

support an institution by the payment of taxes rightly feel that it is their institution. If it engages for a considerable period of time in activities of which they do not approve, or which they regard as useless and frivolous they will either withdraw their support, or if this is practically impossible, they will, by the pressure of public opinion, bring about changes in its management until they get it controlled by men whose policy meets with their approval. Every experiment station worker knows this obvious fact. He must govern his actions in accordance with it if he desires to do *any* useful work in this field. Because of this fact, which is from one point of view a great advantage, the experiment stations have come to take a very important part in the promotion of scientific farming. Their achievements in this direction, viewed as a whole, over the past twenty-five years, are noteworthy in a high degree. But doing this has left but little time, energy, resources or brains available for fundamental research in agricultural science.

The greatest need of organized agricultural development in this country at the present time is, I venture to think, an endowed institution for agricultural research, which shall do for the science of agriculture what the Rockefeller Institute is doing for the science of medicine. This need the state experiment stations never can entirely fill, for the reason that the farmers of the country collectively are not and can not be expected to be qualified to judge either (a) what are fundamental problems or fields in which research should be carried on, or (b) what lines of investigation are likely to advance knowledge, or (c) what are appropriate methods of investigation in general and in particular. Yet these are matters which the interested tax-paying public in actual fact does, and will continue to pass judgment upon in the case of tax-supported institutions. I have no criticism to offer on this attitude of mind. It is human, and understandable, and has led to some excellent results, and I have no quarrel with it whatsoever. I merely affirm that it is not one well calculated to promote the advance of science. He who will endow on a

scale in some degree commensurate with the importance of agriculture in the social and economic system, an institute for agricultural research and place its management in the hands of a board of directors, of which a majority shall be scientific men of standing, will do the world a service of inestimable value.

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BLOCKS AND SEGMENTS

IN the issue of *SCIENCE* for January 31, 1913, Dr. Geo. I. Adams proposes the use of the word *segment* for a general term to be applied to a minor part of the earth having the dimensions of a solid. He finds that this term has already been used in Chamberlin and Salisbury's text-book of geology in discussing continental and oceanic segments and asks, "If it is applicable to major elements, why not to minor ones as well?" The note is not untimely, as it is evident that there are some divergent practices in the selection of terms to denote the categories in question. A quotation is given from a prominent geologist who uses the word *segment* in the way to designate a minor part of the earth's exterior marked off by some structure. It is not evident, however, if the writer of the quotation meant to use it in as wide a sense as proposed in Dr. Adams's note; for it appears that Dr. Adams would apply the name *segment* to all parts of the earth's exterior marked off by faults.

It seems that a term has long been in use, at least among American geologists, to denote a minor part of the earth's exterior marked off by faults. This term is *block*, a short, clear-cut, Anglo-Saxon word, very suitable for such use as is now proposed for *segment*. The use of the word *segment* by Chamberlin and Salisbury is, as it appears to me, for the purpose of denoting parts of the earth, more or less commensurate with the geosphere itself. The term seems very appropriate in that sense. Smaller parts of the earth's exterior, marked off by faults or sharp folds, especially when not discussed in connection

with cosmogenetic problems, ought to be designated by a different term. The need of such a term has long ago prompted its adoption, as will be evident from the following quotations from various text-books and geological papers, selected somewhat at random. "Manual of Geology," Dana, 4th ed., p. 366:

The ridges of the Great Basin . . . have been assumed to be each limited by faults . . . and to have become, in effect, monoclinical orographic *blocks*.¹

"Elements of Geology," LeConte, 5th ed., p. 239:

The strata are broken into prismatic *blocks*. . . The slipping of these *blocks* has given rise to cliffs.

"An Introduction to Geology," Scott, 2d ed., p. 5:

Rocks are divided into still larger masses or *blocks* by . . . fissures and planes of dislocation, or faults.

(Pp. 464 and 465): The plateau of basalt has been fractured into a series of *blocks* which are tilted. . . .

"Exploration of the Colorado River of the West, and Its Tributaries," Powell, p. 184:

The faults . . . divide the district under consideration into long belts or *blocks*. . . In examining the downthrow of these *blocks*, it is observed. . . .

"Geology of the Henry Mountains," G. K. Gilbert, p. 23:

The strata of the upper part of the arch (of Mt. Ellsworth) are divided (by faults) into a number of prismoid *blocks*.

"The Geology of the Eastern Portion of the Uinta Mountains," by J. W. Powell, pp. 16, 17:

When the *blocks* into which a district of country has been broken by faults are greatly tilted . . . the uplifted edges of such *blocks* often form long mountain ridges. . . . In this region many zones are found to be divided into small *blocks* by faults. . . . Fig. 4 is a bird's-eye view of the *blocks* mentioned. . . . Fig. 5 is a diagram of the same region showing the *blocks* into which it is severed.

¹ Italics here and below by the writer of this note.

. . . Many other areas far more complex than these have been discovered where a zone has been broken into *blocks* and these *blocks* tipped and contorted. . . .

"The Ore Deposits of New Mexico," Lindgren, Graton and Gordon, Professional Paper 68, U. S. Geological Survey, p. 25:

The principal disturbances . . . are marked by a series of . . . ranges of apparently tilted *blocks*.

Bulletin of the University of Texas, No. 93;

"A Sketch of the Geology of the Chisos Country," p. 80:

It (the Chisos country) covers a part of a sunken *block*, which measures about 39 miles from east to west and which has settled from four to six thousand feet below the level of the terranes on either side.

SCIENCE, N. S., Vol. XXXVII., No. 945, p. 226:

Keyes speaks of the "so-called fault-*block* mountains" and refers to a statement by Spur that no one has ever seen the fault-lines *blocking* out the desert ranges.

It will be seen from these quotations that *block* is a term which has long been in use, and which is being used at the present time with a definite meaning, similar to that proposed. It seems to be needed. If retained and used in the same sense as heretofore, it will aid in giving greater precision to the geological nomenclature. We need the term *segment* for a slightly different use, as already stated.

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CRITICAL CRITERIA ON BASIN RANGE STRUCTURE

CHARLES R. KEYES in a recent number of SCIENCE¹ presents a note entitled as above in which he expresses in general terms his lack of belief in "Basin Range Structure," so called, and suggests deflative agencies rather than local tectonic displacement as the important factor in the formation of such ranges.

The writer has no desire at this time to defend the hypothesis of basin range structure, though he is thoroughly convinced of the

¹ N. S., Vol. 37, No. 945, p. 226.