seen adopted in the setting of specimens received from my brother entomologists. For large species the "bristle" should be a true hog's bristle of the kind obtainable at curriers'; for smaller, a stiff horse-hair. The "bristle" is sharpened by a diagonal cut with the scissors, and is then inserted between, and a little in front of, the mesocoxæ, and is run down to near the end of the abdomen, care being taken not to damage the appendages, and allowing a little space over for shrinkage during drying. It is then cut off close to the thorax. Even the soft-bodied *Perlidæ* can be much improved by this method.

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Early Use of the Word "Blizzard."

In a communication to *NATURE* of June 22 (vol. xcvi., p. 341) Mr. Miller Christy states that the first appearance of the word "blizzard" in "permanent literature" was in 1885, when he used it in his work, "Manitoba Described," and that the description of the phenomenon therein by Mr. Thompson Seton was the earliest ever published.

As one of the American meteorological specialties, the blizzard has always received attention by the Canadian and United States Weather Bureaus. The very earliest use of the word has not yet been ascertained, but it has been found in current use as the name of the storm Mr. Christy describes, at least as early as 1867. In that year the *Dakota Republican* published, at Vermilion, Dakota, an account of the blizzard that suddenly approached that town, and called the storm by that name as one in common use when applied to a sudden change from warm and balmy weather to a blinding snow with cold north-west winds.

The earliest known description of "blizzard" phenomena seems to have been that by Henry Ellis in his account of his visit to Hudson's Bay in the *California* in 1746, and his winter at York Factory. However, Ellis did not apply the name "blizzard" to the storms he described.

Brief notes on the name "blizzard" will be found in the *Monthly Weather Review*, Washington, December, 1898, p. 562; January, 1899, p. 18; and December, 1914, p. 692.

The name "blizzard" for "a cold-wave gale with very low temperature and fine driving snow" is recorded by C. A. Lounsberry as being in use in Dakota, Iowa, and Minnesota as early as 1865. The *American Meteorological Journal*, July, 1886, pp. 112-14, quotes an excellent description of the blizzard by Mr. Lounsberry in the *Northwest Magazine*.

OTTO KLOTZ.

Dominion Observatory, Ottawa, October 2.

THE FUTURE OF THE ZINC-SMELTING INDUSTRY IN GREAT BRITAIN.

IN 1913 the world's production of the metal zinc, or, to give it its trade name, spelter, was 985,142 English tons (2240 lb.). Of this Great Britain produced 58,298 tons, i.e. 5.9 per cent. On the authority of Moulden,¹ however, it may be stated that "probably not more than 31,290 tons were 'primary' spelter in the sense of being extracted from ores, the balance of 27,008 tons being the result of treatment of by-products, galvanisers' ashes, hard-spelter, etc." In the same year Great Britain imported 145,004 tons of spelter, which, at the average ruling price, "ex

ship," represents a total value of 3,291,772l. In other words, this country in the year before the outbreak of war was producing—even including "secondary" metal—only 30.1 per cent. of its spelter requirements. The galvanised iron industry absorbed about 60 per cent. of the above production, the manufacture of brass from 20 to 25 per cent., while the remainder was used for the manufacture of sheets, alloys other than brass, etc.

The bulk of the spelter imports was obtained from Germany and Belgium, each of them a large producer of the metal, and each of them a large importer of zinc ore from the most important zinc mine in the British Empire, at Broken Hill, Australia. This ore consists of an intimate mixture of argentiferous galena and blende occurring in a gangue chiefly composed of rhodonite, quartz, and garnet. It is treated by concentration and separation processes so as to give two main products, a lead ore and a zinc ore concentrate, the latter containing about 46-48 per cent. of zinc with certain values in lead and silver. The output of zinc concentrates before the war was about 500,000 tons annually. Apart from the ore which was smelted at Port Pirie, and about 20,000 tons which were sent to England and smelted at the Sulphide Corporation works at Seaton Carew, "the whole of the zinc concentrates in the past has been sold under long-term contracts to smelters in Belgium and Germany."² The Germans had acquired a controlling interest in the most important Belgian works, and, according to Moulden, utilised this control to make money, which they did by passing the greater part of their concentrates on to the Belgian works for smelting. "Of the total Australian output Belgium smelted at least 75 per cent. and Germany only 14 per cent."³

On the outbreak of war in August, 1914, the following situation arose:—

(1) Germany was unable to take delivery of Broken Hill concentrates owing to the command of the seas which Great Britain immediately obtained and has ever since held.

(2) The Belgian works, which soon fell into German hands as a result of the military invasion, were equally unable to receive their share of the concentrates.

(3) Australia thus lost nearly all her market for zinc concentrates.

(4) Great Britain was deprived of by far the greater part of her imports of spelter.

Great Britain thus found herself in the anomalous and dangerous position that, with the command of the seas and an immense supply of zinc ore in the Empire, there was, owing to the lack of smelting works, no prospect of converting it into metallic zinc; and zinc as a constituent of cartridge brass is an indispensable munition metal. It is, of course, obvious that such a situation should never have been allowed to arise, and it will naturally be asked why should not all

¹ Le Neve Foster Prize Essay. *Journal of the Royal Society of Arts*, 1916, p. 526.

² Smith, "The Development of the Spelter Industry." *Journal of the Institute of Metals*, No. 2, 1916.

³ *Journal of the Royal Society of Arts*, 1916, p. 528.