coal-mine has been discovered near Cape Town, etc." If the Cape colonial newspapers were as particular as the *Times* and other London papers, there would not be so many "mare's nests" as the Capetonians are constantly discovering, and which usually end in smoke.

NOTICES OF MEMOIRS.

I.—Records of the Geological Survey of India. Vol. I. Part 2. August, 1868.

THIS publication contains miscellaneous notes and observations made by Officers of the Geological Survey of India.

Coal at Chenda.—Mr. W. T. Blanford, F.G.S., having been engaged in examining some coal seams discovered in the neighourhood of Chenda, here furnishes a report on the prospects of the coal being profitably mined. He states that although one seam is very promising, some further research is necessary before a decisive opinion can be formed upon this subject.

Dr. Oldham adds that borings have been carried out close to the town of Chenda, and have proved the existence of coal, about 2 ft. 6 inches in thickness. The coal is said to be hard, but as no trial of it has yet been made, its quality is unknown.

Coal near Nagpur.—Mr. Blanford reports on the likelihood of coal being found near Nagpur. Although it is probable that the sandstones developed in the neighbourhood belong to the Indian coal-bearing series, yet he has been unable to obtain any indications of coal.

By far the greater portion of the beds of this series in Nagpur are concealed by thick alluvial soil, and it is therefore impossible to say whether coal exists beneath it, or not. Mr. Blanford, however, points out a few localities where its presence is just possible, in order that, if advisable, borings may be made to determine the question.

Geological Notes on the Surat Collectorate, (Bombay Presidency).—Mr. A. B. Wynne, F.G.S., gives a general account of the Physical features and of the formations constituting this Collectorate, and he then furnishes some detailed notes on the rocks in various localities.

Taken generally the district may be described as flat, with isolated hills on the south, and bordered on the east by a hilly and jungly tract.

The formations which occur are—

Recent	Cotton soil.
	Alluvium and river-beds.
Tertiary	Nummulitic
?	Trap.

The trap-beds consist of many varieties, ranging from solid basaltic trap to soft shaly-looking amygdaloid, the variously sized cavities of which are filled with zeolites of different kinds, and sometimes by transparent or amethystine quartz.

Resting unconformably upon the traps is to be seen a series of

hard lateritic ferruginous rocks, coarse conglomerates, dull yellow earthy limestones, sandy and clayey beds; many of them highly fossiliferous, some largely made up of Nummulites, others of the separated valves of *Balanidæ*, with teeth of sharks, fragments of the carapaces of turtles, and bones as yet undetermined. From the evidence of the fossils, a 'Parisien' age has been assigned, by Dr. Stoliczka, to this series of beds. Sections of these Nummulitic beds, from one to three hundred feet in thickness, may be seen in many of the streams.

The alluvium is almost universally composed of a fine light-coloured argillaceous loam, seldom pebbly or gravelly, and always formed from the decomposition of the local rocks.

The cotton soil covers the alluvium over many large tracts of the country. It is often of considerable depth, presenting the usual desiccation cracks, but without any circumstances to throw additional light upon its source or formation. It seems in this country at least to result from the decomposition of an alluvium largely made up of trappean materials.

Cretaceous Cephalopoda of South India.—Dr. F. Stoliczka records some recent observations which must be considered as a supplement to his volume on the *Cephalopoda*, already published. No fresh materials have been procured, but from his having had last year the opportunity of examining, in London, Professor E. Forbes' original collection, made by Messrs. Kaye and Cunliffe, and also in different European Museums a large number of other species, with which Indian *Cephalopoda* have respectively been identified, new light has been thrown on some of the species, and some alterations in the names, etc., rendered necessary.

II.—The Jherria Coal-Field.

By Theodore Hughes, Assoc. R.S.M., F.G.S., [Mem. Geol. Survey, India, Vol. V. Art. 4.]

THIS memoir is confined chiefly to a detailed description of the physical aspect and geological history of an area of not less than two hundred square miles, and which has been termed the Jherria Coal-field. It occurs a few miles south and south-east of Parisnáth, one of the highest mountains in Bengal. The field commences at a distance of about 170 miles from Calcutta, and extends in an east and west direction about eighteen miles, its greatest breadth, in a line north and south, being about ten miles.

The character of the ground is generally flat, and nowhere rises into undulating scenery; it is rocky, and covered by a very slight amount of soil, so that cultivation is not extensively practised.

Two series of beds are developed in the district, the lower, the Talchir; the upper, the Damúda; comprising a total thickness of 6,800 feet of strata, and forming a basin, the beds usually dipping at right angles away from the boundary, at varying amounts, towards a common centre of depression.

The *Talchir* series consists of a Boulder-bed, and above it flaggy green shales and mammillated sandstones.

The *Damúda* series, which has three sub-divisions, is characterised by its containing coal. The bottom beds consist of felspathic grits, sandstone with seams of coal, carbonaceous shales, conglomerates, etc.; then come carbonaceous shales with ironstones, forming the middle sub-division; and at the top, thick-bedded, and yellow slightly calcareous sandstones. With the exception of the middle sub-division, coal occurs at all depths in the Damúda series.

The Boulder-bed of the Talchir series, which is, more properly speaking, a coarse conglomerate, consists mainly of masses of gneiss and quartz, of about one foot in length and three to six inches in breadth, imbedded in a matrix varying in texture from a coarse-grained sandstone to the finest silt. One is apt, at a first glance, to attribute to the agency of ice a share in the transportation of the larger blocks. But the author states that on examining the evidence he can find none to justify such an hypothesis. No scratchings or groovings occurred on any of the stones, nor have they been derived from any very distant source. The larger blocks sometimes retain the primitive form in which they were broken off from the parent mass. A recent visit to the Straits Settlements led the author to conclude that the beach deposit which is forming there at the present time is analogous to the so-called Boulder-bed.

No coal has as yet been discovered in the Talchirs. In the Damúda series the coal-seams appear to be very irregular, and to vary much in thickness. In the upper sub-division there is a general tendency to ignition in all the coal seams, owing, most probably, to the presence in them of iron pyrites, which gives rise to spontaneous combustion. Metamorphism is produced in the shales either above or below, and it is of a varied character. Sometimes the beds become like well-burnt bricks, or obtain a rough vesicular appearance.

A caking variety of coal is procured at one locality, which moreover gives out a copious supply of gas, burning with a rich yellowish white carburetted flame.

Many seams are much injured by the trap-dykes which ramify through them and render the coal useless. In one instance the coal assumes every variety of form and texture, passing from a light vesicular pumice-like stone through all the intermediate stages until it becomes a hard dense columnar mass.

The seams vary in thickness from a few inches to twenty feet, and more.

The quality of the ironstones is very poor, and they are so siliceous that even the native Kummars can do nothing with them.

In a note, appended to the report of Mr. Hughes, Dr. Oldham says, that if, in calculating the probable quantity of coal obtainable from this field, we take twenty feet as a fair average thickness of workable coal—the mean of all the sections drawn by Mr Hughes—and make allowances for the impersistence of the beds by supposing that they will extend over less than a third of the area of the field,—say sixty square miles, we should have an available supply of coal amounting to about 465 millions of cubic yards, or, roughly, tons.

But every such estimate must be of the rudest kind possible with reference to a coal-field, in which not a single pit has yet been sunk, nor a single opening made.—H. B. W.

REVIEWS.

I.—Thesaurus Siluricus—The Flora and Fauna of the Silurian Period. By J. J. Bigsby, M.D., F.G.S., etc., etc. London, 1868. Van Voorst. 4to. pp. 268. [Second Notice.]

(Continued from the November Number, p. 521.)

In his introduction, Dr. Bigsby gives an analysis of the classes *Gasteropoda* and *Echinodermata*, and the orders *Trilobita* and *Brachiopoda* as they occur, both in stratigraphical and geographical distribution;—space, however, entirely forbids our attempting any fresh analysis for this notice, the subjects being so prolific. Under the head *Gasteropoda* in the introduction, pp. vii.-x., several tables are constructed; that on p. vii. gives the geographical summary of species for the chief areas in which Silurian life is known;—27 areas are given—12 on the American Continent, 3 in Britain (England, Ireland, Wales), 9 European, 1 South Australian, 1 Tasmanian, and 1 for North India; but in the chief and detailed summary, p. 169, in the body of the Thesaurus, 43 areas are given—25 American, 15 European, with India, Australia, and Tasmania in addition, and an analysis of all the genera (51) and 895 species, with their appearances, numbers, and habitations. The table (B) also containing those genera having the greatest range in time and space, with the number of species in each and number of countries inhabited—show a kind of analysis that may be carried to any extent. The result of one line for the *Pleurotomariæ* is, itself, suggestive. This genus contains 171 species, and they are distributed over 34 large countries [*the fossiliferous Silurian area of Canada alone is* 70,000 *square miles*]. This dispersion or distribution applies to all the 51 genera, and *species* belonging to the class *Gasteropoda*, the ratio of the proportion of species in each genus, and the different degrees of distribution being due to life habits, associated faunæ, sea-bottom, temperature, locality, etc. The Thesaurus tells us that 18 genera out of the 51 are known only in, and each confined to one district, and 12 of these genera possess only one known species in each, and 7 have 2 species only; supposing the genera to be well established, we only require further research, probably, to discover many other species. We have, however, much doubt as to the value of such genera as *Calyptræa*, *Cerithium*, *Delphinula*, *Littorina ? Naticella*, *Phasianella*, *Rotella*, *Siphonaria*, occurring in the Silurian rocks, until we certainly know more of them, and it is amongst such that the *few* forms, above named, seem to occur. We mention this to guard against drawing conclusions hastily upon doubtful determinations, as per centage in generic life is of importance on either side, and leads to false conclusions upon the question of *first appearance*, *locality*, etc., as propounded in the 7 doctrines laid down in the introduction to the Thesaurus. Particulars are given, in the body of the great table, of no less than 894 species of *Gasteropoda*. The increment and decrement of the *Gasteropoda* in time, as exhibited over large areas through their physical history and mutations, is one of the many problems which the Palæontologist is constantly called upon to investigate, and thus to account for the "rise and decline," "first appearance," and "extinction" of any group. Dr. Bigsby, at p. ix. (table C), points out in 8 subdivisions of the Silurian system, the rise, culminating point, and decline of the Silurian *Gasteropoda*;—their extinction, like that of other groups, which really took place at the close of the Silurian and commencement of the Old Red Sandstone, in Britain, is a problem geologists have yet to solve.

The table D, on p. ix., is too important to be passed over; it is, as the author terms it, a "time table" of all the Silurian *Gasteropoda*, showing the number of species in each genus through the four Silurian stages, and if the species in the work may all be relied on, opens up a mode of time and space analysis whereby any known area, having one or all the stages, may be "censused." That this early epoch in the Earth's history should have contained so great an assemblage