

Shortly after opening the abdomen and beginning of the gastric manipulation the total resistance showed pronounced changes. In a few cases (especially those in which there had been a previous hemorrhage), the total resistance was found to increase, for a time. The optical curves in such cases showed no essential variations, however. In the majority of cases, however, the total resistance as measured by the Cope method decreased at once and the optical curves showed typical changes interpreted as characteristic of low peripheral resistance.

During the progressive stages of shock, *i.e.*, where mean arterial pressure begins to fall, wide fluctuations in resistance were found by the Cope method, confirming observations of Erlanger, Gasser and Gesell. In those experiments, however, in which the total resistance was initially decreased, it continued below normal.

We believe, therefore, that direct proof has been supplied that the early changes in contours of the arterial pressure curves during shock are associated with a reduced peripheral resistance. Taken in conjunction with the observations of Erlanger, Gesell and Gasser that the arterioles at this time are constricted these results lend support to the idea that the point of vaso-relaxation in shock is in the capillaries rather than the arterioles.

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**Experimental plumbism: therapeutic efficiency of some agents and comparative toxicity of other metals.<sup>1</sup>**

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Experimental chronic lead poisoning was produced by feeding metallic lead in the form of bullets to pigeons. The symptoms are characterized by a prompt loss of body weight and appetite, gradual depression, loss of equilibrium, diarrhea, increased crop peristalsis with regurgitation of contents, wing drop (anatomically corresponding to drop-wrist in man), paralysis of legs, marked emaciation and death at the end of 21 days (mean). At autopsy,

the principal lesions observed are marked atrophy of the skeletal musculature everywhere, and sometimes darkening of mucosa of the large intestine and cloaca; unabsorbed lead bullets, if any, being found in the gizzard.

The results on 63 animals to date may be briefly summarized as follows: The lethal dose of lead was found to be about 0.16 gm. per kilo; time of death in fatal cases was 21 days; time of recovery in survival cases was 26 days to 8 months; lead absorbed in fatal cases was 85 per cent.; concentration of lead in tissues of fatal cases was about 0.075 per cent.; and the current of lead, about 0.0103 gm. per kilo per diem for 83 days to 0.02 gm. per kilo per diem for 25 days; the maximal loss of body weight in fatal cases was 40 per cent., in surviving pigeons 8 per cent.; the first appearance of loss of body weight in all animals was demonstrable at end of 2 to 4 days after administration and the greatest loss of body weight occurred at the end of 20 days; loss of body weight proceeded or was parallel with diminished food intake apparently due to loss of appetite from sickness; the daily food intake was 3.9 gm. in fatal cases and 18 gm. in survival cases; the normal food intake being 23 gms.

All of the above factors were beneficially influenced by the administration of sodium iodide in food and water and magnesium sulphate and calcium sulphide in food, while sodium chloride administered in the same way was not beneficial.

The following lead salts administered in doses whose lead content was 2 to 13 times that of the minimal fatal dose of metallic lead were non-toxic: lead chloride, lead iodide, lead acetate and lead sulphide.

Of the following metals used in 2 1/5 times the dosage of the minimal fatal dose of lead, namely, zinc, copper, tin, bismuth, iron and cadmium, only cadmium, bismuth and zinc were toxic, but not fatal during a period of 27 days of observation. Therefore, lead is decidedly more toxic, and plumbism is more or less a specific toxicity in the sense that symptoms occur promptly and in a striking manner, the motor effects and fatalities being absent with cadmium, bismuth and zinc.

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