The Observatory consists of three picturesque buildings of the Swiss-chalet type, and are shown in the accompanying illustrations. Illustration A shows the office buildings, consisting of two rooms, with an attached room at the left-hand end, in which one of the incline horizontal pendulum seismographs is placed. In the foreground is an interesting instrument designed by Elste and Gertel, of Wolfenbuttel, for the determination of certain quantities connected with the electrical state of the atmosphere. Illustration B shows the "absolute house," where absolute determination of the magnetic quantities are made. The Sitz recording photographic instruments are what are known as variation instruments—that is, instruments which record all the variations in the magnetic quantities which occur. If, then, at any time we determine otherwise the absolute value of the three magnetic quantities—the horizontal intensity, the vertical intensity, and the declination — we can, by measurement from the photographic curves of the variation instruments, determine their values at all hours of the day. With new instruments such as ours it is necessary to keep a very careful check on the variation instruments, as these magnets "age" rapidly; and variations which are really due to this "aging" of the magnets might be ascribed, unless care were taken, to variations in the earth's magnetic condition. In front of the building on one of the tripods is the absolute magnetometer constructed by the Cambridge Scientific Instrument Company under Dr. Chree's supervision; while the smaller instrument is the dip circle belonging to the Observatory. Inside the building on the pillars, of which only one of the two is visible, the absolute instrument lent us by the Royal Society is rather indistinctly seen. The building has been constructed with copper nails and brass screws and locks and hinges, so as to be absolutely free from foreign magnetic influence. It was on the pillar which is seen that the bulk of the "Discovery's" instruments were standardised by Lieutenant Armitage. Illustration C shows the magnetograph house. The special feature of this building cannot, unfortunately, be shown in a photograph, as it consists of a cellar under the building, in which the magnetographs are placed. In front of the building the solar thermometer and terrestrial-radiation thermometer can be seen, and also in a brass tripod one of Lord Kelvin's portable electrometers with a fuse attached, for determining the value of the electrical potential of the atmosphere. The Observatory has quite recently received two of these, and there are also two amongst the "Discovery's" physical equipment, one of which, however, unfortunately met with an accident on the journey out. The object of these instruments is to study the variations which take place in the electrical state of the air. We live surrounded by an immense store of electrical energy in the air, which it is not impossible that some day we may be able to utilise. Of late years our knowledge of this subject has been considerably increased by the observations carried on at the fixed observatories in the Northern Hemisphere, as at Kew, Greenwich, and Lyons; indeed, nearly all the observatories of the Northern Hemisphere which are not severely astronomical make this subject a part of their work, and balloon ascents to a height of 12,000 ft. have been made in France by Ch. André and Le Cadet expressly to give more information of the air's electrical state at high altitudes. Elste and Gertel too, and Exner, have also observed on mountain-peaks with the same end in view; but so far, I believe, the subject is almost entirely neglected in the Southern Hemisphere, with the exception of a few isolated observations made in the extreme south by the "Southern Cross" expedition before accident to their instruments rendered further work impossible. Observations of atmospheric potential have been asked for in the south by the International Magnetic Co-operation, which drew up the scheme of international work during the period of antarctic research of this and next year, and accordingly systematic observations are now being made in Christchurch; but as they were not commenced till after the end of the financial year—indeed, have only now (June) been begun—no details can be given. The pipe which can be seen projecting in the illustration from the right-hand side of the building is the discharge-tube of the water-dropping collector of atmospheric electricity for observations at a fixed spot. This water-dropper takes the place of the fuse which can be seen projecting horizontally from the electrometer in the illustration. Fuses are for field-work; water-droppers are for fixed-spot work. The building shown contains also a dark-room for photographic work. Underneath this building the magnetographs are placed in a rather specially constructed cellar. One was used in the selection of the materials for the cellar to see that there was nothing magnetic in them, and, as it is quite essential to secure as uniform a temperature as possible in a room containing magnetographs, the cellar was built with double walls. It is with a view to uniform temperature that these instruments are put in a cellar rather than in a room on the ground floor, and the combination of the cellar and double walls has acted admirably. The regular daily variation of temperature which is so marked in the open air disappears entirely in this cellar. The temperature does not vary half a degree on days when the external temperature varies from twenty-five to twenty-eight degrees. The difference between summer and winter is, however, visible, and the temperature of the cellar is now (June) eight degrees lower than it was in January. The importance of uniformity of temperature is consequent on the fact that all magnets are affected by temperature, having what are known as "temperature coefficient." In general a magnet is weaker when hot than when cold, and if no account were taken of temperature, or if it were allowed to vary irregularly, apparent alterations, in reality due to changes of temperature, might be put down as real; indeed, it would be impossible to say what was real and what was due to alteration of temperature. The temperature coefficient of the magnet will be determined from a year's results, when there will be the "aging" and the temperature to be taken into account. The two effects can be separated, however, as the "aging," though becoming less and less as the year proceeds, will always be in the same direction—*i.e.*, the magnet will always become weaker from age, though at a less and less rapid rate. The alteration in their strength in consequence of temperature will, on the other hand, at first be in the direction of increasing their strength owing to the fall of temperature from summer to winter, while the strength will decrease as the temperature rises from winter to summer. The records of these magnetographs are kept continuously night and day by photographic means, and this has been in progress since November, 1901. In