

out anæsthesia a needle connected to a recording mercury manometer was inserted into the femoral artery. Ether at 7°C. was dashed onto the opposite limb and an electric fan allowed to blow upon it. The responses in the 4 oldest completely sympathectomized animals and in 4 of the controls were compared. All 8 showed an elevation of blood pressure and heart rate together with surprise and struggle. The average increase of blood pressure over readings taken before and after the stimulus in the control dogs was 32 mm., and in the sympathectomized dogs 16 mm. Hg. The mechanism of this rise in blood pressure is not determined.

From these experiments it seems fair to assume that even a complete sympathectomy will not permanently alter the blood pressure or the peripheral resistance of normal dogs longer than 94 to 225 days.

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#### Characteristics of Small Colony Variants of *Shigella paradysenteriae* Sonne and *Staphylococcus aureus*.

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A number of small-colony variants of the G-type were isolated from plates streaked with 2- to 5-month cultures of *S. paradysenteriae* Sonne. These variants occurred irregularly and infrequently—to the extent of one per cent of the colonies counted. Cells possessing the potentiality of developing G-colonies were not encountered in 18- to 24-hour cultures. The variants produced colonies from 0.04 mm. to 0.20 mm. in diameter. In microculture the normal cell divided by a process similar to budding while the variant divided by simple transverse fission. The minimal reproductive time of the normal was about 36 minutes and that of the variants from one hour and 45 minutes to 3 hours and 54 minutes.

Reversion of the variants to the large-colony or normal form was brought about by cultivating in serum-enriched media, incubation for 5 days or by 15 to 20 serial transfers in nutrient or veal-infusion-broth. After reversion, normal biochemical, serological and cultural characteristics were reestablished. Some strains, while believed to be true variants, could not be made to revert completely to the normal colonial size.

The biochemical activity of the variants was greatly reduced as compared to the normal. Sugars were fermented very slowly and in some cases not at all. The variants often required 10 to 30 days to produce acid in some sugar-broths. The addition of serum to the medium usually resulted in better growth and fermentation of a wider range of sugars.

Agglutination and complement-fixation tests showed most of the variants to be related to the corresponding normal strains. There existed a direct relationship between colonial size and titer with normal antiserum.

By means of their "resting cells" the comparative activities of the normal and G-colony forms of *S. paradysenteriae* Sonne and *Staphylococcus aureus* were studied. In the presence of a hydrogen-donor, such as glucose, resting cells reduce methylene blue. The variants reduced the dye at a slower rate than did the normal cells. The time of reduction was roughly proportional to the colonial size and the concentration of organisms.

A direct relationship was found to exist between cataphoretic velocity and the size of the colony which the cell was capable of forming. The larger the colony the faster the velocity of the cells when corresponding normal and G-strains were compared. For instance, a normal strain of *Staphylococcus aureus*, colonial diameter 2.00 mm., had a velocity of 16.3  $\mu$  per second while its corresponding G-colony with a diameter of 0.20 mm. had a velocity of 9.5  $\mu$  per second. Those G-strains which partially reverted to the normal had a velocity between that of the normal and the variant.

The cataphoretic velocity is related to the electrical charge upon the cell and a higher velocity generally signifies a greater charge. The normal forms therefore possess a greater electrical charge than do the small variants.

Those G-strains which possessed the ability to revert to the large colonial forms were not filtrable through Berkefeld N, W or Seitz filters. One minute variant which never reverted completely passed through Berkefeld N filters 50% of the trials.