various oils from cruciferous and other seeds which now pass under the name of "rape oil."

In the eleventh chapter, which extends over 273 pages, the natural oils, fats, and waxes are systematically arranged and separately described, a very excellent and most valuable feature being a series of tables appended to the description of each oil, fat, and wax, giving the physical and chemical constants (1) of the oil itself, (2) of the mixed fatty acids, and (3) of the wax alcohols. It is a pity these tables were not arranged so as to be readable without having to turn the book half round, which might have been done by cutting each table in half. No less than 106 oils, &c., are thus separately described, and their physical and chemical constants are collected and arranged in about 175 tables. The usefulness of these tables to the analyst cannot be over-rated, though it does not appear to be clear in all cases by what method the melting and solidifying points of the fatty acids were determined. The "saponification values" are expressed per mille, and the iodine and other values per cent., but there is no reason why the simpler plan of expressing all the quantitative values in percentages should not be adopted. The section on butter fat, the analysis of which was the first to be placed upon a scientific basis, occupies twenty-three pages.

In chapter xii. the analysis of the raw materials and products of the fat and oil industries is treated, and in the concluding chapter some examples of the interpretation of results are given; but space does not admit of further reference.

This book is unique: the analyst will find in it practically all the available information upon the subject up to date, with full references to the original papers; and it will increase the author's already high reputation.

L. ARCHBUTT.

TRACES OF A DELUGE.

On Certain Phenomena belonging to the Close of the last Geological Period, and on their bearing upon the Tradition of the Flood. By Joseph Prestwich, D.C.L., F.R.S., &c. (London: Macmillan and Co., 1895.)

HAD the story of the Deluge a foundation in fact; in other words, is it a record of some inundation which affected a considerable area of the earth's surface? This is the question which Prof. Prestwich sets himself to answer in the small volume before us—a volume which combines a paper read to the Victoria Institute with some of the material communicated to the Royal and the Geological Societies.

In the south of England, especially in the neighbourhood of the coast, a drift is often found, varying in thickness from a few inches to a few feet, which consists of angular fragments of rock with loam derived from adjacent higher ground, and lies on the slopes of the hills and at the bottom of the valleys. Frequently it is absent, but where hollows occur in the surface of the underlying rocks, it has accumulated in greater quantities, and occasionally even exceeds eighty feet in thickness. In some localities it rests on an old raised beach, and is banked up against a buried sea cliff; in others it fills up fissures in the rocks. In the last case it frequently contains the bones of mammals, many of them now extinct—at any rate in Britain. These are neither worn nor gnawed, but are commonly broken and split. Its fossils, almost without exception, are of terrestrial origin. Similar deposits occur in the Channel Isles and on the French coast, and in many places around the Mediterranean, not to mention others. What is the origin of this "rubble drift," "head," osseous or fissure breccia?

Prof. Prestwich refers all these deposits to one epoch of very limited duration. He supposes that there was a rather widespread subsidence, amounting, in some places, to a few hundred feet, during which the sea overflowed the lower land. This was sufficiently rapid to make the invading water muddy; then, before the marine molluscs had time to establish themselves in the new territory, the land was upheaved by jerks (with intervening pauses). These sudden disturbances of its bed set up currents in the sea, strong enough to sweep heavy débris, and even largish blocks of rock, from the higher to the lower ground, and to precipitate the material into any open fissures. By this tumultuous action the bones of the terrestrial mammals which had been drowned by the submergence would be dispersed and shattered, and it explains, in his opinion, all the phenomena better than any other hypothesis. As man was living at the time, it gave rise to the tradition of the Flood.

An adequate discussion of Prof. Prestwich's hypothesis is impossible in our limited space; but we may be permitted to remark that it is not free from serious difficulties. Many geologists would dispute the assumption that these deposits all belong to one and the same epoch. Others will doubt whether the sudden upheavals, which he postulates, would be adequate to produce currents, capable of moving the larger débris, or whether the earth movements would suffice, as he supposes, to make gaping fissures. Some will think that he hardly appreciates the effect of "cloud bursts," such as may be seen in many mountain and even lowland districts of Europe, in transporting débris very similar in character to the "head." It is admitted that since this was deposited denudation has wrought some changes in the contours of the country, and this may explain the apparent isolation of some patches of the "head," whether it fill fissures or cap tabular hills. In several cases the ordinary explanation of breccias (admitting as an adjunct the action of snow) seem to us more simple than that proposed by Prof. Prestwich, and his mode of accounting for the abundance of hippopotamus bones at San Ciro, near Palmero—that as the land sank they were embayed between its precipitous face and the advancing sea, and at last were drowned—can hardly be called probable. Lions and hyænas might have perished in that way, but the hippopotamus seems far from helpless in the water, and is likely to have saved itself.

We think, then, that Prof. Prestwich's hypothesis will be received with some scepticism; nevertheless, it demands careful consideration as an attempt to solve a very difficult problem, which is put forward by one who may now be termed the Nestor of British geologists, and who has paid especial attention to questions of this nature.