Comments and Communications

Failure of Vitamin B_{12} to Promote Growth of Premature Infants

With the development of knowledge of animal protein factors and of vitamin B_{12} as growth-promoting factors for bacteria and some animals, it seemed that possibly these agents might be of value in similarly promoting the growth of premature infants.

A study was undertaken in this clinic several months ago to determine whether or not this could be demonstrated. To date, that portion of the study having to do with the use of vitamin B_{12} intramuscularly has been completed.

Forty-eight infants with birth weight between 1,245 g and 2,326 g have been considered. Twenty-five received vitamin B_{12}[1] intramuscularly, and the others served as controls. The average birth weight in each of the groups was similar, 1,950 g and 1,933 g, respectively, for those receiving the vitamin and the controls. All infants received one of three types of formula, with comparative distribution between control and experimental groups.

TABLE 1

	Controls	Vitamin B_{12}
Average birth weight	1,933 g	1,950 g
Average discharge weight	2,630 "	2,577 "
Average total gain	698 "	618 "
Average daily gain	29.4 "	24.5 "
Average time to regain birth weight	7.5 days	8 days
Average time to reach 2.5 kg:		
Birth weight 1,500–2,000 g	28.6 "	29.3 "
Birth weight 2,000–2,500 g	14.6 "	14.8 "

The general condition of the infants in each group was similar. The vitamin B_{12} was given intramuscularly in a dosage of 10 μg. The frequency of administration varied from daily to every three days. The average total dose was 70 μg, with a range of 30–220. The time of introduction of the substance varied from the second to the seventh day of life, the average being the fourth day.

The results of the study in this particular group of premature infants was disappointing. There was no appreciable difference between those receiving vitamin B_{12} and those serving as controls in respect to average total gain before discharge, average daily gain, average time to regain birth weight, and average time to reach a weight of 2.5 kg. Indeed, on all counts there was a slight margin of superiority in the control infants. No difference was noted in the individual infants in the experimental group so far as dosage was concerned, those receiving the maximum total dose gaining no better than those receiving the minimal amount.

Although the group studied is not large, one may perhaps justly conclude that vitamin B_{12} is not effective in promoting weight gain of what might be termed normal premature infants. One may speculate that larger doses intramuscularly or doses similar to those used, but given orally, might be more effective. These possibilities are being explored, but we doubt that the results will differ materially from those detailed above. Wetzel (Wetzel, N. C., Fargo, W. C., and Smith, I. H. *Science*, 1949, **110**, 651) has recently reported suggestive evidence that the vitamin is effective in promoting weight gain in certain older children with slow progress in growth, children who perhaps have a deficiency of the factor. It is probably reasonable to believe that no premature infant will benefit from its administration unless he, too, has the specific deficiency. At present there is no evidence that such deficiency exists in premature infants.

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[1] Cobione, kindly supplied by Merck and Company.

Effect of Tricaine Methanesulfonate on the Determination of Sulfonamides

Tricaine methanesulfonate was used with a considerable success for the anesthesia of lower vertebrates (McGovern, B. H., and Rugh, R. *Proc. Soc. Biol. Med.*, 1944, **57**, 127; Hamburger, V. *A manual of experimental embryology*. Chicago: Univ. Chicago Press, 1942. Part II, p. 40; Schotte, O. E., and Harland, M. *J. Morphol.*, 1943, **73**, 329; and Gordon, M. N. Y. Zool. Soc. Private communication). Therefore, in one of the series of tests on the concentration of sulfamerazine in the tissues of fingerling brook trout (*Salvelinus fontinalis*), tricaine methanesulfonate M.S. 222 (Sandoz) was used as an anesthetic. The results in this series became inconsistent with the previous tests, and the tissue level of sulfamerazine was higher than could be expected. Therefore, tests were carried out in order to determine the effect, if any, of the anesthetic on the sulfonamide test.

Sulfamerazine was determined with a photometric modification of the method of Bratton and Marshall (Bratton, A. C., and Marshall, E. K. *J. biol. Chem.*, 1939, **128**, 537). The trout selected for the determinations were expected to contain in their tissues only a trace of sulfamerazine or none. In the trout anesthetized with tricaine methanesulfonate, the test indicated that the tissue level of free sulfamerazine was from 1 to 2 mg % and of total sulfamerazine from 2 to 4 mg %. Trout from the same batch, but not anesthetized, gave negative results, indicating that they were free from this sulfonamide.

Anesthesia was carried out by dipping trout for less than 1 min in a solution of tricaine methanesulfonate 1 : 5,000 in spring water.

This observation shows that tricaine methanesulfonate, or other anesthetics with similar molecular structure, should not be used whenever they may interfere with the colorimetric tests for sulfonamides.

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Book Reviews

Einführung in die Kernphysik. 4th rev. ed. Wolfgang Riezler. Berlin and Buxtehude, Germany: Hermann Hübener, 1950. 309 pp.

The chief difficulty in introducing nuclear physics to the beginner or to the worker in other branches of the natural sciences is to find a scientifically correct presentation requiring a minimum of background in physics. This is accentuated if, as the author wishes, the text should also appeal to a wider public. Riezler attacks the problem by giving an essentially nonmathematical, somewhat narrative treatment, using the historical approach for balanced measure. Formulas are used sparingly. Even where they are given, the nonphysicist is generally able to understand the result from the text alone.

The first half of the book contains a survey of the physical aspects in a deductive order: atomic physics, general properties of nuclei, radioactivity, nuclear reactions, elementary particles, and systematics and structure of nuclei. The second, in parts more specialized, is devoted to nuclear techniques and to the applications of nuclear physics. Tables of isotopes and nuclear reactions, as of summer 1949, a glossary, and registers fill the last fifty pages. A two-tone isotopic chart, giving abundances and half-lives only, is attached.

The book is, throughout, well written, clear, and usefully illustrated. The small number of printing errors and factual mistakes will be detected and corrected by most readers. A few instances of repetitions of topics are excusable. One major omission may be noted. The liquid drop model is not mentioned, although the packing fraction curve and the mass parabolas for isobars are given and discussed. The chapter on electronics of nuclear detection instruments is rather inadequate, at least for the reader in the United States, since several outmoded designs are presented. The usefulness of the extensive tables is seriously limited by the lack of references. A list of only about 40 books and review articles is given in the bibliography, without connection to the tables or to the text. Finally, in the chart of isotopes, one may object to the distinction made between positron emitters and nuclei decaying by positron emission *and* electron capture.

These are all minor objections, however, to a text which gives an excellent survey of nuclear physics for beginners and nonphysicists. It is even quite fruitful and pleasant reading—in good German—for the physicist. It may be added that the print, though fine, is very clear, on good paper, and that the book is well bound, in gratifying contrast to some volumes received from Germany during or shortly after the war.

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Kleine Raketenkunde. Hans K. Kaiser. Stuttgart, Germany: Mundus-Verlag, 1949. 150 pp. DM 9.

This is not the only new book on rockets and rocket research that has been published in Western Germany since the end of hostilities. There have been three so far, but *Kleine Raketenkunde* is certainly the most impressive of them. In external appearance it compares well with better books of German manufacture of prewar times and is almost lavishly illustrated. Many of the photographs collected by its author are rather rare, a number never having been published in a book before. Hans Kaiser was the founder of a prewar rocket society, devoted to space travel ideas, which had the courage to continue the work of the original German Rocket Society in spite of frowns from Nazi headquarters. Naturally, that society did not last very long, and its founder was then put to work in the research institute at Peenemünde, where the V-2, the *Wasserfall*, the *Taifun*, and a number of other rockets were created.

Since the book is meant for the general reader, it logically begins with an elementary explanation of the third law of motion and its application to rockets. This is followed by a chapter on rocket research, most of it in Germany, during the period from 1920 to 1930. Then there is a chapter on modern solid fuel rockets, followed by one on German work on liquid fuel rockets during the second world war. This chapter contains a good deal of information that will be news to virtually every reader, in Germany as well as in all other countries.

The author then continues his narrative of contemporary rocket history with an account of postwar work —this largely in the United States—as far as the sources at his disposal permit. The last chapter is devoted to the future. A list of the more important publications in book form and a list of technical terms with explanations form appendices. Some readers who did not know anything about rockets until V-2 appeared on the scene may be surprised by the heavy stress throughout the book on space travel. But these ideas are what started rocket research in Germany.

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