By giving the wind pattern in a detail that would be out of the question from observations of smoke trails from rockets, the radar observations were one of the factors which led to the introduction in the early 1960s of the gravity-wave interpretation of many atmospheric phenomena. Indeed, with growing numbers of atmospheric observers leaning towards the view that the links between the surface layers of the atmosphere and the higher regions may be less tenuous than used to be suspected, there is still plenty for the radar observers to do in portraying the wind motions in this narrow but possibly crucial layer of the atmosphere.

A further example of the way in which radar observations of the ionized trails left behind by meteoric particles may give information about the atmosphere in which the particles burn up—in addition, of course, to information on the astronomical nature and origin of the particles themselves—is set out on page 224 of this issue of *Nature*. D. W. Hughes of the Sheffield meteor group and W. J. Baggaley, formerly of Sheffield but now at Canterbury University, New Zealand, describe observations of the Quadrantid meteor shower which at Sheffield occurs near dawn on January 4 each year when the Earth passes through a concentrated stream of dust particles presumably left behind by a disintegrating comet, the number of meteors for several hours during the shower being many times higher than on a normal day when no showers are active.

On previous occasions the Sheffield group have noticed an increase in the number of longer duration meteor echoes lasting more than a few seconds from the Quadrantid shower at about the time when the Sun was rising on the region high in the atmosphere where the Quadrantid meteors burn up. Hughes and Baggaley set out to discover the reason for this effect from detailed radar observations of this year's recurrence of the Quadrantid shower.

They have identified the increase in the rate of occurrence of longer duration echoes as taking place about an hour after sunrise on the echoing layer, and discuss whether the duration of the echoes could have been increased by an increase in atmospheric turbulence associated with heating of the atmosphere at sunrise—which would lead to an increase in

the number of meteor trails which are at the correct orientation to give a radar echo—or whether there is some change at sunrise in the chemical constituents of the atmosphere which control the loss of ionization from the longer-lasting trails.

Hughes and Baggaley conclude that to some extent both factors are at work. There is a post-sunrise increase in the number of echoes which are up to 8 s long because of changes in the wind pattern, but the post-sunrise excess of echoes with longer durations probably has to do with the chemistry of the region, there being a change in the processes which govern the loss of electrons from the ionized trails.—By our Astronomy Correspondent.

MARINE BIOLOGY

Research in Jamaica

from a Correspondent

CORAL reefs are the most complex of marine ecosystems. Their investigation has been held back by lack of adequately equipped laboratories from which, as in temperate water marine stations, long term observations—such as determinations of breeding seasons and life histories—can be conducted and where physiological work can be carried out in the closest contact with ecological studies.

An important advance in the filling of such a need was made with the opening in March 1970 of the Discovery Bay Laboratory on the north coast of Jamaica, some 40 miles east of Montego Bay. For its first year of operation the laboratory was run by the station manager, Mr N. Copland, but from the beginning of this year it has had a full-time director, Mr P. M. J. Woodhead, who was formerly on the staff of the Fisheries Laboratory at Lowestoft and then for three years was in charge of the Heron Island Laboratory at the

southern end of the Great Barrier Reef. It is expected that the laboratory (address: Box 36, Discovery Bay, Jamaica, WI) will soon become a leading centre for research in tropical marine biology, with particular reference to Atlantic coral reefs.

The laboratory, which replaced the very simple facilities which were previously available, lies off the edge of reefs which are now among the best known in the world, largely through the efforts during the previous twenty years of the late Professor T. F. Goreau and his colleagues. Professor Goreau just lived to see the opening of the laboratory, which represents a most suitable memorial to this outstandingly original and productive worker.

The laboratory is equipped with all the usual facilities associated with marine stations. On the left-hand side of the photograph can be seen the "wet laboratory" which has a central water table and a row of aquarium tanks provided with continuous seawater circulation. There is space here for more than twenty students or research workers. On the right of the main entrance is a series of six research laboratories with a total floor area of 2,100 square feet, together with an instrument room, a dark room and offices. The equipment includes a wide range of SCUBA diving apparatus—including air tanks, a compressor and a small recompression chamber—a 22-foot fibreglass boat and a 15-foot plywood boat.

The cost of erecting the laboratory was met, approximately half and half, by grants from the Wolfson Foundation and from the University of the West Indies which has also been responsible for the usual final modifications. Salaries are met by the Marine Sciences Research Center of the State University of New York. Final responsibility for the running of the laboratory is in the hands of a committee of management consisting of two members from the University of the West Indies (with Professor I. Goodbody as chairman), two from the State University of New York, and Sir Maurice Yonge from Edinburgh.

Discovery Bay Laboratory, Jamaica.