Coal-measures, and contain even feeble black seams of coal. In such cases the boundary is well indicated by the presence of the characteristic flora and fauna of the Lower Rothliegende, *Walchia piniformis* (Schl.), *W. filiciformis* (Schl.), *Odontopteris obtusi oba* (Naum.), *Callipteris conferta* (Stbg.), *Calamites gigas* (Bgt.), and other characteristic plant-forms, or by such characteristic fish-remains as *Acanthodes gracilis* (Röm.), *Xenacanthus Decheni* (Beyr.), *Palæoniscus angustus* (Ag.) and others.

4. *On the Integral Character* (Selbständigkeit) *of the Dyas as a "Terrain" or "System"* (newer nomenclature of the International Geological Commission).

"We are now pretty generally convinced from such evidence as is described above that the strata of the Dyas (or Permian) mark the close of the Palæozoic series of formations, as was admitted, in fact, by the celebrated Sir R. I. Murchison; it remains however still a question whether the Dyas or Permian shall maintain its position as an independent system, or should be subordinated to the Carboniferous, perhaps under the name of Post-Carboniferous ("Post-carbon"). This was not definitely settled at the sittings of the International Commission for Geological Nomenclature, etc., at Bologna in 1883, and the question remains to be decided at the next International Congress at Berlin.

"For a satisfactory answer to the question it must be referred primarily to the German geologists, since it is in the German area that the greatest and most significant changes took place in the Dyas period, especially in the construction of continental deposits (Festlandbildungen); the views of the Russian, English, and North American geologists have also to be considered, since in those countries discovery has followed quickly upon discovery in the region of the Dyas in most recent times.

"The richest fauna and flora of the Dyas is certainly to be seen in the Royal Mineralogical Museum in Dresden, where perhaps geological *confrères* will be convinced that even from a palæontological point of view our Dyas deserves the same recognition as an independent Terrain or System, as the Devonian in comparison with the Silurian, and that notwithstanding the fact that several species pass upwards from the Silurian to the Devonian." A. Irving.

CORRESPONDENCE.

NOTE ON SOME SIWALIK BONES ERRONEOUSLY REFERRED TO A STRUTHIOID (*DROMÆUS* (?) *SIVALENSIS*, LYD.).

Sir,—In examining the collection of Mammalian remains in the British Museum for the purpose of cataloguing, I have come across certain specimens from the Siwalik Hills, which have convinced me that the phalangeals described and figured in the "Palæontologia Indica" (Mem. Geol. Surv. India), ser. 10, vol. iii. pp. 145, 146, pl. xiv. figs. 2, 4, 5, 6 (1884), as belonging to a Struthioid, and named *Dromæus* (?) *sivalensis*, are not Avian at all, but belong to one

of the lateral digits of the fore-foot of an Artiodactyle Ungulate allied to the *Hippopotamus*. The genus *Dromæus* must therefore be expunged from the Siwalik fauna.

I regret having made this unfortunate misidentification; but am glad to take this early opportunity of correcting it. A note to the same effect will appear in the Introduction to the volume of the "Palæontologia Indica," quoted above, on its completion.

R. LYDEKKER.

SUBTERRANEAN CONTOURING ON GEOLOGICAL MAPS.

SIR,—The notice in your March number, by my friend Professor Benjamin Smith Lyman, of Northampton, Mass., regarding this means of expressing the underground configuration of stratified deposits would, I venture to think, have attracted wider attention if it had dealt as fully with the manner of construction as it does with the results to be gained.

A long acquaintance with Professor Lyman's own use of this system in the number of beautifully constructed maps which he has produced of Japanese and other geological regions must be my excuse for pointing out that, while the employment of the system on a large scale by another American geologist (in the Pennsylvania anthracite coalfield) is certainly evidence in his favour, the important circumstances stated in the second sentence quoted from Mr. Ashburner's report have an essential bearing upon the usefulness of these contour lines. The quotation reads thus:—"The data which are available for the construction of these maps are very extensive and very accurate." This beings so, few will doubt that in such a case plans showing true underground contours of coal beds, etc., would be most valuable charts for the guidance of all kinds of mining operations. But granting this involves the consequence that, where the data are neither extensive nor accurate, the results will be hypothetical and may be even largely based upon the safety of assertions which there is no evidence to contravene, albeit there may still be ample room for doubt.

The forms and curvatures assumed by contorted strata varying infinitely, it seems to me we may speculate upon, but cannot predict, the continuity of any conditions at depths beyond the reach of direct observation. We may trace an ellipsoid formed at the surface by the outcrop of a synclinal basin, but without further information we can scarcely foretell whether the interior rocks are, or are not, folded again and again into anticlinal and synclinal curves, overfolded or faulted, thinned away or crushed out.

If what we call contortions had as uniform proportions as basins, saucers, spoons or even casks, from any section of which something might be presumed regarding the size and shape of other portions concealed, the theory of these contour lines would be complete; but as neither the shape nor size of a contortion has relation to any standard, I do not see the advisability of laying down upon ordinary geological maps, with the semblance of accuracy, what