Salvarsan injected intravenously into rabbits in large doses causes intravascular agglutination which may be observed in the drawn blood. The lungs of such animals are filled with petechial hemorrhages resulting from emboli of the agglutinated red cells, and the animals die acutely.

A certain proportion of animals injected at three-day intervals with sub-lethal doses die during the third or fourth injection in a manner resembling the death of animals injected with large doses. In these animals also the anatomical evidences of intravascular agglutination and pulmonary embolism are constantly present.

The total sum of these repeated doses barely reaches the concentration found necessary for immediate intravascular agglutination, and as this total sum must be considerably reduced by the excretion of salvarsan during the six or nine days intervening, some additional factor must be responsible for the sudden occurrence of intravascular agglutination in these animals.

Examination of their blood shows no increase in the agglutinability of the red cells during the course of the injections, but there is a distinct drop, in some cases to one-sixteenth of the original value, in the power of the serum to inhibit, in vitro, the agglutination of red cells by salvarsan.

164 (1746)

Impure and misnamed stock cultures of obligate anaërobes.

By IVAN C. HALL.

[*From the Department of Bacteriology and Experimental Pathology, University of California.*]

During the past few years the writer has engaged in building up a collection of cultures of obligate anaërobes whose purity and true identity should be, if possible, beyond question. In addition to numerous cultures isolated from original sources a number have been received from other laboratories. Most of these were already labelled as to species and form the subject of this report.

While a few cultures were received with aërobic contamination these are not included here since aërobic contaminations are

readily recognized and eliminated by the bacteriostatic action of selective dyes[1] or by selective heating according to whether the contaminants form spores or not.

No assumptions as to purity or correct identity were made; after ascertaining the absence of aërobes, every culture was first carefully examined for the salient properties of the indicated species in order to determine, (1), its presence or absence, and (2), the possible presence of contaminating organisms. Irrespective of the findings in the preliminary tests, every culture was regarded as possibly impure and was therefore purified and repurified from three to six times by either the deep colony, or the surface colony method or both.[2] The pure culture was then identified.

Following are the results briefly tabulated.

More than one species of anaërobe (6 cultures)		
Containing the designated species	5	cultures
Not containing the designated species	1	"
No evidence of anaërobic impurity (40 cultures)		
Renamed in accord with recently accepted nomenclature	7	cultures
Incorrectly labelled	13	"
Correctly labelled	20	"
Total	46	cultures

This experience indicates that the majority of anaërobic cultures received from other laboratories are pure but that a surprisingly large number contain or consist of resistant species not indicated by their labels. *B. sporogenes* is the commonest organism found in stock cultures of anaërobes.

The writer believes that many of the cultures were pure and properly identified in the beginning of their history which in some cases goes back many years and involves transfers between several laboratories. The most probable source of anaërobic contamination is imperfectly sterilized culture medium. Once contaminated a culture may readily lose the possibly less resistant species indicated by its label while the contaminant may persist indefinitely without detection by any but one skilled in anaërobic bacteriology.

A few instances have been observed in our own laboratory in which pure cultures of anaërobes became contaminated and the

[1] Hall, "Selective elimination of hay bacillus from cultures of obligative anaërobes," *Jour. A. M. A.*, 1919, lxxii, 274.

[2] Hall, "Practical methods in the purification of obligate anaërobes," *Jour. Infec. Dis.*, 1920, xxvii, 576.

original species completely supplanted by another. Cultures of anaërobes require exceptional care to avoid contamination and subsequent loss of identity; no culture can be accepted upon its face value.

165 (1747)

The variation in the size of trypanosoma brucei according to the host.

By T. D. BECKWITH and W. W. REICH.

[*From the Department of Bacteriology and Experimental Pathology, University of California.*]

It has been stated by observers that a certain species of trypanosome may show differences in size according to the host infected. An examination of the literature however reveals much divergence of opinion concerning this matter. In addition such statements as appear are very fragmentary. The technique upon which some of them are based moreover leaves much to be desired.

Plimmer and Bradford[1] (1898) quoted by Castellani and Chalmers remark that the length of *Trypanosoma brucei* is constant for a given animal but varies in different hosts, being between 26 and 27 micra in rats, mice, guinea pigs, rabbits and dogs. Kanthack, Durham and Blandford[2] state that the Nagana parasites vary considerably both in size and in form. Bruce, Hamerton and Bateman[3] come to the conclusion that *Trypanosoma brucei* varies from 10 to 16 micra in length in the rat with an average of 13.0 while in guinea pigs the limits are 8 to 16 micra with the average 12.5. Laveran and Mesnil[4] claim that their own work which included parasites from a large range of mammals shows no manifest variation in size of the organism.

A culture of *Trypanosoma brucei* was obtained from Dr. F. G. Novy at the University of Michigan. Immediately upon re-

[1]Plimmer and Bradford, quoted from Castellani and Chalmers, "Manual of Tropical Medicine," 3d edition, 1920.

[2]Kanthack, Durham and Blandford, *Proc. Roy. Soc. London*, 1908, lxiv, 100.

[3]Bruce, Hamerton and Bateman, *Proc. Roy. Soc. London*, 1909, lxxxi, 14.

[4]Laveran and Mesnil, "Trypanosomes et Trypanosomiases," 1912.