the batrachians of the Mascarene Islands are distinguished by the absence of many characteristic African families, and the presence of peculiar types, in so far conforming to the distinguishing features of the vertebrate fauna in general; whilst a few reptiles and batrachians exhibit remarkable relations to Indian genera on the one hand, and to South American on the other. The ophidians of Madagascar alone, including the Colubrine snakes, have been believed to belong almost wholly to South American genera. Mr. Boulenger, however, has ascertained that the Madagascar Colubrine species possess hæmal processes (hypapophyses) to the vertebræ, and are consequently generically distinct from their neotropical analogues, whilst some of the Madagascar Boidæ, belonging to what is very probably a family of more ancient origin than the Colubridæ, are of South American genera. Thus the Madagascar snakes agree with the lizards, tortoises, and frogs in their foreign relationships.

Nor has the thoroughness of the scientific work prevented due attention being paid to the details that are important as aids in the identification of species. The number of ventral and subcaudal shields is given for every specimen in the collection. Now as the ventral scutes alone are usually about 150 to 250 in different kinds of snakes, the mechanical work of counting them in nearly 3000 individuals (a few snakes have no ventral shields) catalogued in the volume before us may easily be conceived.

At a time when systematic zoology is not greatly studied by many biologists, and is even, it may be feared, despised by some of them, it is some satisfaction to point to the monographs that are issued from the British Museum as evidence of the work that is being done with the unrivalled collections there available for study. There is scarcely any branch of biological research in which the systematic relations to each other of different organised beings is not of importance, and if systematic biology does not represent the knowledge of the day, all biological studies are likely to suffer. It may fairly be doubted whether any branch of biological work demands greater scientific capacity, higher powers of generalisation or harder work than that of which Mr. Boulenger has afforded a good example in his Catalogue of Snakes.

W. T. BLANFORD.

AN ALPINE GUIDE.

A Handbook for Travellers in Switzerland. Eighteenth edition. (London: John Murray, 1892.)

IN the early days of mountaineering, when the Alpine climber wished to scoff at guide-books, he referred sarcastically to Murray's Handbook to Switzerland. It was so emphatically a *vade mecum* for middle-aged prosperity, and was more successful in limiting its information than in restricting its words. But times and editors have changed. The book for several years past has been up to the high standard attained by the other members of the series; and the edition of 1891, of which the present issue is a revision, even improves upon its predecessors. In the initials "W. A. B. C.," appended to the preface, it would be affectation not to recognise the name of one who unites a knowledge of the Alps, unique, perhaps, in its completeness, to an infinite capacity for taking pains.

We are told, and the book fully justifies the statement, that in preparing this edition, "every line of the text has been very carefully revised and corrected, the historical information having been considerably increased; the notices of the towns have been practically rewritten, particular attention having been devoted to their architectural monuments." The historical notices, indeed, are admirable models of terseness and clearness. That this is so, and that the information concerning the mountain districts has been brought quite up to date, while many places at present little known have been introduced to the notice of English travellers, is only what was to be anticipated in a book edited by Mr. Coolidge.

Six new maps of districts much frequented by English travellers form a special feature of this revised edition. One, of Zermatt, is on a scale of 1 : 50,000, while those of the environs of Lucerne, of Grindelwald, of the Upper Engadine, the Saasthal, and the district round Evolena, Arolla, and Zinal, are on half that scale. They are contoured at distances of 200 metres; the mountains are tinted brown, darkened as the height rises; the snows and glaciers are a pale blue. The maps themselves are excellent, but the tints do not produce a very satisfactory stereographic effect; indeed, we think that actually they have a contrary tendency. It may be that as the higher ground bears the darkened colour, and the snow region is almost white, the contrast is too violent. Be the cause what it may, the result is not quite a success. Still, notwithstanding this, the maps will be a boon to travellers. The introductory matter in this handbook is excellent, and we have observed only one omission. Avalanches, glaciers, structural geography are duly noticed, even natural history is not wholly forgotten, but geology is excluded. But in the course of two or three pages a general outline of the structure and geology of the Alps might have been given, and the attention of travellers called to the significance of the wonderful sections which are so often exhibited in Alpine regions.

We have dipped here and there into the two volumes, which include not only Switzerland, but also the Alps of Savoy and Piedmont, the Italian Lakes, and part of the Dauphiné, reading the accounts of the districts with which we are personally more familiar. Needless to say that we find them clear, accurate, and terse, yet full of information. The book, good before, is even better now, and cannot fail to be most useful to the British tourist.

T. G. B.

OUR BOOK SHELF.

A Handbook on the Steam Engine. By Herman Haeder, Civil Engineer. English Edition. Translated, with considerable additions and alterations, by H. H. F. Fowles, Assoc.M.Inst.C.E. (London: Crosby Lockwood and Sons, 1893.)

THIS is an excellent book, and should be in the hands of all who are interested in the construction and design of medium-sized stationary engines.

It is a real pleasure to find so much information gathered together, particularly when it is from the practical side of the subject. The number of text-books

on the steam engine is legion, but few are of any use to the engineer as distinguished from the student.

The book appears to largely consist of notes accumulated both in the drawing office and in the works. These are of great value, and particularly so because all dimensions have been reduced to British units, thus rendering possible a comparison between Continental and British practice.

A careful study of the contents of this book and the arrangement of the sections, leads to the conclusion that there is probably no other book like it in this country. The volume aims at showing the results of practical experience, and it certainly may claim a complete achievement of this idea.

It must not be imagined from these remarks that the steam engine has not been treated in any other manner than that of rule of thumb, a term often used by those who would place theory before practice in the training of an engineer. Take, for instance, the diagrams intending to illustrate the defects in valve gears, which may often be met with in practice; these make the different defects perfectly clear, and one can see at a glance where the mistake is to be found.

Section x. deals with the calculations for power and steam consumption, and section xi. explains the effect of the inertia of the reciprocating parts of a steam engine; with an ordinary amount of mathematics all these can be easily followed. Section xiv. is on boilers. This section is the weak part of the book, and in future editions should be considerably augmented with information having reference to the design and strength of boilers.

The book is fully illustrated, in fact, we are told in the preface that the letter-press has been reduced as much as possible to allow of the introduction of the numerous tables and drawings; among the latter there is an excellent illustration of a compound Willan's central valve engine with two cranks—probably the best engine of the kind to be had. Some of these illustrations have evidently been especially prepared with the intention of giving an idea of principles of construction to the reader, particularly those having reference to types of steam engines, various ways of arranging cylinders and cranks in double and three-cylinders, compound, and triple expansion engine. These outline diagrams are exceedingly clear. Other illustrations are sectioned and finished in such a way so as to render the details evident. All these points add considerably to the value of the work as a text-book for senior students in our technical colleges; for draughtsmen engaged in stationary engine work, and for mechanic engineers generally.

N. J. LOCKYER.

Heat. By Mark R. Wright. (London: Longmans, Green, and Co., 1893.)

"OF making many books there is no end, and much study is a weariness of the flesh." Truer words than these were never written, and they are specially applicable at the present day. Mr. Wright's addition to the literature of science is avowedly "written specially to meet the requirements of the Advanced Stage of Heat as laid down in the Syllabus of the Directory of the Science and Art Department." To say that the author has satisfactorily accomplished his design is, therefore, to give him praise. In an examinational text-book there is little, if any, scope for originality, and all the author can do is to develop new methods of treatment. This Mr. Wright has done to a small extent, and he seems to be in touch with the work that has been done in connection with his subject during the last few years. Of the 136 illustrations only thirty-five have been drawn for the book: the majority of the others being of the well-known stock character, which have "had their day" and should have "ceased to be" long ago.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Slickensides.

IN the account of M. Daubrée's experiments on the geological work of high-pressure gas (NATURE, July 6, p. 228), the following sentence occurs:—"In any case it is perhaps a little difficult to understand how a *single* movement of one rock surface over another . . . could produce anything like a perfect polish."

This recalls to my mind a freshly-made fault I examined in 1890, in a pit at Longcliff, Derbyshire. The rock was a moist, sandy fireclay or gannister; an area of about 80 feet square, lying on a slope of 35°, had slid down some 3 or 4 feet. The operations at the foot of the slope removed the support of the mass of rock above the sliding plane, and shortly afterwards it split across the middle, and the lower portion moved about

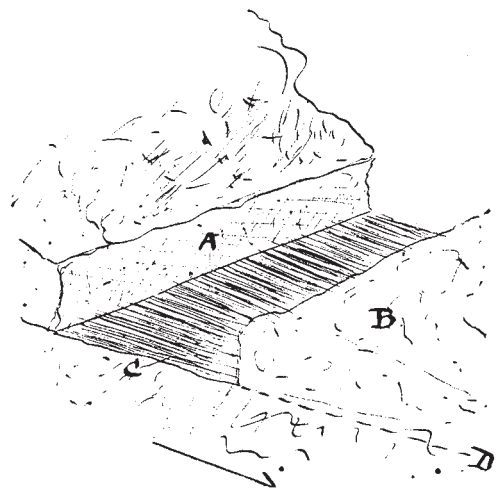

Diagram of fault at Longcliff Clay Pit.—A, Mass that slid down 4 ft. and then stopped: B, portion of A that slid 4 ft. further; C, Slickenside surface; D, fault or sliding plane.

3 feet further down, disclosing in the gap thus made the surface of the stationary rock. This surface exhibited every appearance of a typical slickenside; it was *highly polished*, *striated*, and even *blackened*, though the clay itself is cream-coloured. The striations corresponded with the direction of the movement, which had been a simple downward one.

Some slickensides may possibly be explained by reference to the action of high-pressure gas, but here at Longcliff was an unmistakable example of one caused by a "single movement of one rock surface over another," and it is very probable that the majority of ordinary slickensides have had a similar origin.

Mile End Road, London E., July 12. J. ALLEN HOWE.

Potstones found near Seaford.

PARAMOUDRA or potstones are known to geologists as existing in the chalk strata around Norwich and Belfast, but till lately I had supposed they were confined to those districts.

Last Whitsuntide, whilst enjoying a ramble along the chalk cliffs, east of Seaford, I was surprised to come across what seemed a real, but unusual potstone, lying among the stones below high-water mark, but which must, presumably, have originally fallen from the chalk above. Although consisting of a mass of chert, instead of pure flint like those near Norwich, in every other respect it resembles them. In form it is a large irregular cylinder and lies on its side, so that the sea water, when the tide rises, flows freely through it. It measures roughly between four and five feet in each direction, and the aperture has a diameter of twelve inches.

The enclosure of several large black flint nodules indicates that this peculiar shaped mass of chert has been formed since the flint itself segregated.