sity of the ultra-violet rays of the sun at that time of the year, which might have influenced the results, the basal metabolism of both children did not rise permanently. Although it rose after the fifth and third treatment, respectively, it then fell, the one case 11 per cent below the original level, and in the other thirteen per cent.

Conclusions: It is important to bear in mind the reactions of the individual, when considering the effect of ultra-violet rays on the basal metabolism. A prolonged rise in basal metabolism following ultra-violet irradiation, is apparently not the usual reaction, but may possibly be found in certain children. The explanation must be sought elsewhere, to account for the clinical improvement noted in malnourished children following irradiation.

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Observations on lytic principle of weak potency.

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Bordet and Ciuca[1] have demonstrated that an anticolon lytic principle of weak potency can be obtained from a strong one by addition of a very small amount of strong principle to *B. coli.* The quantitatively reduced lytic principle produces only slight lysis, and according to these authors induces generation of a *new* principle of weak potency. This transformation of a strong principle into a weak one is considered of a qualitative nature, since no matter what amount of this weak principle is added to *B. coli* only weak lysis occurs and a weak principle is generated. To explain these observations Bordet and Ciuca assume that the introduction of a quantitatively reduced lytic principle leads to its considerable dispersion among the bacterial cells. Therefore, each bacterial cell is only weakly impressed by this dispersed

[1] Bordet and Ciuca, *Compt. Rend. Soc. de Biol.*, 1922, lxxxvi, 295, and 1922, lxxxvii, 366 and 987.

principle, and thus reacts with generation of a new qualitatively reduced lytic principle. The technique for producing this variation in the quality of the principle, as given by Bordet and Ciuca, is as follows: Highly diluted lytic principle is added to broth, and inoculated with *B. coli.* In 24 hours only weak lysis occurs. This culture is incubated for about one week, and then sterilized by heating at 58° for one half hour. This fluid when added to *B. coli* produces slight lysis. If the second culture is then left in the incubator for one week and subsequently sterilized by heating, it shows again the presence of a weak lytic principle.

It is apparent from the description of the method employed that incubation for about one week, of cultures showing slight lysis is a necessary step for obtaining a weak principle. However, if the explanation of the mechanism of formation of weak lytic principle given by Bordet and Ciuca is correct, the prolonged incubation of the cultures mentioned above should not be necessary. It is evident that, according to the conception of these authors, weakly impressed bacterial cells should give rise to *only* a weak principle, and that at no time should these cultures show the presence of a principle of strong potency.

The object of this work was to investigate the relation of prolonged incubation of a quantitatively reduced lytic principle to the formation of a principle of weak potency. A series of experiments led to the following results:

I. When the lytic principle is highly diluted (10^{-8}) and inoculated with *B. coli,* only weak lysis occurs in the culture.

II. If this culture is sterilized by heating to 58° for one half hour 24 hours after inoculation with *B. coli* and tested immediately for its lytic potency, it shows the presence of a *qualitatively unchanged* but *quantitatively weaker* lytic principle than the original one. In other words, if a series of dilutions of this principle is made, it is able to produce strong lysis in a dilution not higher than 10^{-6} and slight lysis in dilution 10^{-6}, while the original principle produces strong lysis, does so in dilutions up to 10^{-7}.

III. If the same culture showing weak lysis is left in the incubator at 37° for one week, and then, after sterilization by heating to 58°, is diluted in tubes of broth inoculated with *B. coli,* it shows the presence of a weak lytic principle. That is

to say, it produces slight lysis in dilutions up to 10^{-6}, and has no effect whatsoever in higher dilutions.

IV. If the same culture to which reference is made in paragraphs "I", "II", and "III" is heated to 58° 24 hours after inoculation with *B. coli,* incubated for one week and then tested for its lytic potency, it shows the presence of a weak lytic principle producing slight lysis in dilutions from 10^{-1} up to 10^{-6}, and no lysis in higher dilutions.

V. However, if such a weak lytic principle as is mentioned in paragraphs "III" and "IV" is brought in contact with *B. coli,* it induces generation of a principle of strong potency again.

It is evident from the results obtained that a highly diluted lytic principle induces the generation of a qualitatively unchanged but quantitatively reduced lytic principle. Such a principle[2] undergoes partial inactivation on standing in the incubator, but no qualitative variation occurs in it since it can be regenerated to full strength.

CONCLUSIONS.

1. The formation of a weak principle is brought about by the partial inactivation of a quantitatively reduced lytic principle, which partial inactivation is produced by prolonged standing in the incubator, and is not, as held by Bordet and Ciuca, the result of a quantitative reduction by itself.

2. No qualitative transformation of lytic principle occurs if the method indicated by these authors is employed.

[2] No noticeable inactivation of original undiluted lytic principle on prolonged standing in the incubator was ever observed.