against reactor accidents; disposal of radioactive effluents); and (c) public health legislation on the control of such hazards.

The Committee summarizes the responsibilities, in relation to the use of nuclear energy, of personnel in the various health disciplines—health officers, hospital administrators, industrial hygiene workers, sanitary engineers of all types, veterinary public health workers, and laboratory and other technical personnel; instruction in the field of nuclear energy should speedily be incorporated in graduate and postgraduate courses for public health students. The Committee recommends that the teaching content of the courses should cover physical principles, biological principles, the application of nuclear energy and radiation, hazards and protection; each of these subjects is considered at four teaching levels—an orientation course, an introductory course, an advanced course, and a specialist course. The compilation of a handbook of radiological health data, to serve as a reference manual for public health workers, was also proposed.

RECORDING THE POSITIONS OF MICROSCOPICAL OBJECTS

MORE than a century has elapsed since Maltwood[1] introduced his admirable 'finder', which enabled the user to record the positions of objects on microscopical slides. Not many of the original Maltwood finders survive. Interest in the subject revived recently, when careful instructions for making similar finders were published[2].

An instrument of the same sort as Maltwood's, but differing in details, has now been put on the market by Graticules Ltd. under the name of the 'England Finder'. This resembles in appearance an ordinary microscopical slide. When it is viewed under a low power of the microscope, it is seen to be divided by rulings into a large number of squares. In the centre of each square a circle is inscribed; each circle is distinguished by a letter and a number (for example, *P*31). The part of each square lying outside the circle is divided by vertical and horizontal straight lines into four equal parts, situated north-west, north-east, south-west and south-east of the circle; these are labelled 1, 2, 3 and 4, respectively. The letters and numbers are clearly legible.

When an interesting object has been found on a microscopical slide, it is brought into the centre of the field of view. It is necessary that the slide should lie against the horizontal bar of the mechanical stage, and should be pushed up against the lateral stop. The slide is then removed and the finder placed in exactly the same position. The finder is examined with a low-power objective. If one of the circles covers the centre of the field of view, its letter and number are recorded. If one of the corners of a square covers the centre, its number is recorded in addition to the letter and number of the circle enclosed in that square (for example, *P*31/2). One can at any time find the interesting position on the slide by bringing the recorded place on the finder into position and then replacing the finder by the slide.

It is claimed by the manufacturers that their finders are all marked in exactly the same way, so that all give the same reading with the same object.

Those who have tried both verniers and finders are likely to favour the latter, because the letters and numbers are so easily read, and also because the recorded positions do not relate to one particular microscope only, but are applicable to any instrument provided with a mechanical stage (or some substitute for this). The only disadvantage is that the slide must be removed temporarily while the reading is being made. The 'England Finder' can be strongly recommended.

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[1] Maltwood, T., *Trans. Micro. Soc.*, **6**, 59 (1858).
[2] Bradbury, S., Galbraith, W., and Lyster, M. E., *Quart. J. Micro. Sci.*, **97**, 197 (1956).

VERY LOW-FREQUENCY SPECTRA OF ATMOSPHERICS PROPAGATED THROUGH THE IONOSPHERE

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IT has been known for many years that atmospherics in the very low-frequency band can propagate to great distances. In recent years, however, there has been a renewed interest of this problem; many investigators have found an evidence of a pronounced absorption band at 2–4 kc./s., while for frequencies around 10 kc./s. there is little attenuation. Extensive studies have been made on wave-form characteristics as well as the amplitude frequency spectra of individual atmospherics[1,2]. Their results showed distinct frequency spectra of atmospherics, indicating the existence of an appropriate mode of propagation and of the strong selective attenuation due to ionospheric influences. A new theory of very low-frequency ionospheric propagation, known as the mode theory, was suggested by Budden[3] in 1951, and further theoretical studies have been pursued, especially by Wait[4,5], who made an elaborate computation on the mode of ionospheric propagation and showed that the characteristics predicted by the theory accord well with the experimental facts.

In this investigation, an attempt was made to obtain a more complete experimental proof of the mode theory. A new apparatus was developed recording continuously the frequency-spectrum of atmospherics. Two sets of radio spectroscopes covering the frequency ranges 1–10 kc./s. and 5–70 kc./s. were used; each set consisted of the conventional very low-frequencies atmospherics receiver of superheterodyne type, a frequency scanning device with a display unit comprising a cathode-ray oscillograph and a photographic motion camera. The bandwidths of the scanner for the two very low-frequency bands were $\pm$ 250 c./s. and $\pm$ 600 c./s., respectively, and its frequency-scanning rate was about 10 c./s. Special attention was being paid to obtaining a flat frequency-response of the receiver over the sweep-frequency range and a sharp cut-off for the rest of the frequencies.