"It is not our purpose to dwell on this branch of the subject, which belongs rather to treatises on the physical properties of iron" (p. 49). We hope our authors may find more readers than we fear they will, because there are really some excellent mathematics in their book, even though the student must seek his electricity and magnetism elsewhere.

A Treatise on Elementary Dynamics. By S. L. Loney. (Cambridge: University Press.) It is, perhaps, difficult to define the exact functions of an English university press. Such a press could not continue to exist if it confined its attention to great scientific works, whose sale scarcely ever pays for their production. A university press nowadays feels itself driven to entering the lists with school and college publishers of all sorts; but this cannot relieve it from the responsibility of securing that its *imprimatur* should not fall on the title-page of even elementary scientific works which are not up to the highest level of modern teaching. With books like Heath's *Optics* and Lamb's *Hydrodynamics*, confessedly written for students, the Cambridge Press did more than maintain the reputation of its *imprimatur*; but the wisdom of its judgment when it determined to add yet another to the myriad of mediocre text-books on elementary dynamics may well be questioned. Mr. Loney's work is beautifully printed, and it has a wide range of problems, in many cases selected from recent examination papers. But it does not seem in any other respect superior to Garnett's *Elementary Dynamics*, while in our judgment it is much inferior to Macgregor's *Kinematics and Dynamics*, recently published by Macmillan, which covers, to a considerable extent, the same ground. We have sought in vain for any real novelty of treatment. There are the old definitions and the old statements; and if Mr. Loney has not the sacrilegious hand of a Clifford or a Mach, he was bound, at least, to annote the old words into some form of intelligible logic. Thus we note that speed and velocity are defined as "rates"; but the student is left to understand instinctively what a "rate" is, without a warning of the many difficulties associated with the conception—difficulties which the student will very soon find for himself, and which he will hardly master without a clear appreciation of the elements of infinitesimal geometry. The measurement of variable velocity is defined in the good old way, which literally involves a knowledge of the thing to be measured before it can be measured. "If the motion be not in a straight line the velocity is not the same as the speed" (p. 5). The reader might almost suppose they were the same if the motion be in a straight line. The proof of the parallelogram of velocities seems only to hold for constant velocities—"Now since the two coexistent velocities are constant in magnitude and direction" (p. 7). The proof of the parallelogram of accelerations wants a good deal more explanation if it is intended for variable acceleration, and the figure is badly drawn. "A particle is a portion of matter which is infinitely small in all its dimensions"—but is a "particle" of water *one* molecule, or perhaps even an atom of hydrogen? As for matter, force and mass, we have the usual run of contradictories. Combining these old definitions of matter and mass, we should conclude that "the mass of a body is the quantity of that which can be perceived by the senses"; but this would never lead us to a scientific measure of mass. Of Newton's Laws our author says "No formal proof, experimental or otherwise, can be given." This is because the first two laws involve, in rather obscure language, definitions of accelerations and mass, and are not real laws at all. The third law is an experimental law, and one which several atomic facts warn us not to extend rashly beyond the limits of experiment. The student might be led by p. 203 to believe that Newton's experimental law of impact had a wider field than the examination room. It is not only that the "co-efficient of restitution" depends on the velocity, but it is also a function of the *shape* of the colliding bodies; hence the evil of saying (p. 261)—"The law enunciated by Newton would be found true in all cases." The proof of Newton (§ ii., prop. 1.) seems fallacious as it stands. Suppose the velocities at P and Q had been plotted out from any point T' not the intersection of the tangents, the argument seems to show that the acceleration must be in the direction OT'. We have referred to these points not to prove that Mr. Loney's book is a *very* bad one—it is quite up to the level of the half-dozen or more text-books we have received this year—but merely to question whether it is up to the high level of the scientific works hitherto issued by the Cambridge Press.

An Elementary Treatise on Heat. By H. G. Madan. (Rivingtons) This is an excellent book to satisfy the insatiable desire of boys to understand anything and everything mechanical. The scientific part of it is clearly and very carefully written by one who has evidently had considerable experience in teaching. The engravings are good, and in many cases differ from the hackneyed types common to works of this kind. If the description of locomotive and marine engines is, perhaps, hardly a part of a treatise on heat, it will be none the less welcome to the boyish reader, to whom the iron slave presents an irresistible fascination. As for the negro on p. 20 we feel how much the *tout ensemble* enables us to realise both heat from friction and cold from insufficient clothing! The book ought to have a good effect in leading its readers up to the more scientific works of Maxwell and Balfour Stewart, and we only wish its price put it more within the range of the pocket-money of every schoolboy of our acquaintance.

Hydraulic Motors: Turbines and Pressure Engines, for the Use of Engineers, Manufacturers, and Students. By G. R. Bodmer. (Whittaker.) The want of any extensive English hydraulic literature would be more felt did not our coal supply lead us to neglect water-power. Mr. Bodmer has endeavoured to partially supply this deficiency by a comprehensive work on Turbines. As may naturally be supposed, he has had to draw largely, although not entirely, on German and American sources for both theory and design. The exact practical value of his work we must leave to the judgment of our technical contemporaries. The mathematical portion appears, however, carefully done, although hydrodynamically little but the old theory of "parallel sections" is made use of. Mr. Bodmer is evidently fond of analysis, and our only fear is that his pages may have a depressing effect on the engineering student who has been taught in all difficulties to rush to his drawing-board for aid. The patient reader will not, however, find the analysis really stiff, although only a practical experience of turbines would enable us to feel confident that the theory of "parallel sections" is sufficiently exact for technical purposes.

Spacial and Atomic Energy. Part I. By Frederick Major. Mr. Major, having found his key to the universe "unsuited for newspaper publication," is now throwing it at the public in fragments. The following lines will convey the key to Mr. Major:

"The principle of manipulating mass to gravitating force, or ponderosity exhibited, can be replaced by one that time of force, the equivalent of momentum, is the resultant of the time that force, applied in one direction to move a body, takes to stretch through it while being interfered with by existing greater force from all others."

We hardly think Hegel has given a more lucid description of Being than Mr. Major of "the air vacuum fluid." We fear Mr. "Paradoxer" Major or Maximus is not "rotating in a true circle or spiralling inwards," for his energy is evidently being dissipated.

We have received the first two *Lieferungen* of that portion of the *Encyklopaedie der Naturwissenschaften*, which contains the "Handbuch der Physik." (Breslau: Trewendt.) The editor is Prof. Dr. Winkelmann, of Jena, and he is assisted by a fairly strong and numerous staff. The present parts deal with *Allgemeine Mechanik*; and, after general notions of mass and units, pass to statics, dynamics, weighing, pendula, universal gravitation, and elasticity. As a work of reference we believe this book will be of considerable value, although its contents do not present much novelty of treatment. Dr. Auerbach, to whom these parts are principally due, has compiled from well-known sources, and gives fairly copious references to recent literature. We were quite prepared to judge the work on its own merits; but, as the publishers send us with the book a ready made review, they may prefer to see a portion of it quoted here:

"Die Probleme, welche hier ihre Erledigung finden, werden allgemein und scharf auseinander gesetzt. Die aufgeworfenen Fragen finden eine erschöpfende Beantwortung und Darstellung, ohne dass sich die Verfasser hierbei in Einzelheiten verlieren. Die mathematische Behandlung ist durchweg elegant und instructiv."

We find this puff "durchweg elegant und instructiv," and only regret we cannot describe the work as more than useful—so far, possessing none of the high average brilliancy of the long series of articles on mathematical physics in the *Encyclopaedia Britannica*.

CORRESPONDENCE.

CHILDREN'S LANGUAGE IN THE OMANI DIALECT OF ARABIA.

Queen's College, Oxford: Nov. 11, 1889.

The second part of a valuable study of the Arabic dialect of Oman, by Surgeon-Major Jayakar, has just appeared in the last volume of the *Journal* of the Royal Asiatic Society. At the end of the paper the author gives a list of the words used by Omani children which differ from those of the current language. The list is of considerable interest to the comparative philologist; and as it is printed in Arabic characters I reproduce it here in Latin letters for the sake of those who are not Semitic scholars. The words are as follows:

animal	tîtîh
bad	kanhhîh
beat	dahhhh, bubba
bird	kûkûh
bread	bayziyah, khabaiziyah
breast	dîdîh
brother	dâdâh
camel	'â'âh
cat	wâwûh, qashshûh
clothes	bûbû
come	ta'ah
cow and ox	ma(?)jûhh
dig	khâbûh
dirty	qûqû, akhîyyah, akhkh
dog	wâwâh, wahhwahh
donkey	ta', t"ûh
eye	lûlûh
fall	bûff
father	bâbâ
fire	bâbûh
fish	ambahh

food...	ḥama, hammah, nam, nammah, namnam
fowl...	kûkûh
goat...	tîtih
hot	wûfûh, nânûh
leave off...	tûtû
lift	ill
little	mânih
meat	lahhîmîyah
milk...	kukh
mother	mâmâh
nothing, none ...	nânâkh
old woman	hhabbûh
pain...	wahhûh
pretty	tûtûh
be quiet	wushsh
sleep	bûhû, lûlû
small	tattûn
stick	addahh
water	ambûh, ambûwah.

Some of these words are modifications of words in ordinary use, like the words for "bread," "meat," or "come." The donkey-boy of Cairo will similarly shout *ta'* for *ta'al* or *ta'alah* "come." But it will be noticed that a good many of the words are onomatopoeic, among which I would signalise *wusheh* "hush," which, in the language of the Egyptian donkey-boy, becomes *'ushsh*. As for *bâbâ* "father," we must remember that no *p* exists in Arabic, *petits pois*, for instance, being pronounced *betits bois*.

A. H. Sayce.

SCIENCE NOTES.

The Anthropological Institute is to be congratulated on the November number of its *Journal*, which contains an exceptional amount of interesting matter. Mr. Tregear sends from New Zealand a long account of the Maoris, in reply to the code of questions issued by Mr. Frazer at Cambridge. Mr. A. Thomson gives an exhaustive description of certain skeletons of the Veddahs of Ceylon, now in the Oxford Museum; Mr. Hyde Clarke discusses some curious rights of property in trees; Mr. Ling Roth offers a comprehensive review of the modes of salutation in different countries; the Rev. H. G. Tomkins has a learned paper on the shepherd-kings of Egypt; Dr. Codrington writes on the so-called poisoned arrows of Melanesia, which he believes are not poisoned at all; and Mr. H. Balfour enters into a minute description of the structure of certain composite bows from Persia, preserved in the Anthropological Museum at Oxford.

Mr. G. Horne, the well-known salmon-fisher and bird-lover of Hereford, has just issued a *List of the Birds of Herefordshire* (Hereford: Jakeman & Carver), which will be useful to all who are studying the avi-fauna of that county. Much care has been taken to include only the species which have incontestably occurred in Herefordshire. Of course the black woodpecker (*Picus Martius*) is conspicuously absent. Naturally, littoral birds cannot be expected to be well represented in so inland a county; and yet it is remarkable how many have been procured on the banks of the Wye, as if the birds of North Wales used that devious river's course along which to find their way to the Bristol Channel. As we write, a fulmar petrel has been obtained—the first adult specimen as yet taken in the county. Mr. Horne has done his work well, and deserves the thanks of all who dwell near the "sweet inland murmur" of the Wye.

PHILOLOGY NOTES.

Prof. Daniel G. Brinton, of Pennsylvania, announces a new work under the title of *Rig Veda Americana*, containing sacred songs of the ancient Mexicans. The book will probably be very valuable; but "Rig Veda Americana" jars on the ears of scholars, considering that Rig Veda is a masculine.

M. Raoul de la Grasserie, of Rennes—who has already written several papers on the psychology of language, which have been favourably noticed in the columns of the Academy—will publish very soon an important work on comparative grammar. His subject will be the grammatical relations studied in their idea and expression. This new volume—entitled *De la Categorie des Cas*—is dedicated to Prof. Terrien de Lacouperie. In the last part of the *Zeitschrift der Sprachwissenschaft* of Teichmer was a valuable paper of his—"De la Classification des Langues." The same scholar has published lately a pamphlet—*De la Famille Linguistique Pano*, a group of languages from South America; and he has reprinted from the *Revue de Linguistique* two articles: "Esquisse d'une Grammaire du Timucua, Langue de la Floride," and a "Vocabulaire Timucua." In collaboration with Mr. Albert Gatschet, the American archaeologist, he is preparing a collection of texts in the same language, with translation and analysis. We understand that Dr. de la Grasserie intends, when he has finished his cycles of works on the psychology of language, to devote himself to the study of the languages of South Africa. Among his forthcoming works, we see already a grammar of the Kaffir language.

Dr. Glaser, the well-known explorer in Southern Arabia, has just published the first part of a very valuable work, *Skizze der Geschichte Arabiens*. (Munich: Straub.) His facts are derived from the epigraphic materials, mainly collected by himself during his three adventurous journeys into the heart of Arabia; and they are likely to surprise most readers. Arabia, which has usually been looked upon as commencing its history with the rise of Mohammedanism, is shrown to have been the seat of powerful kingdoms and a high culture as far back, at all events, as the age of David. Dr. Glaser has made it clear that the Minaean kingdom, instead of being contemporaneous with the Sabaean, as has hitherto been supposed, really preceded it; and, as the Sabaean power was already flourishing in the eighth century B.C., the antiquity of its predecessor can be more readily imagined than defined. Minaean colonies made their way to the frontiers of Palestine, and seem there to have borrowed and modified the letters of the Phoenician alphabet. In later times the history of the Jewish kingdom in Southern Arabia has a special interest, and the inscriptions copied by Dr. Glaser throw upon it a vivid light.

M. Delattre has published a second edition of his essay on *Les Chaldéens* (Louvain), as well as two articles on the cuneiform tablets found at Tel-el-Amarna. The re-publication of the first-named work has been occasioned by Dr. Winckler's recent *Untersuchungen zur Altorientalischen Geschichte*. M. Delattre claims priority for the view that the Chaldeans represented a population hostile to the Babylonians; and he maintains that Dr. Winckler deliberately ignores the fact that the view had been propounded by himself more than ten years ago. The learned world will await with some curiosity Dr. Winckler's reply. M Delattre is a careful and conscientious compiler. It is only a pity that he has such an overweening confidence in himself and his own opinions, and that his knowledge of English should be so imperfect.

Dr. Krall has proposed a new explanation of the Egyptian name given to Joseph (*Ueber den ägyptischen Namen Josephs*). He sees it in the Egyptian Ze(d)-Month-ef-onkh, and reminds his readers that the monuments afford examples of Semitic foreigners who received Egyptian names. He also finds illustrations of the transference to the government both of property and of the persons of the owners themselves in default of the payment of taxes. It was during the age of the Hyksos that the imperial fiscal system of Egypt seems to have been organised. Before that epoch the feudal chief, rather than the Pharaoh, received the rents of the soil.

MEETINGS OF SOCIETIES.

Clifton Shakspere Society.—(*Saturday, October 26.*) E. G. Crew, Esq., vice-president, in the chair.—Mr. Leo H Grindon, in a paper on "The Figurative Language of Shakspere," said that the figurative language employed by Shakspere did not differ essentially from that of our own everyday colloquial usage; but he made consummately brilliant use of his opportunities. All appellations of natural objects and phenomena can be used to picture the emotions and operations of the human heart. The intellectual faculty which rules and directs the use of them for such purposes is the poetic, so that all genuine figurative language is in reality a form of poetry. The literal or physical sense of a word may be compared to one's material body—very good in itself, no doubt, but the worthiness of which consists in its suitability to serve the purposes, and fulfil the behests, of the intellect and the affections. Words are thus beautiful emblems of man himself, who, in turn, is a word of the Creator. Figurative language pervades our daily talk. We need, however, very little consideration to see that in the hands of a master the empire of metaphor must needs be constantly widening. Shakspere employs words in figurative senses not previously used. The Shakspere metaphors cover the wide expanse of nature; hence, the incomparable value of Shakspere as an educational lever. It would be a most useful exercise to go through the dramas, one by one, selecting examples of every principal kind of figure, then classifying them and contemplating what is signified alike in the letter and the spirit. These diligently collected and collated would constitute no trifling lesson in that grandest of the sciences, the science well designated by Bacon, "respondence." The picturesque portions of Shakspere—those which are something more than dramatic colloquy—are so much admired by people of taste and culture because they say what is true in a way so very easy to understand (this because it is the figurative way), and at the same time in the most agreeable manner possible (this also because it is the figurative manner). Taking "All's Well that Ends Well," for example, we notice how exquisite are the lines in which Helena gives expression to the hope supporting her in her adverse circumstances (IV. iv. 31-3), or in which the king compares himself to a bee unable to work (I. ii. 64-6), or in which Helena refers to Bertram (I. i. 97-8), or again in the Countess's bold metonymy (III. ii. 53). These may be taken as an intimation of the briefest and simplest kind of the wealth of wisdom and poetry to be found in the figurative language of Shakspere. So long as a sense of the sublime and a love of the beautiful remain integral portions of human nature, so long will it continue to be a fountain for ever overflowing with waters of solace and delight.—Mr. E. J. Sheppard read a paper on "'All's Well that Ends Well' considered as a Stage Play," in which, after a summary of the stage-history of the play as given in the "Henry Irving" *Shakespeare*, he said that the actions and scenes in this play are as a whole monotonous, and lack the freshness and sprightliness of Shakspere's earlier comedies, although most of the characters are complete and finished portraitures. It is a play to be read and re-read with care and pleasure. Interest in the heroine is concentrated and sustained. She is the author's ideal of true womanhood and self-devotion, only equalled by Imogen and Hermione. Her devotion is the key to the play. Indomitable resolution and decision of character are combined with a gentleness and tenderness which throws the unworthiness of its object, Bertram, into the strongest contrast. But given the most talented exponents of the leading characters, and the minor