News of Science

Muller's Paper Barred

During recent weeks considerable publicity has been given to the report that H. J. Muller of Indiana University was not permitted to present a paper at the International Conference on the Peaceful Uses of Atomic Energy that was held in Geneva 8–20 Aug. From newspaper accounts based on interviews with Muller, statements by officials of the United Nations, and statements from Atomic Energy Commission spokesmen, the facts appear to be as follows:

Muller, Nobel laureate and professor of zoology at the University of Indiana, was invited—as were many others—to submit a paper for the Geneva conference. This he did.

In a letter dated 18 July Muller was told by the AEC that the U.N had "not requested" his paper and that because of size limitations of the United States delegation he could not be included. Four days later another letter from the AEC to Muller contained an apology for the late notice and blamed the U.N. for the delay.

Before the two letters to him were sent, Muller had left for Europe. He attended the Geneva conference, as a spectator, but did not present his paper and was barred from taking part in the discussion because he was not an official delegate.

More than a month after the conference began, Warren Unna of the *Washington Post and Times-Herald* reported additional facts. He obtained from U.N. headquarters in New York a flat denial that the U.N. had barred or "not requested" Muller's paper and the further statement that the U.N. had been instructed by the AEC, in a letter dated 30 June, that Muller was not a delegate and that the AEC did not want his paper on the program.

Confronted with the U.N. statements, the AEC then admitted that it was responsible for the omission of Muller's paper. It appears that the paper was initially reviewed and accepted by the AEC technical staff that processed the conference papers. But after the paper was forwarded to the U.N. for oral presentation, it was decided by the AEC that mention of the Hiroshima bombing made the paper "definitely inadmissable" at a conference devoted to the peacetime use of nuclear energy.

Accordingly, the U.N. was requested by the AEC to omit the paper and was informed that Muller was not a delegate. At the time this explanation was given, the AEC also declared that no suppression of Muller's views was involved since his paper would appear in the proceedings volumes to be published in a few months by the U.N.

In a statement made to the press on 3 Oct., Lewis L. Strauss, chairman of the AEC, expressed his regret that the "snafu" had occurred and declared that he assumed full responsibility for it. He added that the correct procedure would have been to ask Muller to omit mention of Hiroshima. The mistake occurred, he indicated, because the AEC technical staff had had to handle so many papers in such a short time.

The Soo and the Suez

The Soo Canal, which links Lake Superior and Lake Huron, celebrated its centennial year during this past summer. The Soo long has surpassed all other canals in volume of traffic; frequently it has been cited as having an annual volume greater than the combined tonnages of the Suez, Panama, and Kiel canals. However, in 1954 the Soo—properly named the St. Marys Falls Canal—lost its position to the Suez. Ironically, this occurred in the canal's 100th year of operation and just a year after the establishment of an all-time tonnage record of 128.5 million net tons.

The Suez outranked the Soo by a wide margin; comparative records of 106.8 and 85.4 million net tons give a difference of 21.4 million tons. Last year marked the first time that the commodities moving through the Suez exceeded 100 million net tons, whereas in 6 of the last 10 years the Soo volume has passed this figure.

This change in positions was primarily the result of the change in traffic in two commodities—iron ore and oil. In 1954 iron ore represented 73 percent of the Soo tonnage, and petroleum, both crude and refined, accounted for 65 percent of the volume through the Suez.

In 1954 the petroleum products that passed through the Suez reached a new peak of more than 69.95 million net tons. This was also greater, for the first time, than the iron ore movement through the Soo, which totaled only 62.6 million net tons. Although the oil figure represents a gain of more than 7 million net tons over the 1953 total, the volume of iron ore declined by 36 million tons from the previous year.

Further expansion of the Middle East oil fields, which have had a spectacular development since World War II, largely accounts for the Suez Canal's increase. However, the decrease in shipments in the Soo was caused by economic factors.

The Soo ore traffic in 1953 reached an all-time high of 98.6 million tons. This record flow was the result not only of the high tempo of industrial activity in 1953, but also of the 1952 steel strike, which had delayed ore shipments. In the first half of 1954, however, steel production was only 71.5 percent of rated capacity, and this declined to 64 percent in the third quarter of the year. Accompanying this decrease in demand was a record import of 17.7 million net tons of ore. These are the conditions that caused the cargo traffic in the Soo to drop to the lowest volume since the 1930's except for 1946.

While iron ore has always dominated the Soo traffic, the rise of petroleum to its dominant place in the Suez trade has been a post-war phenomenon. In 1946 this commodity group amounted to about 9.3 million net tons, or 38 percent of the total traffic between the Red and Mediterranean seas. Only 8 years later the volume had increased 7½ times to account for two-thirds of the total cargo tonnage.

Pipe lines have had an important effect on the commerce of both the Suez and Soo. Lines from Saudi Arabia and Iraq to Lebanon on the Mediterranean Sea divert large quantities of crude oil from the Suez route, whereas the Soo is affected by the pipe line from Duluth-Superior to Sarnia, Ontario, which opened in January 1954. From 1951, when the pipe line from the Alberta oil fields reached the head of the Great Lakes, until the Sarnia extension opened in 1954, the crude moved eastward in tankers. The 1953 volume reached 3.4 million tons, but fell to one-fifth of this amount last year.

In comparing the two canals, it should be noted that because of ice the Soo locks cannot operate for more than 9 months a year, whereas the lockless Suez never closes. Based on the figures for 8

months, the Soo cargo volume for 1955 is estimated at from 107 to 110 million net tons, indicating that this year the tonnage competition between the Soo and the Suez will probably be the closest in history.

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Structure of Vitamin B_{12}

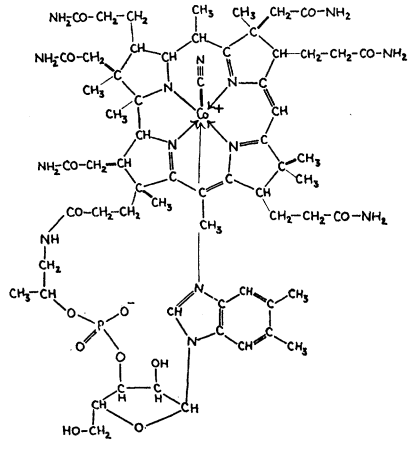
The articles that virtually complete the deciphering of the chemical structure of vitamin B_{12}, first announced in tentative form in 1954, appear in the 20 Aug. issue of *Nature*. The research is reported by the same two groups of biochemists that reported the earlier work. One team of six persons consisted of Dorothy C. Hodgkin, Jenny Pickworth, and J. H. Robertson of Oxford University; K. N. Trueblood and R. J. Prosen of the University of California at Los Angeles; and J. G. White of Princeton University. The other team, also comprised of 6 workers, was made up of R. Bonnett, J. R. Cannon, A. W. Johnson, I. Sutherland, and A. R. Todd, of Cambridge University; and E. L. Smith of the Glaxo Laboratories, Middlesex. Still other groups have aided in the elucidation, in particular the research group at the Merck Laboratories.

The size of these research teams, and their international composition and geographic distribution on opposite sides of the world, speak volumes with regard to the present-day organization of scientific effort. The simultaneous achievement of essentially the same conclusions by diverse methods not only points up the keenness of scientific competition in active biochemical areas, but also affords a vivid example of the way in which scientific knowledge depends on mutual confirmation.

It is by now well known that the essential structure of vitamin B_{12} represents a new type of compound ring structure similar to, and yet significantly different from, the tetrapyrrole ring structure of the porphyrins such as chlorophyll, heme, and the cytochromes. The vitamin B_{12} structure likewise consists of four linked rings each of which is composed of 4 carbon atoms and one nitrogen atom; but each ring has at least one tetra-substituted carbon atom and therefore lacks the typical double-bond structure of the pyrrole ring.

As in the porphyrin structure, the four rings in the vitamin B_{12} molecule are joined by three —C— bridges, but the final, closing linkage that unites rings *A* and *D* is thought to be a direct one. The single cobalt atom of the molecule occupies the center of the tetra-ring structure, like magnesium in chlorophyll and iron in the hemes and cytochromes. It bears a cyanide group; hence the name *cyanocobalomin* is sometimes applied to the vitamin.

Electron density maps and crystallographic data, as well as chemical analysis, now show more detailed features of the attached side chains on the ring. Three acetamide and three propionamide and six methyl groups are attached to the rings and two methyl groups to the carbon bridges. Ring *D* bears another propionic acid side chain, which is combined with a propanolamine residue that forms an ester linkage with the phosphate group of a nucleotide that is also coordinated with the cobalt atom. Both groups agree on the formula $C_{63}H_{90}N_{14}O_{14}PCo$, arranged as shown here.



To work out the details of structure of so complicated a molecule is truly a triumph of scientific ingenuity. It opens the way to greater insight into the metabolic activities of this vitamin that prevents pernicious anemia and which was isolated for the first time only in 1948.—B.G.

News Briefs

■ The Atomic Energy Commission has announced that the Los Alamos Scientific Laboratory will use the Nevada Test Site beginning about 1 Nov. 1955 for a series of experiments to determine the safety of various weapons and experimental devices in the event of accidents such as fires during handling of storage. Laboratory calculations and previous experiments have established a strong probability that such accidents will not cause nuclear detonations, but confirmation through field tests is desired.

There will be detonations of conventional explosive materials. All explosions, even if there should happen to be a nuclear detonation, will be of low explosive force. Because fissionable materials are involved, precautions will be taken; tests will be made only under carefully selected weather conditions. No off-site radioactive fallout problem is anticipated. The explosions may be heard by nearby residents. Because the detonations will take place in daylight, it is improbable that they will be visible off-site.

It is possible that even very low scale detonations such as those planned may release enough radioactive material into the air to affect the very sensitive instruments or processes of certain industries and research institutions. For this reason, the AEC will announce the conclusion of the experiments.

■ Scientists of the U.S. Department of Agriculture's Animal Disease Laboratory on Plum Island, N.Y., report success in growing the virus of foot-and-mouth disease in cultures of swine or bovine kidney cells. This accomplishment, by H. L. Bachrach, W. R. Hess, and J. J. Callis of the laboratory staff, makes possible the use of practical tissue-culture techniques in (i) diagnosis of the disease and identification of the type of virus present; (ii) determination of concentrations of the viruses and antibodies produced in animals; and (iii) large-scale production of the virus for fundamental studies and vaccine investigations.

Foot-and-mouth disease virus has been grown experimentally in other types of cultures by investigators in the Netherlands, but the methods used were not adapted to the measurement of virus and antibody concentrations. The method developed at Plum Island, which has also been independently achieved at a research laboratory in England, permits the rapid enumeration of viruses and antibodies. This work is also the first in which kidney cells from hogs and cattle have been used for routine production of virus in the quantities needed for research purposes. The method is similar to that employed for growing human polio virus for the manufacture of vaccine.

Announcement of work at the Plum Island Laboratory is the first report of research conducted inside the United States on foot-and-mouth disease, a potential major threat to the nation's swine, beef, and dairy herds. Before establishment of this laboratory, no research on foot-and-mouth disease virus was permitted in this country.

■ Robert J. Hasterlik, associate director of Argonne Cancer Research Hospital and a participant in the Geneva nuclear conference, recently reported his impressions of Soviet biology to a meeting of University of Chicago alumni. Emphasizing that contacts with the Soviet biologists who attended the conference might