

THE TERM "SCHIST."

SIR,—Undoubtedly Mr. Rutley is right in his etymology of the word "schist," and can produce authorities for the sense in which he proposes to use it; but notwithstanding this, and Mr. Allport's support, I must confess myself a schismatic.

But as authority has been named, I will also quote one by way of adding to the confusion, "It would be well to describe no structure as *slaty* or *fissile* except cases of transverse cleavage" (Sedgwick, *Structure of Large Mineral Masses*, Tr. G. S. ser. 2, vol. iii. p. 480). Mr. Rutley says (p. 239), "I use *schistose* and *fissile* as convertible terms when the fission is not of that perfect kind which characterizes *slates* and *shales*." I confess, indeed, that I can see no reason etymological or otherwise why, if the term "schist" is to be extended beyond metamorphic rocks, those with slaty cleavage should be excluded.

"The correct application" of these terms must, no doubt, to some extent "depend on usage," but then we must be satisfied that usage has not proceeded from inaccuracy and will not give rise to inconvenience. Surely it is always lawful to fix the sense of a term which previously has been rather vague. This Prof. Jukes attempted to do, as I venture to think, wisely, well, and intelligibly. Schists, then, in his sense (and I believe it one very commonly in use among geologists) are metamorphic rocks with a fissile structure due to the arrangement of their mineral constituents. Schistose rocks are those which possess this property or seem to possess it; while slates have the property of cleavage; shales of lamination. Thus all schists are in some sense foliated rocks, though it is possible a foliated rock (as sometimes happens with gneiss) may not be strictly a schist. With such a limitation of the term we know what a writer means. Just think of the confusion which is caused when, on meeting with the word schist, we are uncertain whether the author is speaking of a rock that has undergone great chemical alteration or practically none at all. Seeing then that (as it seems to me) Prof. Jukes's limitation supplies us with a term which we really want, I trust that no attempt will be made to extend the name "schist" beyond the group of metamorphic rocks.

T. G. BONNEY.

ECCENTRICITY AND GLACIAL EPOCHS.

SIR,—There are some points in Mr. Hill's remarks as to the causes of a Glacial Epoch which I think require rectifying. He admits that the total amount of heat radiated by the sun and received by any portion of the earth in any one year is a fixed amount. In his letter in your issue of April, he admits as probable, that the heat given up in the formation of snow, being disengaged in the upper regions produces little effect at the ground. Now, granting these, I think it is clearly demonstrable that a Glacial Epoch may be caused by an increased snowfall. For say in any region we have through increased eccentricity a fall of two feet of snow as against a fall of one foot before such increase of eccentricity. Then, with

a fixed amount of heat we have double the work to do in reconvert-
ing this snow into water and vapour. Hence, we must conclude
that the available heat influencing the climate is decreased by
exactly the amount expended in this work, and therefore a con-
tinuance of the greater snowfall must have the effect of lowering
the average temperature of the climate.

On page 17 of your January Number, Mr. Hill argues that owing
to increased radiation being greater in proportion to the increase of
temperature, therefore, that this may be a cause of glaciation. He
apparently ignores the fact that if radiation is increased in greater
proportion by a rise in the temperature, it is decreased in like pro-
portion by a fall, and that therefore the total annual radiation with
a fixed amount of heat received is therefore also a fixed amount.
If this total radiation was not a fixed amount, would it not have the
effect in high latitudes, where there is a great difference in quantity
of heat received between summer and winter, of causing a Glacial
Epoch? And if so, how is it that with this cause of glaciation
the action does not spread towards the equator as it should do if so
caused?

JOS. GREENWOOD.

DURHAM, June 1st, 1880.

“ POST-GLACIAL.”

SIR,—Might I ask the anonymous reviewer of my pamphlet
memoir on the Colchester District¹ to state in what esoteric sense he
uses the word Post-Glacial; at what point in the northward reces-
sion of Arctic conditions he draws the chronological line between
the Glacial and Post-Glacial epochs; and why he supposes that
those conditions obtained outside of the Arctic Circle at the time of
formation of the beds I have described as Post-Glacial in the work
in question.

The mammalia and most of the invertebrata are present in the
middle and lower terraces of the Thames Valley, whilst *Unio*
littoralis, three of the *Helices*, and several of the Coleoptera indicate
the climate of more southern latitudes, and *Corbicula fluminalis* is a
sub-tropical species.

Further deposits have been formed under the existing geographical
conditions as valley brickearths and foreshore mud and sand, up-
heaval of the latter to about 30 feet having taken place, with an
equal extent of deepening of the valleys in consequence.

HARLESTON, 13th June, 1880.

W. H. DALTON.

¹ GEOL. MAG. June, 1880, p. 279.

THE CUDGEGONG DIAMOND FIELD.

Mr. Norman Taylor, whose paper, bearing the above title, was
published in the GEOLOGICAL MAGAZINE, 1879, Vol. IX. pp. 399-412,
and pp. 444-458, requests permission to make the subjoined correc-
tions, viz. :—