Specimens were exhibited from Lochend Pit (Upper Drumgray Seam), Drumbon Pit (Upper and Lower Drumgray Seams), and from Eastfield Pit (Upper and Lower Drumgray Seams).

Coal apples were found by Mr. Masterton during the years 1911 to 1913, and he exhibited specimens from the following localities: (1) Moncur Colliery, Kilwinning—in the Ell Seam in a reversed fault, and where a line of face was slightly baked and approaching a whin dyke; (2) Littlemill Colliery, Rankinston—Main Seam, where the working face was approaching a whin dyke; (3) Earallan Colliery, Old Cumnock—Maid Splint Seam, in a place going parallel to a whin dyke, and 25 yards distant from it; (4) Ponfeigh Colliery, Douglas, Lanarkshire—apples described by the manager as occurring near a whin dyke, the coal becoming coke close to the dyke.

Mr. Masterton advanced the opinion that the coal apples were pieces of coal matter either of harder nature or of less volatile content than the surrounding parts of the seam, and that these parts resisted the compression and "flux", if the term can be used, better than the rest of the seam.

2. "The Raw Materials of the Glass Industry." (With lantern illustrations.) By G. V. Wilson, B.Sc., F.G.S.

A brief description was given of the materials needed for the manufacture of glass, with special reference to the quality of sand used. The essentials of an ideal sand were pointed out, namely, high percentage of silica, freedom from ferruginous materials, and absence of refractory minerals, such as rutile and zircon. Attention was drawn also to the importance of the size and shape of the grains. Analyses of Fontainebleau and Dutch sands were compared with those from the best Scottish localities. None of the latter are quite equal to Fontainebleau, but several are as good as, if not better than, Dutch. The essential qualities of the clay for making glass pots were also noted, such as high plasticity, high refractory quality, and freedom from iron in any form. The paper was illustrated by lantern slides, many of which were photomicrographs showing the minerals formed by the devitrification of a large body of glass.

OBITUARY.

CAPTAIN LEWIS MOYSEY,
R.A.M.C., B.A., M.B., F.G.S.

BORN 1869. DIED FEBRUARY 26, 1918.

WE much regret to learn of the death of Dr. Moysey, who was lost on the hospital ship *Glenart Castle*, which was torpedoed on February 26. Dr. Moysey had only just joined this ship, as one of the medical officers, and he was not among those subsequently rescued.

Dr. Moysey was a graduate of Caius College, Cambridge, and a medical man who had long been in practice at Nottingham. He was mobilized in the early days of the War, and until quite recently he had been occupied with regimental work in this country.

He had devoted, over a period of many years, the scanty leisure of a busy professional life to the collection of the fossil remains of the Coal-measures around his home at Nottingham. He was an exceptionally ardent palæontologist, with a keen eye for a good specimen, and he was possessed of great skill and perseverance as a collector.

He rediscovered a half-forgotten method of developing fossils contained in clay-ironstone nodules, by freezing them in cold storage. This he described in a paper in the GEOLOGICAL MAGAZINE for 1908.

He also contributed several memoirs on some of the rarer specimens in his collection. Among these may be mentioned his writings on *Palæoxyris* and allied genera, published by the Geological Society in 1910 and the British Association in 1913 (1914), which did much to clear up the obscurities which then surrounded these fossils. But, as a rule, he was content, with great generosity, to place the results of his labours in the field in the hands of specialists for description.

His collection covered a wide range both of Coal-measure animals and plants, not a few being unique or exceptionally perfect examples. Some of the former have been described in the pages of the GEOLOGICAL MAGAZINE, by Dr. Henry Woodward in 1907 and 1908 and Dr. W. T. Calman in 1914, and in the publications of the Palæontographical Society by Mr. R. I. Pocock in 1911.

Dr. Arber some years ago (1910) also figured some of the best of the plant remains in his collection, but many further examples which Dr. Moysey had since acquired remain undescribed. It is not too much to say that our exceptionally good knowledge of the fauna and flora of the Notts and Derby Coalfield is due almost entirely to his single-handed efforts, as his list of records contained in the recent Survey memoir dealing with this field testifies.

A few weeks before his death, as if conscious of his impending fate, Dr. Moysey made over as gifts his entire collections, the animal remains to the Museum of Practical Geology in London and the plant specimens to the University of Cambridge. The latter are now in the Sedgwick Museum.

Dr. Moysey possessed many friends among those interested in Coal-measure fossils, and his delightful personality, generous nature, and enthusiasm for research had endeared him to all of them.

[NOTE BY THE EDITOR.—Of the Arthropods discovered by Dr. L. Moysey the first specimens were sent in May, 1907, to his friend Mr. Henry A. Allen, F.G.S., of the Geological Survey, Jermyn Street, and described by Dr. Henry Woodward in the GEOLOGICAL MAGAZINE for June, 1907 (pp. 277–82, Plate XIII). They consisted of examples of *Eurypterus* (*E. Moyseyi* and *E. Derbiensis*) from the clay-ironstone nodules of the Coal-measures, Ilkeston, Derbyshire.

As the result of his experiments in splitting by a freezing and thawing process the ironstone nodules obtained on the Shipley Hall Estate clay-pit, near Ilkeston, Dr. Moysey records the fortunate discovery of a greater proportion of rare fossils in these harder

nodules than from those found naturally inclined to split in the clay-pit. Out of some ninety nodules cracked by freezing he had obtained three specimens of *Belinurus*, one of *Palæoxyris*, two of a "*new shrimp-like animal*", and one complete but diminutive example possibly akin to *Arthropleura armata* of Jordan from Saarbrucken—he enumerated fifty-seven different fossil organisms obtained (see GEOL. MAG., 1908, pp. 220–2).

The new shrimp-like animal (*Præanaspides præcursor*, H. Woodw.) referred to by Dr. Moysey, and discovered by him, proved to be of the very highest interest, being a Coal-measure representative, or ancestral form, of the rare modern Schizopod *Anaspides tasmaniæ* from Mt. Wellington, Tasmania (see H. Woodward, GEOL. MAG., 1908, pp. 385–96).

On March 23, 1910, Dr. Moysey read a paper before the Geological Society of London on *Palæoxyris* and other allied fossils from the Derby and Nottingham Coal-field (see Quart. Journ. Geol. Soc., vol. lxvi, pp. 329–44, pls. xxiv–vii, 1910).

Dr. Moysey contributed a note on some undescribed Coal-measure fossils from the Nottinghamshire coal-field (British Association, Sheffield, 1910, Sect. C, see also GEOL. MAG., 1910, p. 474).

In 1911 Mr. R. I. Pocock, F.R.S., contributed a "Monograph of the Terrestrial Carboniferous Arachnida of Great Britain" to the annual volume of the Palæontographical Society for 1910, in which two species obtained by Dr. L. Moysey are figured and described, namely: *Eobuthus holti*, sp. nov. (see p. 15, pl. ii, fig. 2*a*) and *Geralinura britannica*, sp. nov. (p. 30, pl. ii, fig. 3).

In the GEOLOGICAL MAGAZINE for 1911, pp. 497–507, twelve Text-figures, Dr. Moysey described a further series of fossils from the Notts and Derbyshire Coal-field, including a new bivalved Entomostracan, *Leaia trigonioides*, sp. nov. (Fig. 1, p. 498), parts of an undescribed Arthropod, and remains of *Prestwichia* (?), of a Scorpion, of *Eurypterus*, carapace of *Anthracosiro* sp., of *A. Fritschii*, Pocock (Figs. 7, 8, p. 503, and Fig. 9, p. 504), of *A. Woodwardi*, Pocock (Fig. 10, p. 504), an opisthoma of *Anthracomartus* (Figs. 11, 12, p. 505); he appends a list of sixteen Arthropods and six other fossil remains.

At the Meeting of the British Association, Birmingham, 1913, Dr. Moysey read a paper on *Palæoxyris* and other allied fossils and on *Vetacapsula* (see GEOL. MAG., 1913, pp. 453–5). The author compares these problematical bodies from the Coal-measures with the egg-cases of *Chimæra collei*, *Rhinochimæra*, and other Chimæroid sharks.

In 1914 (GEOL. MAG., pp. 541–4, Pl. XXXVIII) Dr. W. T. Calman figures and briefly describes a remarkable new form of "Myriopod-like" Arthropod probably related to *Arthropleura armata* of Jordan, from the Coal-measures of Saarbrucken, of which similar fragmentary remains have been obtained from other coal-fields of France and in this country. Dr. Calman considers it to be a new species of Arthropod (*incertæ sedis*), and names it *Arthropleura Moyseyi* after the discoverer, Dr. L. Moysey.

The Council of the Geological Society of London so lately as

February 19, 1915, awarded him the Lyell Geological Fund in recognition of his valuable work on the fossils of the Derby and Nottinghamshire Coal-field, including his contribution to the recently published Geological Survey memoir on that district.

That so valuable a life as that of our friend Dr. Lewis Moysey should have been sacrificed in so sad and tragic a manner, though in the service of his country, only increases our sorrow for his premature loss to science and to his personal friends, by whom he was greatly valued.]

E. A. N. A.

CORRESPONDENCE.

"FLINT-MEAL" FROM THE BRITISH CHALK.

SIR,—I should be greatly obliged if any of your readers would send me properly localized samples of flint-meal from the British Chalk, other than the *B. mucronata* zone of Norfolk, of which I have plenty. Failing flint-meal, weathered chalk containing foraminifera is useful provided its horizon is known.

R. L. SHERLOCK.

GEOLOGICAL SURVEY,
JERMYN STREET, S.W. 1.
February 25, 1918.

A NOTE ON ISOSTASY.

SIR,—A rather important consideration has, I think, been overlooked by Dr. A. Morley Davies (see GEOL. MAG. for March, p. 125). In estimating the amount of subsidence that must ensue "if the isostatic adjustment is perfect and immediate" after a sea of depth d has been filled to the surface with sediment, we must take into account not only the weight of sediment but also the weight of water which flows in over the sediment during the process of sinking. Allowing for this on the basis of Dr. Davies' figures, the downward movement becomes $\frac{1{\cdot}36}{2}d$. To secure equilibrium, with sedimentation up to sea-level, we have the following equation, where x is the total subsidence:—

$$1{\cdot}36\,d + 2{\cdot}36\,x = 3x.$$

$$x = \frac{1{\cdot}36}{3-2{\cdot}36}\,d = 2{\cdot}12\,d;$$

or the total thickness of sediment $= 3{\cdot}12\,d$, instead of $1{\cdot}83\,d$ as calculated by Dr. Davies. If we assume for the density of the substratum what we may agree is the rather unlikely figure of 2·7, the last result is altered to $5\,d$.

E. M. ANDERSON.

EDINBURGH.
March 11, 1918.