

It therefore became necessary for me to patent this device independently of commercial considerations, and the Motomusic Company soon realised its advantages. But until the attitude of commercial firms towards scientific inventors has considerably changed I shall continue to avoid undertaking any investigation the results of which may be directly capable of commercial application. If this be impossible, I shall continue to follow my previous practice of rendering such inventions unpatentable by the method of publication; and I advise others to do the same. Of course, there is nothing to prevent Germans from exploiting inventions that have been published without previous protection (e.g. the "Thermos" flask). G. H. BRYAN.

The Aurora Borealis of November 5.

WITH reference to the description in NATURE of November 18 (p. 314) of the appearance of the aurora borealis in Yorkshire about 7 p.m. on the evening of November 5, I may mention that I saw it at the same time from the neighbourhood of Broadley Common, in the west of Essex, latitude $51^{\circ} 45' N$.

It formed a low, colourless luminous arch on the northern horizon, probably about 6° high and 30° in length. There were no streamers, and no movement was visible. J.

November 19.

As a supplement to the observations of Mr. Scriven Bolton on the aurora borealis of November 5, and his beautiful illustrative drawing (NATURE, November 18), may I be allowed to record the following observations. Mr. Scriven Bolton ceased observing at 7.40 p.m.; I began at 8 p.m., although the aurora had been noticed about 7 p.m. The aurora appeared in the form of a bright whitish-green glow, of the form depicted by Mr. Scriven Bolton, extending on the horizon from N. by E., to W. by N., with streamers occasionally rising from it. At 8.25 p.m. the general glow was affected with pulsations, and at 8.40 p.m. five comet-like streamers appeared in the N.W., and a brighter patch of luminosity N. by W. A single streamer appeared in the N. at 8.45 p.m., and at 8.50 p.m. a dark arch formed, separating an upper bright arch from the brightly glowing region beneath. This must not be confounded with the dark segment, so often seen in auroræ surmounted by a bright arch. This particular phenomenon I do not remember to have observed before in auroral displays.

At 8.55 p.m. the luminous arch rose rapidly, reaching to the Pointers of the Great Bear, and became very bright. It then, 8.58 to 9.0 p.m., divided in the middle, and broke up into luminous clouds, which appeared to drift, until a very bright patch was formed due W. The bright clouds had disappeared by 9.2 p.m., but five minutes later the summit of the arch formed again, though it was much fainter than before. It then increased in brilliancy, and disappeared at 9.9 p.m. At 9.12 p.m. a very bright streamer arose in the N.W. At 9.15 p.m. the sky became overcast with dark, filmy stratus clouds. The luminous patch in the W. was also observed earlier in the evening, at about 7.0 p.m. The stars seen through these bright clouds were certainly dimmed in lustre. Looking at the bright glow with a direct-vision prism, I could only see a mere ghost of light in the green.

The aurora was observed during a disturbance of greater intensity on the magnetic needles. A marked easterly movement in declination was synchronous with the formation of the dark arch, and with the rising and marked increase of luminosity of the bright arch. A. L. CORTIE.

Stonyhurst College Observatory, November 20.

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A Remarkable Solar Halo.

A SOMEWHAT remarkable halo was visible at Bristol for more than an hour during the morning of Thursday, November 11, between nine and half-past ten. At nine the sky was bright and almost cloudless; a couple of hours or so later it was completely overcast and much rain fell. The halo was white with a slight red coloration on the inside edge, and the whole circle was visible. The most striking feature at 9.30 was the clearness of the sky outside the ring, and its darkness inside. It looked just like a circular cloud of smoke bounded by a bright ring. When measured by my colleague, Mr. Broadbent, the diameter of the halo was found to be $44^{\circ} 10'$.

DAVID ROBERTSON.

Merchant Venturers' Technical College, Bristol,
November 17.

Rule for Determining Direction of Precessional Movement.

PROF. A. M. WORTHINGTON has kindly pointed out to me that my interpretation of Prof. Watanabe's rule (NATURE, October 21, 1915) gives the wrong direction of azimuthal turning for the gyroscope. In my statement, for upper part of the wheel read lower part of the wheel. A. GRAY.

The University, Glasgow.

SCIENTIFIC EXPOSITION AT ITS BEST.¹

(1) ALL who have enjoyed Sir Ray Lankester's popular essays published in the *Daily Telegraph* under the title "Science from an Easy Chair," will be glad to have a third instalment of them in permanent form; those to whom they are new are to be envied. The mood of the essays expresses the conviction that while science is for foresight and the practical mastery of things, it is also for our delight, "in this world of unending marvels and beauty." Far from echoing the old moan that increase of knowledge is increase of sorrow, the author declares that science "satisfies man's soul." To accept this generous appreciation it may be necessary, however, to include with "science" the attendant feelings and imaginings which are usually kept at a stern arm's length off.

What are the characteristics of these masterly essays, when we get beyond their obvious qualities of learning and lucidity, experience and insight? The first is that Sir Ray Lankester, like Huxley before him, is able to show us the interest and significance of common things. Thus there are illuminating chapters on the sand and pebbles and shells of the sea-shore, on a piece of amber, on sea-anemones and jelly-fish, shrimps and barnacles, on daddy-long-legs, on Christmas trees, and more besides. It is the function of art and poetry to idealise what we see and do every day; but science also has its share (for there are really no hard and fast compartmental rôles in life) in showing us the significance of the commonplace, and fine examples of lucid exposition of difficult,

¹ (1) "Diversions of a Naturalist." By Sir Ray Lankester. Pp. xv.+424 (London: Methuen and Co., Ltd.) Price 6s.

(2) "The Birth-Time of the World and Other Scientific Essays." By Prof. J. Joly. Pp. xv.+307. (London: T. Fisher Unwin, 1915.) Price 10s. 6d. net.

(3) "Birds and Man." By W. H. Hudson. Pp. 306. (London: Duckworth and Co., 1915.) Price 6s. net.