reference should be made to the valuable gifts of cases of books forwarded to this Observatory by Dr. L. J. Comrie. These include publications from the Nautical Almanac Office, London; the Royal Astronomical Society, London; and the British Astronomical Association, London, and the Royal Observatory, Greenwich. A total of fourteen cases was received in this way.

A complete list of all the publications that have been purchased by the Observatory is attached to the report.

Meteorological Records, 1927.

The following are the meteorological records for 1927 :—

Barometer (height above sea-level, 415 ft.)—
Maximum reading, 30·23—1927, September 30.
Minimum reading, 28·78—1927, July 13.

Temperature (in transit-room)—
Maximum, 71·0° F., recorded 1927, February 13.
Minimum, 47·6° F., recorded 1927, June 19.

Temperature (in clock-room)—
Maximum, 70·2° F., recorded 1927, February 1.
Minimum, 52·0° F., recorded 1927, May 1 and June 20.

Humidity in new cellar—
Maximum reading, 100 per cent.
Minimum reading, 72 per cent.

Staff.

No changes in the staff took place during the year. The staff was constituted as follows: A. G. C. Crust, M.Sc., temporary professional assistant; T. S. Wyman, clerk. In addition, Mr. H. O. Belworthy, Internal Affairs Department, was attending to the Sunday duty till 7th August, after which date this work was taken over by the Observatory staff. Mr. B. L. Elphick, B.Sc., assisted with the seismological work for a total period of forty-seven days. Mr. R. D. Thompson, M.A., F.R.A.S., was assisting with the longitude work for a period of three months. Professor D. J. Richards was engaged on the seismological work for eight days.

My thanks are tendered to the staff for efficient and loyal service. The duties at the Observatory are exacting, and are discharged every day of the year, including Sundays and Government holidays. On no occasion has any essential duty ever been neglected.

C. E. Adams,
Dominion Astronomer and Seismologist.

REPORT OF PETROLOGICAL LABORATORY.

Much work has been done in the preparation of a bulletin on the building-stones of New Zealand. Many samples have been collected in the field, and others have been forwarded by J. Tait and Son, of Christchurch, and other workers in stone. Samples of all of these have been tested for specific gravity, absorption, and crushing-strength.

The greatest requirement of the building trade in New Zealand has been an easily-worked freestone which will resist the weathering action of the atmosphere. Numerous observations and tests have been made in connection with the vitric tuff which in various tones and grades has such a wide occurrence between Taumarunui on the south and Hinuera on the north. The stone can be easily and cheaply quarried, is extremely accessible, and possesses remarkable durability. Dressed samples have been shown to various architects in the North Island, and it is expected that this stone will soon be quarried and become available for building in all parts of the country. Since it has a pleasing tone, and is easily sawn, and can be obtained in stones of large dimensions, it can be employed for practically all architectural purposes. This rock has been the subject of a special report.

A special investigation was made in regard to the supposed discoloration of the Kairuru marble which has been used in Parliament Buildings and other large structures in Wellington and Auckland. Research was made in regard to each of the numerous theories that had been devised to account for this effect, but it was found that none of them had any real basis. Subsequently it was demonstrated that the dirty appearance that resulted on certain exposures of buildings was entirely due to the settlement and accumulation of wind-blown dust and soot. There is no doubt that a smoother dressing of the surface will reduce this effect to a great extent.

Samples have been collected from the marble of the Plumbago Valley, near Collingwood. Here there is a variety of mottled and figured marbles, first discovered by Mr. M. Ongley. In the majority of specimens the mottling is usually of a soft-pink colour (though yellow is frequent) and produces a pleasing effect. The locality is easily accessible, and a great variety of stone, which will take a high polish, can be obtained in any quantity and in large sizes.

It has lately been shown that tinted and coloured limestones which will take all the polish of marble can be obtained in any required quantity from Waro and several other localities near Whangarei. This rock when polished has various and pleasing shades of pink, and the softness of tone renders it most suitable for interior ornamentation. It has already been used with the most satisfactory results. It is hoped to complete the bulletin on building-stones shortly.

An investigation has been made into the nature and condition of beach abrasion, as information on this matter was urgently required in connection with many problems of marine engineering in New Zealand. Very unexpected results were obtained, and these were considered to be so promising that the investigations were carried to a considerable length and are still in active progress. Descriptions and results of the earlier of these experiments have already been published.

A number of tests of roadmaking-materials have been made. In connection with this gravels have been collected widely, and it is hoped before long to accumulate the information required to issue a bulletin of a gravel survey of New Zealand.

P. Marshall, Petrologist.

Approximate Cost of Paper.—Preparation, not given; printing (1,150 copies), £44.

By Authority: W. A. G. Skinner, Government Printer, Wellington.—1928.

Price 1s.]