fever and who was primarily responsible for drawing attention to the condition, contracted the infection and died of it.

In March 1972 further cases of Lassa fever occurred among four patients and seven members of the staff in a hospital in the Zorzor district of Liberia in West Africa, and four died. The index case was a pregnant woman admitted to the obstetric ward, and all cases among the patients and members of the staff were in this ward. One of the fatal cases was an American missionary nurse who had direct contact with the blood of the index case (*Morbidity and Mortality Weekly Report*, **21**, 237 ; 1972). A more recent report (*ibid.*, 386) records a further sixty-four cases of Lassa fever admitted to hospital in Sierra Leone. Twenty-three (36 per cent) died, and the case fatality ratio among pregnant women was 75 per cent (six out of eight). One of the sixty-four cases was a nurse who pricked her finger on a needle used for obtaining blood from a patient who subsequently died of clinical Lassa fever.

This is the largest yet reported epidemic, and, unlike the previous outbreaks in Nigeria and Liberia, it consisted primarily of community-acquired infection. Evidence was obtained of family outbreaks of the fever in which spread has occurred among those with the most intimate contact. Man-to-man spread of Lassa virus undoubtedly takes place through contact with blood or infectious secretions, but a reservoir of infection has yet to be identified. Lassa virus is antigenically related to the rodent-associated haemorrhagic viruses of South America and to lymphocytic choriomeningitis virus, usually an inapparent infection of wild mice, but an animal source of Lassa virus or antibodies to this virus in wild rodents has not been found.

It is interesting that many features of this infection are reminiscent of the green monkey disease or Marburg virus infection (see *Nature*, **233**, 236 ; 1971), although, fortunately, no further cases of Marburg disease have been recorded since 1967. In the meantime, however, Lassa fever looms as an awesome new viral infection in tropical Africa, and the epidemiological propensities of this infection may be very wide with the modern means of fast air travel.

MINERAL RESOURCES

Boron from the Sea

from our Soviet Correspondent

NEW work on the sorption of boron compounds may provide a way of isolating the element from seawater. Although the concentration of boron in seawater is relatively low (8 to 9 g B_2O_3 m^{-3} in the Black Sea and 15 to 16 g B_2O_3 m^{-3} in the oceans), the estimated total content of boron in the seas and oceans (2.2×10^{13} tonnes B_2O_3) has provoked a considerable amount of research on the subject. New findings by Nikolaev of the Institute of Inorganic Chemistry of the Siberian Branch of the Soviet Academy of Sciences and Ryabinin of the Hydrophysical Marine Institute of the Ukrainian Academy of Sciences suggest a means of recovering boron, using ZrO_2 as a sorbent (*Dokl. Akad. Nauk SSSR*, **207**, 149 ; 1972).

Nikolaev and Ryabinin carried out a detailed survey of salinity, *p*H and temperature conditions affecting the sorption of boric oxide on various hydrated oxides, for different initial concentrations of the boron. Best results were obtained using hydrated zirconium oxide as sorbent and a *p*H value of 8 to 9—close to that of natural seawater. The effectiveness of the process was found to increase continuously with the amount of sorbent, practically total extraction of the boron (98 per cent) being obtained for a ratio of ZrO_2 to B_2O_3 of 400.

The experiments were performed with water from the Black Sea, and the good results obtained, even at these low concentrations, lead Nikolaev and Ryabinin to think that the use of a zirconium oxide sorbent may be an economically realistic method of recovering boron from the sea.

SEMICONDUCTORS

Transistor Revitalized

from a Correspondent

IT seems that the transistor, which only a few years ago was considered by many people to have reached the limit of its performance, is now a serious contender in the microwave region and may well extend its range to about 10 GHz. This was the theme of a timely symposium held at Imperial College, London, on December 13, and arranged by the Electronics Group of the Institute of Physics in collaboration with the Institute of Electrical Engineers.

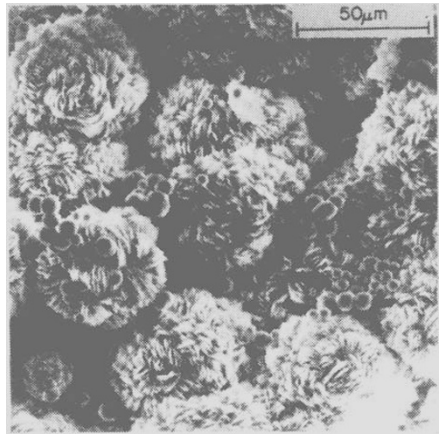
Many of the contributions reported significant advances in both silicon and gallium arsenide technology. In particular two speakers, D. J. Hinds (GEC Hirst Research Centre, Wembley) and Dr R. P. Arrowsmith (Post Office Research Department, Dollis Hill, London), discussed recent advances in the technology of silicon microwave bipolar transistors. It now seems that arsenic has replaced the more conventional phosphorus as the emitter dopant in npn devices. Improved cut-off frequency (f_T) and noise performance result in useful performance up to 4 GHz with promise of extending this to at least 8 GHz by reverting to an improved version of the old "mesa" design.

Many of the improvements can be attributed to great advances in optical photolithography, which mean that line

Laboratory-made Chert

THE flint-like rock called chert which has turned up in surprising quantities beneath the Atlantic to blunt the drilling bits of the Glomar Challenger research vessel continues to hold the attention of geologists. Last year Weaver and Wise of Florida State University reported that some of this chert, which is also found in other oceans, is composed of blades of cristobalite 300 Å to 500 Å thick gathered together in balls about 10 μm across (*Nature Physical Science*, **237**, 56 ; 1972).

These fascinating structures have now been reproduced in the laboratory. In an article in next Monday's *Nature Physical Science* (January 15), J. H. Oehler (University of California at Los Angeles) reports experiments in which aliquots of silica dispersed in water were subjected to temperatures of 150° C and pressures of 2 kbar for four weeks. The product, examined under the scanning electron microscope, consisted of 50–75 μm balls of platy, apparently hexagonal, crystals (see figure).



Oehler says that this hexagonal appearance of the artificial chert is characteristic of tridymite rather than cristobalite, which forms octahedral crystals, and he favours the view that what is being formed are hybrid crystals composed of layers of both tridymite and cristobalite, the tridymite structure dominating the morphology. X-ray diffraction data have so far been unable to confirm or deny the hypothesis. Oehler believes that this layered structure may well apply to the cristobalitic cherts recovered from the oceans.