, its O antigens are labelled simply as I, XIII, XXIII. . .

When the H antigens of *S. mississippi* were examined the organism was found to be diphasic. Phase 1 was flocculated to the titer of serum derived from phase 1 of *S. paratyphi B* (b) and removed all H agglutinins from the serum when used as antigen in absorption tests. The antigens of phase 1 of *S. mississippi* may be denoted by the symbol "b." Phase 2 of the bacillus was flocculated by serums derived from all the non-specific phases of the Kauffmann-White classification. When tested with single factor serums for antigens 2, 3, 5, 6 and 7, agglutination occurred in 5 serum and to a lesser degree in 3 serum. The organism was used to absorb agglutinins from serum derived from phase 2 of *S. choleræ-suis* (1,5 . . .). After absorption a slight residue of agglutinins remained for phase 2 of *S. choleræ-suis* but the serum would no longer agglutinate phase 2 of *S. thompson* (1,5 . . .). The antigens of phase 2 of the bacillus may be expressed as 1,5 . . . The antigenic formula of *S. mississippi* is I,XIII,XXIII . . .:b-1,5 . . .

[1] Hormaeche, E., and Peluffo, C. A., 1943, personal communication.

Summary. A new *Salmonella* type which was isolated from the stool specimen of a normal food handler was described. The organism was designated as *S. mississippi* and was assigned the antigenic formula I,XIII,XXIII . . .:b-1,5 . . .