

ford, writes: "Observers of solar phenomena have seldom an opportunity of witnessing such a fine outbreak of spots as that which took place during the last fortnight of August. After the disappearance of the large group observed in the S. hemisphere (about July 31), a comparative lull in solar activity ensued, lasting thirteen days; the spots which appeared during this interval presented no remarkable features, and were mostly confined to the S. hemisphere. On the 17th, in the N. hemisphere, a large scattered group was observed, which a few days before had consisted of a congeries of minute specks; on the 18th it was 2' 55" in diameter, and was followed by another group, 2' 26" in length; both these groups diminished very rapidly after the 19th. On the 20th the two largest groups on the disc were nearly central; one of them 36", the other 54", in diameter. Cloudy days intervened between the 21st and 24th. On the latter date the first indications of the approaching outburst were remarked. At 4^h 30^m there were three immense groups in the N. hemisphere, extending from the centre of the disc to the E. limb; the preceding group, which was made up of very light and ill-defined penumbrae, enclosing upwards of sixty separate black spots, measured 3' 10" x 1' 49". The second group was 1' 20" in length, the third was too near the line to be satisfactorily measured. From the 26th to the end of the month the north maculose zone was completely crowded with groups and isolated spots, while the corresponding S. zone contained only punctures and small clusters. The following are the lengths of the three largest groups observed on the 29th: 3' 6", 2' 26", and 1' 57". The spotted zone could be seen with the naked eye, protected by an ordinary dark glass at noon on the 28th; it had the appearance of a dusky belt parallel to the sun's equator. Fresh groups observed in the sun's N. hemisphere during August = 11; ditto observed in the sun's S. hemisphere = 15. Maximum number of groups on disc = 13 (Aug. 29, 21^h 18^m); minimum number = 4 (Aug. 20, 4^h 15^m).—Mr. William F. Denning, of Bristol, observed the sun with his 3in. refractor, on Aug. 28, and reports that on this date four large groups of spots were visible in the northern hemisphere. In the N.E. quadrant two large groups were perceptible lying just above the equator. In the N.W. quadrant an irregular scattered group was seen near the limb, and another group near the centre of the disc was very conspicuous. The S.E. quadrant contained three small groups, while the S.W. quadrant was entirely free from visible spots.

Aurora Borealis.—Mr. H. Michell Whitley writes that on August 20 he observed a brilliant aurora. From 11^h 30^m to 12^h it was very well defined. Straight beams of light shot up from the N. horizon to an altitude of about 35°. "These streamers faded and reappeared in other places." Mr. Henry Ormesher, of Manchester, also witnessed this phenomenon. He says, "I first observed it at 11^h 40^m, but from its appearance it must have been visible for some time previous. I determined the extent of its base to be as far as W. by N. to N.E. by N. From between these points streamers shot forth in rapid succession, to a very considerable altitude, a great many of them reaching to the zenith of my place of observation. Some of these streamers were very brilliant, particularly one which at 11^h 50^m shot forth from a point just beneath the Pointers in a direction towards the polar star, and onwards to the zenith. I should think this stream of light to have been of about five minutes' duration, during which time its colour changed from a dark straw to a yellowish tinge. At 12^h 10^m there was quite an auroral arch, whose centre was towards the magnetic pole, and extending from the before-mentioned points to an altitude of at least 40°. The brightness of this arch increased until about 12^h 14^m, when it was exceedingly brilliant. During the whole of the time the sky was very clear, with the exception of a reddish glow, of which the aurora was the cause.

Meteors.—Very few meteors appear to have been observed on about August 10. Mr. Edmund Heison saw nine on the 10th, three on the 11th, and two on the 12th. The Rev. S. J. Johnson watched the sky from 10^h 45^m to 11^h 46^m on the same date, and only detected one. Mr. H. Michell Whitley, of Penarth, witnessed the appearance of two meteors on the evening of August 29. The first was visible at 10^h 25^m, and was accompanied with a faint train. It passed downwards below Corona Borealis. The second was seen at 10^h 30^m to the W. of Aquarius. Both were equal to a first magnitude star. On the 30th the Rev. S. J. Johnson observed the train of a very brilliant meteor. From the appearance of this train it was evi-

dent that the meteor must have become visible a degree or so to the W. of δ Draconis and have ended a degree or two to the E. of α Draconis.

NEW ZEALAND

Wellington Philosophical Society, July 10.—The value of the New Zealand Flax was fully discussed, and Dr. Hector exhibited the operation of the machine he is employing in testing the strength of the various fibres for the Commissioners who have been appointed to investigate the subject. The result, as far as yet obtained, tends to prove, that while the flax of the *Phormium tenax* dressed in the native manner greatly exceeds in strength either Russian hemp or Manilla; yet, when dressed by the machines in ordinary use, it is much inferior. The few samples of the fibre prepared by retting or carefully applied chemical processes, however, gave much better results.

July 17.—Mr. T. H. Potts described an egg of the Great Auk which is in his possession.

New Zealand Institute, July 23.—Anniversary meeting, his Excellency Sir G. F. Bowen, G.C.M.G., in the chair. The president, in advertising to the transactions of the Institute and affiliated societies during the past year, drew attention to the number of contributors on a great variety of subjects to the last issued volume, as proving that a large amount of intellectual activity and practical zeal exist among the associates, although debarred by the geographical circumstances of the colony from achieving frequent meetings. The address was chiefly directed to the necessity for practical scientific instruction; and he stated that the Board of the Institute, having been applied to, the Government had recommended that a course of lectures shall be established in connection with the Museum and Laboratory, on natural history, geology, chemistry, and mineralogy. In proposing the thanks of the meeting to the president, the Hon. Mr. Fox, Premier, stated that the scheme which his Excellency had propounded would be favourably entertained by the Government, who were very desirous of assisting the diffusion of sound scientific instruction, as it was an essential step towards developing the resources of the Colony.

BOOKS RECEIVED

ENGLISH.—The National History of Commerce: J. hn Yeats (Cassells and Co).—The Triangle: a Method of Harmony and Modulation: G. Green (Novello).—The Forces of the Universe, part I.: G. Ferwick (Longmans).—The Adventures of a Young Naturalist: L. Biart (S. Low, Son, and Co.). FOREIGN.—(Through Williams and Norgate)—Abhandlungen der mathematisch-physikalischen Classe der k. bayerischen Akademie der Wissenschaften 10^{ter} Band.—Flora der preussischen Rheinlande: Dr. Wirtzen.—Lehrbuch der Ingenieur- und Maschinen-Mechanic: Dr. Weisbach.—Das Naphthalin und seine Derivate: M. Ballo.—Anleitung zur Ausmittelung der Gifte: Dr. R. Otto.—Leopold von Buch's gesammelte Schriften 2^{ter} Band.

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