trophic relationships at higher levels of the food chain in the tropical Pacific presented by P. Bourret was both elegant and comprehensive. Undertaken by a crew of the Organisation de Recherche Scientifique et Technique d'outre mer, Noumea, they went to 1200 m with their systematic netting and ascertained what constitutes day and night faunas in various depth segments; the relation of tunas to this faunal distribution was also discussed.

In the same oceanographic section, B. Salvat (France) spoke of the shallow-water fauna in Polynesian atolls, stressing in particular the prevalence of bivalve mollusks, especially *Tridacna* with its zooxanthellae. These giant clams can be so dense on certain shallow reef facies as to exceed a flesh biomass of 5 kg/m^2. The effects of islands on the movement of water masses with implications on surface enrichment and on possible supplying "signals" to migrating marine animals was the topic of R. A. Barkley (National Oceanic and Atmospheric Administration).

Productivity in the widest sense of the word was the topic also of several other symposiums such as that on forest resources, crop productivity (mainly rice), and problems and production potentials on certain soils in the Pacific.

The symposiums on demography and nutrition contained topics ranging from aspects of future world population dynamics to an appraisal of the effects of trepanomatosis and gonorrhea as causes of population losses in the Pacific islands, the latter viewed as the cause of reduced fertility, particularly in eastern Polynesia, Hawaii, New Zealand, and Micronesia.

Urbanization and modernization were discussed from medical vantage points. It was pointed out, for instance, that hypertension and degenerative cardiovascular disease accompany assimilation of Polynesians into Western society (I. A. M. Prior and H. P. B. Harvey, Australia). An equally negative result of acculturation to "Western" food habits seems to be balance in the diet and adequate protein intake, especially when the latter is dangerously low, as in children in Papua or New Guinea, to single out just one such location. The recommendations contained in these reports pointed to the need for more and better nutrition studies, especially in societies that were remote but are now experiencing rapid disintegration of old cultural practices.

The symposiums on geology covered structure and resources. They were the least directly man oriented and dealt with what there is and how it came to be that way, by forces existing long before man's influence began.

Activity of the association is hampered by lack of funds for the secretariat at the Bishop Museum in Hawaii; it has certainly not grown at the pace at which new member nations have joined. Nevertheless one should not underestimate a half century of tradition that led to good and fairly frequent communications among the scientists of an area that covers about half the globe; yet one must also be aware of the fact that many United Nations organizations now operate in the Pacific and deal with subject matter that overlaps with the association's concerns. The format of association meetings and committees may change, just as types of scientific endeavor may and should change. But the quest for Pan-Pacific exchange of scientists' findings and ideas, especially in certain ecotypical areas of natural and social sciences, will persist. One must wish good luck to the Canadian organizers of the next Pacific Science Congress (the 13th), to be held in Vancouver in 1975 under the overall chairmanship of Ian McTaggart Cowan.

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Long-Baseline Interferometry

On 14 April the Rumford Award of the American Academy of Arts and Sciences was presented to three groups of scientists for their pioneering work in very-long-baseline interferometry (VLBI). In conjunction with the award, a 2-day symposium on this subject was held at the Academy's headquarters in Brookline, Massachusetts, on 13 and 14 April at which scientists now working on VLBI and related subject areas, both from this country and abroad, joined the members of the award groups in discussions of their results and their astrophysical implications. Speakers at the symposium reported many interesting new results in addition to reviewing the pioneering development work.

Among the interesting new results reported were those relating to observations of rapid angular expansion in the small-diameter radio components of certain quasars, particularly 3C279; this quasar has two equal components moving apart with an apparent linear velocity of some six or eight times the velocity of light, on the assumption that the distance of 3C279 is given by its redshift $[\Delta\lambda/\lambda(\text{rest}) = 0.54]$ according to the Hubble law. The angular resolution obtained is remarkable; the motion in 4 months amounts to 150 microarcseconds, the errors to ± 10 microarcseconds. The rapid expansion and fine structure of quasars has now been observed by several independent groups and was reported by Irwin Shapiro (M.I.T.), David Jauncey (Cornell), Alan Moffet (Caltech), and Jack Locke (National Research Council of Canada).

Theoreticians Martin Rees (Cambridge) and Jeremiah Ostriker (Princeton) reviewed various models of quasars. Models of moving fragments can account for the speeds but not for the high degree of equality of the components of the expanding doubles, although Thomas Gold (Cornell) proposed an explanation involving no motion faster than light but producing a geometrical velocity much faster than light. Geoffrey Burbidge (University of California at San Diego) expressed some doubt about applying the Hubble redshift distance relation to quasars like 3C279. Observers have not yet measured the expansion rates of enough quasars to test for correlation with the optical redshifts. If the radiation from the small diameter radio components arises from the incoherent synchrotron process, it is limited by the inverse Compton effect to a brightness temperature of about 10^{13} °K. This is close to the observed brightness with the use of intercontinental baselines. Some observers feel that all sources will yet be resolved with earth baselines, while others feel that longer baselines would reveal small knots at still higher temperatures.

James Moran, Jr. (Smithsonian Astrophysical Observatory) reported that all of the masering H_2O vapor sources, except that in Orion, are still unresolved at 0.001 second of arc. An experiment planned between the United States and the Soviet Union this summer may have sufficient baseline to resolve more of these sources. Theoretician Marvin Litvak (Smithsonian Astrophysical Observatory) discussed the status of interstellar maser theory, and Peter Goldreich (Caltech) reported on some quantum mechanical studies that he has pursued to help solve the polariza-

tion quenching stability problem as applied to interstellar masers that must operate without a cavity.

Alex Smith (University of Florida) reported on VLB observations of the radio bursts from Jupiter which are still unresolved at less than 0.1 second of arc; the longest baseline observations so far used were between Bowling Green, Florida, and Maipu, Chile. He noted that so far the model of the short-burst emission from Jupiter (the Lynden-Bell and Bardeen model suggests that radiation arises from the plasma wake effects of Jupiter's moon Io) is consistent with observations. The source size implied from the burst duration is 3 kilometers or 0.001 second of arc. This is probably not resolvable with VLBI owing to interplanetary scintillations.

Following is a list of the members of the three groups cited by the Rumford Committee for work in the field of long-baseline interferometry. The Canadian group consisted of Norman W. Broten, R. M. Chisholm,* John A. Galt, Herbert P. Gush, Thomas H. Legg, Jack L. Locke, Charles W. McLeish, Roger S. Richards, and Jui Lin Yen. The M.I.T. group consisted of John A. Ball, Alan H. Barrett, Bernard F. Burke, Joseph C. Carter, Patricia P. Crowther, James M. Moran, Jr., and Alan E. E. Rogers. The National Radio Astronomy Observatory–Cornell group consisted of Claude C. Bare,* Barry G. Clark, Marshall H. Cohen, David L. Jauncey, and Kenneth I. Kellermann.

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Subacute Sclerosing Panencephalitis Treatment

There is great need for a treatment for subacute sclerosing panencephalitis. Chronic measles infection has been demonstrated in the brain tissues of patients with this disease. Still, we are struggling for a clear understanding of the mechanism of pathogenesis.

A conference on approaches to treatment of subacute sclerosing panencephalitis was held in Bethesda, Maryland, on 21 May 1971, under the sponsorship of the National Institute of Neurological Diseases and Stroke (NINDS). Warren Huber of NINDS opened the session. Participants reported on various studies of therapy. Chemotherapy—including treatment with amantadine hydrochloride, cytoxan, methotrexate, 5-iodo-2-deoxyuridine, and azoguanine—measles vaccines, and interferon stimulation have been for the most part unsuccessful. Similarly, chemical treatment with ether and the use of radiation have not been shown to be of value. Immunological treatments with HL-A–matched lymphocytes and transfer factor are under study, but sufficient time has not elapsed to determine the efficacy of these methods of therapy. Several investigators described research on drugs in tissue cultures. Others discussed the limited cellular immune responses to measles in monkeys and antibody studies; also discussed were attempts to document (i) cell-mediated immunity to measles by the use of skin tests and studies of lymphocyte proliferation in vitro in the presence of measles antigen and (ii) lymphocyte toxicity for radioactive chromium–labeled cultures infected with measles virus. The chairman of the morning session was Edwin Lennette (State of California Virus and Rickettsial Disease Laboratory), and the chairman of the afternoon session was Richard Johnson (Johns Hopkins Hospital).

In summarizing the meeting, Samuel Katz (Duke University Medical School) stated: "At present, it is clearly difficult to consider a logical approach to this disease. We need a greater understanding of the mechanisms which are involved in the disease process and must have techniques to study these mechanisms." The measles virus, which is chronically active and yet partially suppressed in this disease, must be studied to determine how this state of activity is retained as well as the defects that are responsible for its continued persistence. The virus must be examined in this state to determine if it is unusual in any way. The members of the conference recommended that fresh isolates of brain tissues from patients be obtained and maintained in a central registry so that better sharing and collaborative examination of these specimens that are difficult to obtain can be accomplished. Support is needed to provide highly specialized reagents for attempts at eliciting delayed hypersensitivity reactions in vivo and in vitro and for sensitizing adult donors