News of Science

Former Members of AEC Comment on Its Present Policies

The United States may lose world leadership in peaceful atomic energy development within a year unless all information restrictions in this field are promptly removed, according to Gordon Dean, former chairman of the Atomic Energy Commission. In an address delivered during the University of Michigan's national institute on the legal problems of atomic energy, Dean said information restrictions contained in American bilateral agreements for peaceful atomic development were making many foreign lands look elsewhere for leadership and assistance in this field.

He cited Japan as a specific example of a nation hungry for nuclear power development that was unwilling to enter a bilateral agreement with the United States because of these restrictions. Western European nations are turning more and more to one another for help in this work rather than to this country. Dean said some restrictions on the distribution of nuclear material were necessary to prevent its diversion to military purposes in foreign lands. But he observed that so far as information is concerned, the United States has no really effective means of policing security regulations in other countries.

Henry DeWolf Smyth, another former member of the AEC, in an article published in a recent issue of *Foreign Affairs,* also condemns the commission for withholding information that is not vital to American security. He says: "We need a clear decision that information of direct and immediate military value should remain classified and that all other information should be declassified. . . . Such a decision would release our work on the controlled thermonuclear reaction from the bonds of secrecy in which it is now entangled and would release other more prosaic data which our rivals can eventually get for themselves if they haven't already."

Chiefly, Smyth's article was devoted to criticism of the Government for its failure to fulfill its obligation to the nation's atoms for peace program, which he describes as both "feasible and desirable."

Pointing out that "we do not have a single plant in operation producing significant amounts of commercial power from nuclear energy," Smyth asks, "How can we offer to build reactors abroad without building enough reactors here to know what we are doing?

"We cannot simultaneously make 'atoms for peace' a major part of our foreign policy and atoms for private industry a controlling part of our domestic policy. . . . However desirable it may be to get the Government out of the nuclear power business, it is more important to back our announced foreign policy with a vigorous and fast-moving program of reactor development and construction."

Malaria and Sickle-Cell Anemia

Much interest has centered on the racial distribution of the gene that is responsible, in the heterozygous state, for sickling of the red blood cells when oxygen is withdrawn and, in the homozygous state, for fatal sickle-cell anemia. The type of hemoglobin which characterizes the sickle cells is largely limited to Negro peoples (exceptions: some Greek populations and the Veddoids of India). Since in some African tribes the frequency of sickling rises locally to 45 percent of individuals, potent factors must be at work to keep this gene from eliminating itself by natural selection. A high mutation rate to sickling from the alleles for other types of hemoglobin has been suggested as a possible cause; but the alternative explanation of a selective advantage favoring the heterozygous sicklers over the nonsicklers has been widely accepted since A. C. Allison's demonstration in 1954 that sicklers were significantly more resistant to infection with tertian malaria than nonsicklers of the same tribe.

Some doubt lingered because great differences in frequency occur in adjacent tribes, and because it seemed unlikely that the mortality from malaria could push frequencies of sickling to the observed heights. These doubts seem to be dispelled by a recent study conducted by H. Lehmann and A. B. Raper [*Brit. Med. J.*, p. 333 (11 Aug. 1956)]. They examined the Baamba of Uganda, a tribe in which the sickling incidence is at the "very high frequency of 39 percent." The Bwamba district in which the tribe lives is highly malarious. First the investigators undertook to determine whether or not any homozygotes for sickling hemoglobin ever survive to adulthood under African conditions. The sample of 227 sicklers should have contained at least five adult sickling homozygotes. Surprisingly, none were found. Thus, sickle-cell anemia seems to be as highly fatal in Africa as elsewhere. The frequency of infection with malaria (both common and tertian) in the years under age 10 approached 80 percent, the two forms being about equally common. Total childhood mortality in the population was at least 58.8 percent and probably higher.

It could be calculated that the death of homozygous nonsicklers from malaria which would be needed to counterbalance the loss of sickling genes from the tribe would at a maximum be 24.2 percent and, if mortality from other causes than malaria was antecedent to or concurrent with that from malaria, it might be as low as 10.6 percent. Hence, "no very high malaria death rate need be recorded if the loss from other diseases is high, and especially if a large proportion of that loss consists of neonatal deaths." What seems particularly significant is the conclusion that different sickling frequencies would be expected in tribes where the infant mortality picture is different.—B. G.

Satellite and Its Vehicle

Test firings of an earth-satellite vehicle will begin at the Air Force missile test center at Cocoa Beach, Fla., this fall, probably in November. The rocket vehicle will be similar to the one that later will carry the earth satellite into space. The third, or top, stage of what eventually will be a three-stage vehicle will be carred aloft in a modified Martin Viking rocket. It is considered unlikely that any part of the test vehicles will be propelled into an earth-encircling orbit. The test was announced at the recent International Astronautical Congress, in Rome, Italy, by a representative of the Glenn L. Martin Company of Baltimore, Md., prime contractors for the launching vehicles.

The launching vehicle, a composite three-stage rocket, will be about 72 feet long. The third stage of the rocket will become a satellite with a velocity of about 18,000 miles per hour. This high speed will be necessary to counteract the earth's gravitational force. It will be attained at the rocket's burnout point, when the fuel is exhausted. At this point the satellite will be nudged ahead by a releasing device activated when the nose