13. E. B. Lewis, *Proc. Natl. Acad. Sci. U.S.* **45**, 894 (1959).
14. *Federal Radiation Council Staff Rept. No. 2* (Sept. 1961) stipulates (pp. 8–10) 0.5 rem/yr for population groups and 1.5 rem/yr for individuals. For the case of fallout, the 0.5 rem figure applies.
15. Data are taken from Table 1 of a letter, dated 7 June 1962, from Drs. E. Reiss, Barry Commoner, M. Peterson, K. J. Hohenemser, and J. M. Fowler to Dr. Luther L. Terry, U.S. Surgeon General. The letter is quoted with permission of Dr. Commoner.
16. From "Fallout Surveillance and Protection," (U.S. Public Health Service and Food and Drug Administration press memorandum) (26 Oct. 1961).
17. According to a New York *Times* report (2 Aug. 1962), Dr. G. D. Carlyle Thompson, Utah State Health Director, attributes levels of 1600 and 2050 $\mu\mu$c/lit. (on 20 and 25 July, respectively) to Nevada tests of 6 and 12 July. Dr. Robert C. Pendleton of the University of Utah reports iodine-131 concentrations higher than 2500 $\mu\mu$c/lit. on 14 July (personal communication).
18. See, for example, testimony of R. H. Morgan on "Problems of assessment and initiation of control measures" given before the Joint Committee on Atomic Energy in June 1962.
19. See statement of Senator Hubert H. Humphrey, *Congr. Record* (22 Aug. 1962), p. 16195.
20. Statement of Senator William Proxmire, *ibid.* (17 Aug. 1962), pp. 15887–92.

13 August 1962

Anopheles leucosphyrus Identified as a Vector of Monkey Malaria in Malaya

Abstract. *Anopheles leucosphyrus,* an important vector of human malaria in Sarawak, Borneo, was shown to be infected with *Plasmodium inui* in Malaya by the inoculation of sporozoites into an uninfected rhesus monkey. The mosquito was caught while biting a man, thus demonstrating that it would be possible for a monkey infection to be transmitted to man in nature.

The *Anopheles leucosphyrus* group of mosquitoes includes several important vectors of malaria in southeast Asia. Recognition of their significance was largely due to McArthur (*1*) in North Borneo. His observations refer to what is now known as *A. balabacensis,* the type form of which is an important vector of human malaria in North Borneo, and in the monsoon forest regions to the north of Malaya in Thailand, Burma, Laos, Cambodia, and probably Vietnam. *A. leucosphyrus sensu stricto* appears to have a less wide distribution and according to Colless (*2*) is known only from Sumatra, Malaya, Sarawak, and possibly Indonesian Borneo. It was shown by Zulueta (*3*) to be the principal vector of malaria in the interior of northern Sarawak and is probably also a vector of human malaria in Sumatra and eastern Borneo. Another member of this same group *A. hackeri,* has recently been identified as a vector of the monkey parasite *Plasmodium knowlesi* in Malaya (*4*).

Both *A. leucosphyrus* and a subspecies of *A. balabacensis, A. b. introlatus,* occur in central Malaya but neither are common, and they have never been found in close association with man in the numerous entomological surveys that have been undertaken, principally by Hodgkin (*5*). They are however, known to attack man, and were caught on human bait at ground level and in the forest canopy in hill-forest by Macdonald and Traub (*6*). These observations were of particular interest to our studies on the vectors of monkey malaria and we have also found that *A. leucosphyrus* and *A. balabacensis* are attracted to monkeys and to man both in the canopy and at ground level. They are therefore potentially of the greatest importance should monkey malaria prove to be transmissable to man in nature as it is under laboratory conditions (*7*).

Attempts are being made to determine the vectors of monkey malaria in different localities in Malaya by catching and dissecting the mosquitoes attracted to man and to monkeys and inoculating the sporozoite, when it is encountered, into uninfected rhesus monkeys. Observations extending for over a year in uninhabited hill-forest where both *A. leucosphyrus* and *A. balabacensis* are present had failed to incriminate either species, though one oocyst infection was found in *A. leucosphyrus.* Similar observations at an aborigine village at the head of a narrow rice-valley bordered by jungle-covered hills had given abundant evidence that *A. maculatus* is of overwhelming importance as the vector of human malaria. A few *A. leucosphyrus* adults were caught in the same area on monkey bait. This area was chosen for a series of all-night catches on human bait to determine the biting cycle of *A. maculatus* both inside houses and in the open. Included in the outside catches were nine *A. leucosphyrus* (compared with 901 *A. maculatus*). One *A. leucosphyrus* specimen had sporozoites 12 to 14 μ in length in the glands. The sporozoites were inoculated into an uninfected rhesus monkey (*Macaca mulatta*) intravenously, and into man intradermally. The monkey exhibited an infection 17 days later which has been identified as *Plasmodium inui.* No infection developed in the human volunteer.

Anopheles leucosphyrus has therefore been added to *A. hackeri* as a vector of monkey malaria in Malaya. The finding is of considerable significance since the mosquito was caught in the act of biting a man, showing that it is possible in nature for the same mosquito to feed both on monkey and on man. Though this may not be a common occurrence, a single bite of a mosquito infected with a strain of monkey malaria transmissible to man would be sufficient to reintroduce malaria to a human population from which malaria parasites had been previously eliminated. Many factors are involved in determining whether or not this malaria would persist in the human population.

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References

1. J. McArthur, *Trans. Roy. Soc. Trop. Med. Hyg.* **40**, 537 (1947).
2. D. H. Colless, *Proc. Roy. Soc. London (B)* **26**, 131 (1957).
3. J. de Zulueta, *Bull. World Health Organ.* **15**, 65 (1956).
4. R. H. Wharton and D. E. Eyles, *Science* **134**, 279 (1961).
5. E. P. Hodgkin, *Studies Inst. Med. Res. Malaya* **27** (1956).
6. W. W. Macdonald and R. Traub, *Studies Inst. Med. Res. Malaya* **29**, 79 (1960).
7. D. E. Eyles, G. R. Coatney and M. E. Getz, *Science* **132**, 1812 (1960).

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Male Sexual Behavior Induced by Intracranial Electrical Stimulation

Abstract. Electrical brain stimulation in the anterior dorsolateral hypothalamus produced a marked increase in sexual capacity in some male rats. Several measures of sexual behavior, including the length of the postejaculatory refractory period, were significantly affected.

The importance of the role of certain areas of the anterior hypothalamus in the mediation of male sexual behavior has been indicated by studies of ablation, chemical stimulation, and intracranial self-stimulation (*1*). The purpose of our investigation was to determine whether changes in the sexual behavior of male rats could be produced by electrical stimulation of the hypothalamus. Electrodes were permanently implanted