

"KAMES AND DENUDATION."

SIR,—In last month's *GEOLOGICAL MAGAZINE* (which it happened I did not read until to-day) there is a descriptive paper on Kames and Eskers in Norfolk and Cumberland by Mr. T. V. Holmes, in which he describes certain conclusions regarding subaerial denudation arrived at in my paper on the kames in this neighbourhood, published in the *GEOLOGICAL MAGAZINE* six years ago, as "an instructive example of what invincible determination on behalf of a favourite agency can effect where zeal is untempered by discretion."

Leaving aside for the present the general question of the origin of kames, permit me to point out certain facts which prove that accumulations of sand and gravel do not enjoy that immunity from the action of atmospheric erosion which the theories of some geologists seem to demand.

In describing the Newport Kames I grouped along with them (for reasons which it is unnecessary to enter into now) what is known as the 100-foot terrace. Whatever view Scotch geologists may take of the origin of kames, they are at one as to the terrace having been laid down in the depths of the sea, indeed extending for miles over all the low-lying grounds of the North-east of Fife, perfectly flat and even-bedded it stands patently and undeniably a raised sea-bottom, but it is no longer the continuous plain it must have been when first elevated above sea-level. In the neighbourhood of the lofty kames and in many other parts it has been eroded into mounds, cones, and ridges quite undistinguishable in form from the kames and even the broad flat remains of it, which form its most striking characteristics, when examined closely, are seen to be worn into considerable hollows by the action of the rainfall.

Now when this comparatively recent accumulation of sand and gravel is so worn by atmospheric denudation, it seems to me impossible to conceive that similar formations situated nearly 800 feet above the sea-level, which Mr. Holmes says can be seen in Cumberland, can have remained practically unaffected by its ceaseless action throughout the much longer period which must have elapsed since Cumberland was submerged to 800 feet.

Yet Mr. Holmes seems not only to deny, but to ridicule the idea that rain and rivers must have played the most important part in giving their present shape to such loose aggregations.

This may not be "zeal untempered by discretion," to quote Mr. Holmes's elegant phrase; but it seems to me to be a striking example of the *unscientific* use of the imagination. JAS. DURHAM.

NEWPORT, FIFE, 4th, November, 1883.

 OBITUARY.

REV. PROFESSOR DR. OSWALD HEER, OF ZURICH.¹

IN Dr. Oswald Heer, who died on the 27th of September, at the age of 75 years, we have lost the greatest of Fossil Botanists, and

¹ A brief notice of Dr. Heer appeared in our November Number, p. 523.—EDIT.