

certain data to employ a polyvalent typhoid vaccine for immunizing and therapeutic purposes compounded in accordance with these groups as tentatively suggested and which may be confirmed or extended in the future.

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Note on "Salt fever."

By THEO. C. BURNETT and GEO. H. MARTIN, JR.

[From the Rudolph Spreckels Physiological Laboratory of the University of California.]

About six years ago one of us¹ published a short account of the rise of temperature which follows the injection of sodium chloride into rabbits, either intravenously or subcutaneously. This fact seems to have been completely overlooked by subsequent investigators, of whom there are many (Bingel, Freund, Samelson, Hort and Penfold, McIntosh, Fildes and Dearborn, and others). Samelson² claims that the rise of temperature is due to bacterial toxins contained in the distilled water, and not to the sodium chloride. The observations were made on nursing children. Freund,³ on the other hand, maintains that the sodium chloride is the cause of the rise of temperature, at the same time admitting the fact that contaminated water may also cause fever.

As we wished to make use of this fact in another connection, it became necessary for us to be sure that the rise of temperature was due to the injection of the salt, and to that end we have repeated the earlier work. Sterile sodium chloride was put in a flask that had been thoroughly sterilized, and the water, redistilled in glass, was received directly into the flask from the condenser. The mouth of the flask was closed with sterile cotton, and the solution ($m/6$ concentration) was used as soon as it had cooled down to the proper temperature. There can be no doubt, therefore, of the purity of the solution as far as bacterial contamination is concerned. Antiseptic precautions were observed in making the injections.

¹ Burnett, Univ. Calif. Publ., Vol. 4, 1910, p. 5.

² Samelson, *Monatsch. f. Kinderheilk*, Vol. 11, p. 3.

³ Freund, *Arch. f. exp. Path. u. Pharm.*, Vol. 74, 1913, p. 311.

The results confirmed our earlier work. The temperature rose steadily after injection, the height being roughly proportional to the dose given. The maximum was attained in from three to five hours, after which the temperature gradually returned to normal. As an example, a rabbit weighing 2,500 grams was injected subcutaneously with 25 c.c. sterile sodium chloride solution, *m/6*. In five hours a maximum temperature of 40.4° C. was recorded. The next day 35 c.c. were injected, with a maximum of 41° C. in five hours. The following day 20 c.c. gave a maximum of 40° C. in three hours. 25 c.c. Ringer's solution caused a slight rise, but not so marked as the pure sodium chloride (39.8° as against 40.4°). This is not in accord with our original findings, and it is possible that the distilled water used at that time was not perfectly pure. Our present results are more in harmony with Loeb's theory of balanced solutions, and with the results of other workers.

As intravenous injections become more and more general, it would seem wise, when sodium chloride is used as a menstruum for other substances, that the amount injected should be so graduated as to fall below that which will cause a febrile reaction; or better still, Ringer's solution should be used.

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The influence of morphin upon the elimination of intravenously injected dextrose.

By I. S. KLEINER and S. J. MELTZER.

[From the Department of Physiology and Pharmacology of the Rockefeller Institute for Medical Research].

In a series of eight experiments dextrose was injected into dogs which had received 10 mg. of morphin per kilo of body weight. Ten other dogs received similar dextrose injections but no morphin, the slight operation having been performed under local anesthesia produced by cocain or ethylchloride. The dosage of dextrose was 4 gm. per kilo of body weight, injected in a 20 per cent. solution in about one hour. The difference in the urinary