

RIFT-VALLEYS AND TROUGH-VALLEYS.

SIR,—Professor J. W. Gregory, the originator of the term, defines a “rift-valley” as a depression due to the sinking of a band of country between parallel faults; or, in other words, as the surface expression of a trough-fault or fault-trough. Judging by the discussion that took place on Professor S. J. Shand’s paper, “A Rift-Valley in Western Persia” (*Q.J.G.S.*, vol. lxxv, 1919, p. 245), this definition finds fairly general acceptance.

In his admirable article on Structural Geology in the New Volumes of the *Encyclopædia Britannica*, Professor Grenville Cole suggests that “trough-valley” would be a more suitable term for such structures.

It has recently been my privilege to translate and present to the Geological Society of South Africa a valuable paper¹ by Dr. Werner Beetz, in which that author describes a great depression in the Namib (South-West Africa) due to the foundering of a segment of the earth’s crust 185 kilometres in length and some 40 kilometres in width; the sunken area being bordered not by faults, but by great monoclinical flexures, admirably exposed owing to the almost complete absence of soil and vegetation.

Dr. Beetz described this remarkable feature as a Graben, and suggested that “rift-valley” would be a suitable translation. As, however, rifting or faulting has here played a negligible rôle that term would have been misleading. After consultation with Dr. A. W. Rogers it was accordingly decided to call it a *tectonic trough* or simply a *trough*, and its expression at the surface a *trough-valley*. This was before I was aware of Professor Grenville Cole’s suggestion.

As to the latter, it appears desirable, now that the existence of structures such as that described above has been established, to have a specific name for them.

Would it not be better, therefore, to retain the term “rift-valley”, which has won such wide popularity, for depressions of this nature, where faulting can be proved to have occurred, reserving “trough-valley” for those bounded by monoclinical folds?

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OBITUARY.

Grenville A. J. Cole, F.R.S.

Professor Grenville A. J. Cole, one of the most brilliant and versatile of the school of geologists which sprang up towards the end of the last century under the inspiring influence of Professor Judd,

¹ “On a Trough Valley in the Namib,” *Trans. Geol. Soc. South Africa*, 1924, p. 1.

passed away at his residence at Carrickmines, Co. Dublin, on 20th April. He had long been a prominent figure in scientific circles in Dublin, and his place will be hard to fill. He held the Professorship of Geology in the Royal College of Science for Ireland from 1890 until his death, and was Dean of the College for two years. In 1905 he became Director of the Geological Survey of Ireland, then for the first time brought under the control of an Irish Department.

Cole was born in London in 1859 and educated at the City of London School and at the Royal School of Mines. A year after his appointment to the chair in Dublin he published his *Aids in Practical Geology*, which had an immediate and striking success, running to seven editions. Few works have been so popular with all classes of geologists. Gifted with a fluent pen and a brilliant sense of literary values, he produced from this on a series of books which showed, by their ready sale, their attractiveness to the general reader and their value as popular introductions to the science of geology.

Among his more serious contributions to science are to be reckoned papers on the metamorphic rocks of Tyrone and Donegal in which he applied and developed the theory of lit-par-lit injection of the French Schools. His studies of the tachylytic selvages of basic igneous rocks, begun in association with Judd, and extended later to other varieties of glassy rocks and their devitrification products, are well known. His description of the riebeckite-rock of Mynydd Mawr was an important contribution to both petrological and glacial science in that he clearly discriminated between that rock and the riebeckite-eurite so widely distributed as erratics along the shores of the Irish Sea, and now known to be derived from Ailsa Craig in the Firth of Clyde.

It is a relief in these days of narrow specialization to review the life-work of a man of such refreshingly wide and varied interests as Cole possessed. In addition to his petrological work he effectively dealt in turn with such varied subjects as glacial geology, mineralogy, and palaeontology. His contributions to the latter include papers on *Hemitrypa hibernica*; the Fenestellidae of the Carboniferous, *Oldhamia*, and other organic remains from the enigmatical Bray Series; *Belinurus kiltorkensis*, and an Irish Cretaceous Cirripede. In association with O. H. Little he made some interesting determinations of the mineral conditions of the calcium carbonate in fossil shells, and pointed out that whereas the more recent fossils are mainly preserved as aragonite those from the older formations are invariably calcite.

We have recently re-read some of Cole's scientific papers and addresses with the object of evaluating his contribution to the advancement of science. We are struck anew by one of his outstanding characteristics, the generous acknowledgment of the work of others. He had an amazing knowledge of the literature

of his subject, and his meticulous care that no previous contribution should escape notice, was sometimes carried to such an extent as even to obscure his own line of thought. This quality of appreciation he carried also into his daily relations with others, and it was always possible for those who worked under him to gain his sympathetic co-operation in any scheme which promised results of scientific value.

Cole travelled widely, and acquired an extensive knowledge of European geology. His reputation spread far beyond the country of his adoption, and was recognized in various ways. In 1909 he was awarded the Murchison Medal by the Geological Society of London in recognition of his petrological studies on the glassy igneous rocks and his work on the metamorphic rocks of northern Ireland. He was President of the Geological Section of the British Association at Manchester in 1915; and in his opening address he took an original line in pointing out that mountain-building processes were subject to sudden and catastrophic culmination at certain periods of the world's history. Many of his conclusions and suggestions foreshadow the most modern developments of geological thought. In 1917 he was elected a Fellow of the Royal Society.

On the rise of Geography to the status of an independent science he took a keen interest in its development, and was President of the Geographical Association in 1919 and President of the Irish Geographical Association from its establishment in 1919 until 1922. His lectures and addresses in this capacity will be long remembered by those who have heard or read them as stimulating in the extreme and coloured by a delicate play of the imagination such as few scientific men can bring to the popularization of their subject. One of them entitled "The Clearing" cannot fail to live as a gem of literary exposition.

An intimate association extending over many years has given the present writers the opportunity of realizing and appreciating some very lovable features of a character whose outer brilliance and polish served but to cloak the man within. Most noteworthy of all was perhaps his intellectual courage—his refusal to gloss over the unpleasant facts of life by the use of any sophistry. He faced the world undaunted and interpreted it in the light of reason. Side by side with this scientific attitude, however, he cultivated and cherished a poetic faculty of no mean order, which found expression only seldom, but always with remarkable effect. Some of his poems show a rare appreciation of the beauty of nature and a delicacy of touch which one finds but rarely nowadays among the votaries of science. He owed much of this delightful faculty to his early training, but even more perhaps to his wife, whose mental vitality and classical culture gave them a bond of interest that became a very potent factor in influencing his development.

One does not know whether to admire most in Cole his subtlety

of mind, his wide intellectual outlook, or the indomitable spirit which he displayed to the end—the spirit of Browning's Grammarian:

“ Still with the throttling pains of death at strife
Ground he at grammar.”

On his very death-bed he made plans for future activities, new books to write, new doctrines to teach, new schemes for the spread of science and culture in the country to which he had bound himself by ties of affection and interest, strong enough to weather to the end the cruel disappointments and trials which seem inevitably to follow in the wake of political revolution.

W. B. WRIGHT.
M. C. WRIGHT.

ANNOUNCEMENTS AND INQUIRIES.

PETROGRAPHIC EXPEDITION TO ICELAND.

Dr. G. W. Tyrrell and Mr. M. A. Peacock, B.Sc., Glasgow University, have arranged a petrographic expedition to Iceland this summer, under the auspices and with the financial aid of the Carnegie Trustees for the Universities of Scotland. Mr. Peacock is at present investigating the fine collection of 200 Icelandic rocks made by Sir George Mackenzie in 1810, which is now in the Hunterian Museum of the University of Glasgow. This collection was so well labelled and annotated that the methods of modern petrographic research can be successfully applied to it. Mr. Peacock's work has revealed the presence of hitherto unsuspected types intermediate between the abundant basalts and rhyolites of the Icelandic volcanoes.

The expedition has been undertaken partly in order to re-traverse some of Mackenzie's routes and clear up some obscure points, but chiefly to make an extensive petrographic collection. Previous expeditions in Iceland have gone mainly with purely geological, vulcanological, or glaciological aims. The petrography, however, has been somewhat neglected, and less than a dozen first-rate chemical analyses of Icelandic rocks are available. It is hoped ultimately to add at least 25 more to this number.

Three main excursions are projected; one to the Reykjanes Peninsula to study the recent lavas; a second to the comparatively unknown region between Hecla and the Torfajökull to investigate the rhyolite occurrences discovered there by Mackenzie; and a third a trip north by the shield volcanoes Škjaldbreid and Ok, and westward through the Snaefells Peninsula. It is hoped also to return by the north and east coasts, and to touch at various points thereon.
