Zechstein, but one of them, *Streptorhynchus pelargonatus*, is represented by one valve only and is possibly a new variety, *Geinitzella columnaris* may also be a new variety, and *Dielasma elongata* var. *orientalis* is a new variety not known in the Zechstein but known in the Schwagerina Limestone (i.e. basal " Permian "). It appears therefore that the Jisu Honguer limestone has no Zechstein affinities. Other fossils from Jisu Honguer are closely related to Lower Carboniferous forms, e.g. *Pseudomonotis mongoliensis* and *P. furcoplicatus*, but such species are not found in the correlation tables. The effect of these matters is to give a newer appearance to the beds than would otherwise be the case.

The author concludes that the Jisu Honguer formation is approximately of the same age as the Schwagerina Beds of Russia and the Middle Productus Limestone of India. According to many geologists this would make them Carboniferous.

The correlation of the Schwagerina Beds with the Middle Productus Limestone is interesting since C. Schuchert (*Bull. Geol. Soc. Am.*, vol. 39, 1928) correlates the Schwagerina Beds with the lowest beds of the Rothliegende and the Middle Productus Limestone with the middle part of the Zechstein !

R. L. Sherlock.

CORRESPONDENCE.

SALT-PLUGS.

Sir,—Mr. J. V. Harrison's account of the salt-plugs of Southern Persia, published in the December number of the *Quarterly Journal*, 1930, is one of the most important contributions to physical geology which have recently appeared in Britain. Its exceptional interest naturally provokes a desire for further information. Has anyone measured the rate of flow of the Persian salt-glaciers by staking them out in the manner long ago adopted by students of ice-glaciers ? Has anyone experimentally investigated Mr. Harrison's convincing suggestion that certain of the salt-domes still play the part of slow-motion fountains feeding the salt-glaciers ? Mr. Harrison in reply to a question raised by Professor Watts has stated that there are two types of salt glaciers : the one with steep surface flows solidly as if made of glacier-ice ; the other with gently inclined surface is distributed by solution and recrystallization, so that its motion has some analogy to that of travertine or silicious sinter. Presumably these two types can readily be distinguished, for only the former should carry superficial erratics. Would it not be well to restrict the term salt-glacier to salt that has travelled in ice-glacier fashion ? When one speaks of erratics in connection with Persian salt, one naturally thinks of the Hormuz rocks, some of the sedimentary members of which carry Cambrian fossils. These salt-entangled

Hormuz rocks have been brought up to the surface in widely scattered localities through some five miles of later sediments. If, as appears from the descriptions, the Hormuz rocks are very much more abundantly represented among the salt-carried erratics than are rocks derived from any post-Cambrian formation, does it not seem difficult to imagine that they are merely roof-rocks? Is it not more probable that they were originally inter-stratified with the salt formation? A more special point arises in connection with the discontinuous Khushk Kuh layer of Hormuz-like rocks (op. cit., p. 489, pl. lii). This layer obliquely transgresses the bedding of Cretaceous marls, which lie above and below, and Mr. Harrison has offered four alternative explanations of its amazing behaviour. One of these suggests that the Hormuz-like limestone of the layer may be a Cretaceous product, merely mimicking true Hormuz rocks. Is not this possibility ruled out by the finding of basalt fragments in the scree of the outcrop? Can the layer be anything else than the remains of a sill-intrusion of salt subsequently affected by solution (Harrison's third alternative)? Let us return to generalities. According to any theory of salt migration one has to admit that salt may remain undisturbed for long ages while it is being covered by a great thickness of other sediments. The Persian salt, for instance, lay untroubled from Cambrian to Cretaceous times, and then became active at various stages of the Tertiary and Quaternary. The Persian evidence taken in conjunction with that of Germany and Roumania certainly suggests that orogenic forces have had some share in starting salt upon an upward course. On the other hand, the salt-plug region of Texas does not appear to fall in line with this conception. Texas is a region of orogenic tranquillity. Its tectonic feature is a very gentle seaward dip. Is it not possible in such a case that movement has been initiated in a layer of salt owing to inequality of load determined by the wedge shape of the sedimentary cover?

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