

southern species, and the identifications under that name of Canadian material are erroneous.

On the other hand it is more than probable that several other species will yet be found in the Dominion. These are *obliqua*, Gn., *metata*, Sm., *curema*, Sm., *helata*, Sm., *squamularis*, Dru., *benesignata*, Harv., and *bethunei*, Sm. One of the objects of this paper, indeed, is to call the attention of Canadian collectors to this genus and the work that yet remains to be done in it.

ADDITIONAL NOTES TO THE ABOVE PAPER.

BY ARTHUR GIBSON.

As an addition to the above interesting paper by our honoured corresponding member, Dr. J. B. Smith, the following notes, made chiefly from specimens in the collection of insects at the Central Experimental Farm, are presented.

PHÆOCYMA NORDA. Besides specimens from the type locality, Kaslo, B.C., there are in the collection of the Division of Entomology, specimens from Cartwright, Man. (Heath), and Ottawa (Young). The species has also been taken at Chelsea, Que. (Gibson).

P. CALYCANTHATA. In Dr. Fletcher's Entomological Record, 1904 (Rep. Ent. Soc. Ont. 1904), this species is recorded from Kaslo, B.C. As stated in Dr. Smith's paper this record should now refer to the new species *norda*.

P. MINEREA. In the Entomological Record, 1906, (Rep. Ent. Soc. 1906), this species is recorded from White River, Hudson Bay Slope, June 2nd (W. J. Wilson). On further examination Dr. Smith could not confirm this identification, as the specimen was much rubbed and crushed, and might possibly be another closely allied species. The above record had, therefore, better be cancelled.

P. DUPLICATA. This species has been found at Digby, N.S., by Mr. John Russell. One specimen taken there on June 6th, is in the above collection. It has also been collected at Truro, in the same province, by Mr. L. A. DeWolfe. In the Entomological Record, 1904, a specimen of this moth is recorded as having been taken at Wellington, B.C., by Rev. G. W. Taylor. This specimen is the one referred to in Dr. Smith's paper under the name *largera*. *Duplicata*, therefore, must now be removed from the British Columbia list.

P. CINGULIFERA. This occurs at Ottawa. Last year several specimens were taken by Dr. Fletcher, and Mr. Young has also collected it. All the examples were taken in May. At Orillia,



Ont., the species has been captured by Mr. C. E. Grant, on June 10th.

P. OBLIQUA. A single specimen of this species was collected in 1900, at Bristol, Que., by Dr. Fletcher.

P. HELATA. The only Canadian record we have for this insect is a single specimen taken at Ottawa on June 20th, 1907, by Mr. J. W. Baldwin.

METEOROLOGICAL OPTICS.

BY OTTO KLOTZ, LL.D, F.R.A.S.

As we were returning one evening from one of our delightful afternoon natural history excursions, the bright disk of the moon rose slowly from the eastern horizon and soon emerged as a huge platter, arresting the attention and calling forth remarks from every one.

Probably no illusion in the heavens is so apparent as the increased size of the full moon when rising. Every one knows that the disk of the full moon when seen on the horizon appears very much larger than about six hours later when it is in the south and high up in the heavens. One might infer that the moon is a great deal nearer to us when rising than when seen high up in the sky. As a matter of fact, the reverse is the case, for when the moon is above us it is nearer by the radius of the earth, say about 4,000 miles, or 1-60 of its average distance. If there were any question about the delusion, it is very easily settled by turning an instrument onto the satellite and measuring its diameter, when of course it would be found that the diameter was practically the same in the two positions. Quite a different phenomenon is the flattening of the disk of the moon when seen in the horizon, for this would be confirmed by the same instrument that we used for measuring the horizontal diameter. The explanation of the flattening lies in the fact that the nearer we approach the horizon the more the rays are bent or refracted, so that the lower edge of the moon looks relatively higher than the upper edge, i.e., the lower edge is thrown up more than is the upper one, so that the moon looks broader than it is deep, in short its figure is elliptical. But the discrepancy in the exaggerated size of the moon when rising is not due to the refraction of the rays of light. We may state at the outset that the illusion is a physiological phenomenon.

We are accustomed to speak of the sky as the celestial vault,



Gibson, Arthur. 1908. "Additional Notes to Dr. Smith's paper." *The Ottawa naturalist* 22(7), 135–136.

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