of the ordinary and extraordinary rays causes interference beats between the two which results in severe fading in receivers. In addition, it is found that the disturbances cause large variations in the strength of the returned signal.

The investigations are continuing, and will be reported more fully elsewhere.

This work has been carried out in the Electrical Engineering Department of the University of Sydney as part of the programme of the Radio Research Board of the Commonwealth Council for Scientific and Industrial Research, and is published with the consent of the Council.

The keen interest of Sir John Madsen, chairman of the Board, and the assistance of the staff of the Sydney Section, are gratefully acknowledged.

[1] *Nature*, **162**, 886 (1948).
[2] *Proc. Inst. Rad. Eng.* (Nov. 1947).

CONSTITUTION OF THE TERRESTRIAL PLANETS

IN a paper, "On the Constitution of the Terrestrial Planets", by W. H. Ramsey (*Mon. Not. Roy. Astro. Soc.*, 108, 5; 1948), it is suggested that the earth's core and mantle are not chemically distinct. Seismological data show that the earth has a central core which occupies about one-sixth of its total volume and contains about one-third of its mass, and it has been generally assumed that the material of this core is an alloy of iron and nickel. The core is mainly responsible for the earth's high mean density —the highest in the solar system. The high masses of the four great outer planets have enabled them to retain hydrogen and other volatile substances, and this explains their comparatively low densities; but the fact that the terrestrial planets have mean densities smaller than that of the earth presents a difficulty.

One explanation would be that the planets were originally of different compositions; but this theory is impossible to reconcile with any current theory of the origin of the solar system. The only other explanation is that the earth's core and mantle are not chemically distinct, and Ramsey's analysis supports this view. He assumes that the hydrostatic pressure at the boundary of the earth's core depends only on the chemical and crystallographic properties of the substances concerned, which must be true if the core and mantle of the earth are respectively metallic and molecular phases of the same chemical substance.

Assuming, then, that the pressure at the boundary of the core is the same for all terrestrial planets, the mean densities of the terrestrial planets are computed, and these are in good agreement with the empirical results; the calculated density of the moon is also in excellent agreement with the observed value. The greatest discrepancy occurs in the case of Mars, being about ten per cent; but this and other smaller discrepancies can be explained if allowance is made for the tendency of the heavier elements to gravitate towards the earth's centre. While the theory can account for the mean densities of the planets in a manner which is satisfactory from the point of view of cosmogony, it is admitted that it cannot be regarded as completely established until the pressure characteristic of the boundary of the core has been calculated from atomic theory.

CONSERVATION AND UTILIZATION OF WORLD RESOURCES

THE provisional programme of the United Nations Scientific Conference on the Conservation and Utilization of Resources to be held at Lake Success during August 17–September 6, 1949, has now been issued to member Governments for comment, and in particular for suggestions for addition or deletion of topics. The primary concern of the Conference is with the particular application of science to the management and use of resources, and the knowledge of numerous related sciences will be brought into full play on single problems so as to facilitate complete and not partial solutions. The plenary meetings will discuss techniques for assessing and classifying resources; for protecting resources, whether by reducing waste in mineral resources, by control of injurious insects or diseases, or by prevention of soil erosion; and for increasing production; as well as techniques of special interest to the less developed countries, the special scientific and technical needs of such countries, and experience in the interrelated application of such techniques, for example, as the Tennessee Valley Authority.

A section will hold meetings to consider the inventory and survey of forests, control of fire, insects and diseases in forests, sylvicultural techniques, the organisation of research and education in forestry, forest administration, manufacturing processes for wood, and the utilization of wood-waste and new products from wood. Another section will consider the appraisal of water resources, watershed management, multiple-purpose reservoirs, pollution, salinity and sedimentation of water supplies, methods of controlling floods, the relation of soils to irrigation and drainage, and irrigation and drainage technique generally.

Methods and techniques for the conservation and use of soil, soil productivity and fertilizers will be discussed in a third section, which will also consider research programmes and surveys in this field, the settlement of new lands, new crops and plant breeding as techniques for conservation, cropping systems, protection of crops and grasslands against weeds, diseases and pests, storage and preservation of agricultural products, adaptation of livestock to environment and its improvement through breeding, the feeding of livestock, diseases and pests of livestock, farming systems in relation to soil conservation, the condition of grazing lands, and seeding of natural grazing lands. A fourth section will consider such problems of fisheries and wild life as changes in abundance of marine populations, the utilization and management of marine fishery resources as well as inland fisheries, cultivation of aquatic animals, the place of fish and wildfowl conservation in the balanced development of resources, and the control of injurious animals.

A fifth section, on fuels, will consider techniques of producing coal, oil and gas, the recovery of secondary oil, synthetic fuels, and the utilization of coal resources, including by-products. The sixth section, on power, will consider the various methods of power production, including steam and Diesel-electric plants, the gas turbine, hydro-electric power and the wind turbine, transmission, distribution and utilization problems. The seventh section, on mineral resources, will consider the measurement of such resources, methods of prospecting or discovery, new