tivity as compared with a control antigen. Centrifugation at 12,000 RPM removed all of the reacting material from the supernatant fluid. The sediment when resuspended in 0.85% NaCl was found to possess a reactivity almost identical with that of the original suspension. Effective antigens were found to be unstable and to diminish rapidly in reactivity on standing. Antigens which had been stored overnight at 4°C were frequently found to be distinctly anticomplementary.

*Discussion.* The fact that patients convalescent from primary atypical pneumonia often develop in their serum the capacity to fix complement with a number of different antigens seriously complicates the interpretation of complement-fixing tests in this syndrome. This is particularly true when relatively crude tissue suspensions are employed as a source of antigen. Similar reactions were not observed when convalescent sera from certain other acute infectious diseases, either of bacterial or virus etiology, were tested. Since in primary atypical pneumonia positive reactions could in some instances be demonstrated with antigens prepared from a variety of organs obtained from a number of unrelated species it is not apparent what component common to the antigens used might explain the observed phenomenon. The available evidence indicates that it may be possible in one or both of two ways to circumvent the practical difficulties imposed by this property of certain convalescent sera. First, the sera may be rendered non-reactive by heating at 65°C for 30 minutes, a procedure which has been shown by Casals and Palacios[6] to be of importance in carrying out complement-fixation tests against neurotropic virus antigens. Second, the antigens to be tested may be prepared relatively free of easily sedimentable tissue components, a procedure which has been found to be of value in eliminating non-specific reactions in complement-fixation tests with a number of virus antigens.

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[6] Casals, J., and Palacios, R., *J. Exp. Med.*, 1941, **74**, 409.

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## Two New Salmonella Types with Similar Somatic Antigens.*

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A. *Salmonella florida.* The only culture of *S. florida* thus far recognized was isolated by Mrs. Mildred Galton from the feces of a patient affected with a febrile disease which was accompanied by diarrhea. It was sent to the writers for serological examination. The organism possessed the cultural and biochemical characteristics of the Salmonella. Acid and gas were produced from glucose, xylose, rhamnose, maltose, trehalose, and sorbitol. Lactose, sucrose, inositol, adonitol, and salicin were not fermented. Dextro-tartrate, citrate, and mucate were attacked but levo-tartrate and meso-tartrate were unaffected. The bacillus produced large amounts of $H_2S$ but did not form indol nor liquefy gelatin.

Alcohol-treated suspensions of the organism were agglutinated to the titer of *S. onderstepoort* O serum [(I), VI, XIV, XXV] and to a lesser degree by *S. carrau* O serum (VI, XIV, XXIV). When tested with absorbed serums the organism was found to possess antigen

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XXV and a portion of antigen I. No agglutination occurred in XXIV serum. In absorption tests the bacillus removed practically all agglutinins from *S. onderstepoort* O serum, leaving only traces of agglutinins for the homologous strain. The O antigens of *S. florida* may be expressed as (I), VI, XIV, XXV.

Examination of the H antigens revealed that the bacillus was diphasic. Phase 1 was agglutinated strongly by *S. typhi* serum and by all other serums containing agglutinins for antigen d. In absorption tests it was found that *S. florida* did not completely remove agglutinins from *S. typhi, S. oregon* or *S. muenchen* serum, although it caused a reduction of 90 to 95% of their respective titers. The complexity of antigen d was emphasized by Kauffmann,[1] by Hormaeche and Peluffo,[2] and by Edwards and Bruner.[3] This lack of identity in the related antigens designated by the symbol d accounts for the inability of *S. florida* to affect a complete removal of agglutinins from various d serums. For diagnostic purposes phase 1 of the bacillus may be designated as d.

Phase 2 of *S. florida* was agglutinated by serums derived from all the non-specific phases of the Kauffmann-White classification. When tested with absorbed serums containing agglutinins for factors, 2, 3, 5, 6, and 7 respectively it was agglutinated only by 7 serum. In absorption tests *S. florida* completely removed H agglutinins from serum derived from phase 2 of *S. gaminara*. Phase 2 of the bacillus may be expressed as 1,7 . . . .

The diagnostic formula of *S. florida* is (I), VI, XIV, XXV: d-1,7 . . . .

B. *Salmonella madelia*. The sole culture of *S. madelia* thus far encountered was isolated by Dr. B. S. Pomeroy from the liver of a poult that died of septicemia. The cultural and biochemical characteristics of the bacillus were the same as those of *S. florida*. On serological examination it was found that in agglutination tests with O serums, *S. madelia* gave reactions identical with those obtained in the examination of *S. florida*. Its somatic antigens are (I), VI, XIV, XXV.

The organism was diphasic and phase 1 was agglutinated to the titer of serum derived from phase 1 of *S. bareilly* and by all other serums containing agglutinins for antigen y. In absorption tests it completely removed H agglutinins from serum derived from phase 1 of *S. bareilly*. Phase 1 of *S. madelia* may be denoted as y.

Phase 2 of the organism was agglutinated by serums derived from all the non-specific phases. When tested with absorbed serums containing agglutinins for factors 2, 3, 5, 6, and 7 respectively, it was agglutinated only by 7 serum. In absorption tests *S. madelia* completely removed H agglutinins from serum derived from phase 2 of *S. nyborg*. Therefore, phase 2 of the bacillus is 1,7 . . . .

The antigenic formula of *S. madelia* is (I), VI, XIV, XXV:y-1,7 . . . .

[1] Kauffmann, F., *Z. Hyg.*, 1937, **120**, 177.

[2] Hormaeche, E., and Peluffo, C. A., *Arch. Urug. de Med., Cir. y Espec.*, 1941, **14**, 217.

[3] Edwards, P. R., and Bruner, D. W., *Am. J. Hyg.*, 1941, **34**, 121.