NEWS AND VIEWS

Boom in Radio Astronomy

It seems already as if 1968 will be a vintage year for radio astronomy. Last week, from Cambridge, there was described in *Nature* the discovery of radio signals from a pulsating radio source which seem as if they may turn out to be signals from one of the long-sought neutron stars. Now, this week (see page 818), there comes evidence of a survey of the sky for radio sources at a frequency of 2,700 MHz which seems as if it may reopen some cosmological discussions which had seemed quite recently to have been finished.

The signals which may come from neutron stars were recorded by the Mullard Radio Astronomy Observatory at Cambridge using a new radio telescope which can detect sources considerably fainter than previous surveys. They are unusual because they consist of an emission of descending frequency which repeats itself every 1·337 seconds. This repetition period is maintained with breathtaking accuracy—the true period is constant to better than one part in ten million. Up to now, four of these peculiar sources have been discovered, although the position of only one of them was given in the article in *Nature* last week by Dr A. Hewish and his colleagues (*Nature*, **217**, 709; 1968).

Neutron stars are believed to represent the final stages in the life of certain kinds of stars. When the nuclear fuel sustaining these stars is exhausted, they contract to become what is an extremely dense star known as a white dwarf, the size of which is comparable with the Earth. White dwarfs are difficult to detect because they are rather faint objects, but about 250 of them are known to exist. The next stage in the evolution of these stars may be the gravitational compression of white dwarfs to neutron stars.

Much of the observational interest of the new discovery stems from the way in which it is possible to use the character of the signals which are received at the Earth as a means of fixing an upper limit for the distance of these objects. Briefly, ionized hydrogen in interstellar space should modify by dispersion the character of the radio pulses reaching the Earth, and this line of argument suggests an upper limit of 65 parsecs for the object which has so far been studied in detail, which in turn suggests that these pulsating radio sources may be comparatively common in the galaxy. Obviously there is a staggering wealth of observation now to be undertaken.

The new survey of the southern hemisphere is a different story. For several years, radio astronomers have tried to distinguish between different models of the universe by making counts of radio sources. One simple procedure has been to plot log N against log S, where N is the number of radio sources having a radio flux greater than S. The result is sometimes a straight line, and the slope of this line has some importance for cosmologists. On the simplest view of a Euclidean universe containing a uniform distribution of similar sources, the slope of the "log N–log S" curve should be $-1{\cdot}5$. Apparently this is also the value to be expected if the steady state view of the universe holds.

Up to now, counts of radio sources outside the galaxy have led to values of $-1{\cdot}8$ for the slope of the log N–log S curve. On page 818 of this issue of *Nature*, however, is a paper by an Australian group who have used the 210 feet Parkes radio telescope to obtain a slope of $-1{\cdot}4$. The chief difference between this and previous surveys is the choice of observing frequency; the new result refers to radio fluxes at 2,700 MHz whereas previous source counts were compiled at much lower frequencies.

This suggested to the Australian group that the discrepancy between their result and the previous work may be explained by a detailed examination of the spectra of the sources used in the different surveys. Bearing out this notion, there seems to be a large range in the form of radio source spectra. As well as the problems posed by possible differences in the spectral content of the various surveys, the type of radio source observed seems to depend to some extent on the frequency at which the counts are compiled. For instance, the new survey contains many quasi-stellar objects which were not in an earlier count made at Cambridge. The outcome of all this uncertainty is that the value of the log N–log S curve as a means of distinguishing between theories of the universe is made even more questionable.

Plants for South Kensington

The department of botany of the British Museum (Natural History) has received as a bequest the herbarium of the late Georges Le Testu of Caen. The collection consists of about 15,000 specimens of flowering plants and ferns from Africa, and will be very useful to botanists working on the classification and identification of plants from this part of the world.

Le Testu was trained as an agronomist and worked for an agricultural firm in Dahomey during 1900–1902, and for another in Mozambique from 1904 to 1906. After that he entered the French colonial service and served in Gabon and Oubangi-Chari from 1907 to 1934. Throughout his time in Africa, Le Testu collected plants as often as his duties allowed. Of his collection, he gave one set of plants to the Museum National d'Histoire Naturelle in Paris. Many of these were type specimens, from which the original descriptions of species were made. This Paris collection was used by F. Pellegrin for a series of papers entitled "Plantae Letestuana Novae" published in 1923–1955. Le Testu's Paris collection was also the chief source for the *Flore du Mayombe*, and for various other works about the plants of this part of Africa.