been staying for ten days in London, and two long white paraffin candles have been standing on the drawing-room chimney-piece all the time. We have not been using the candles; but the wicks were ignited before we came to the rooms, as it is very common to do with new candles. I noticed two days ago that the wicks were all covered over with what I at first took to be some kind of mouldy growth, but what I now find is dust which has attached itself in fine hair-like tufts to the wicks of the candles, sticking out in all directions exactly like the tufts of iron filings on a powerful magnet.

I am well acquainted with this phenomenon in the vicinity of an electric machine which is kept working continuously. For example, we find it constantly in the neighbourhood of the electrifying machine of Sir W. Thomson's siphon-recorder, where the insulating supports collect great quantities of dust, and generally in these curious forms. From the appearance of the deposits on the wicks of the candles I have very little doubt that somehow or other electric attraction has played an important part in the collecting of the dust and the formation of the filaments. But whence the electrification has come I am unable to say, unless it be that a warm current of air, which I find is always passing upwards past the candles from a wooden mantelpiece warmed by the fire, electrifies the paraffin candles and causes the phenomenon I have described.

J. T. BOTTOMLEY

39, Eastbourne Terrace, London, W.,
October 25

Simson's Line

MR. J. S. MACKAY of the Edinburgh Academy, though not able to trace "Simson's line" to Simson's works (see my notice of Dr. Casey's "Euclid," NATURE, October 23, p. 607), has furnished me with the following account, which may be of general interest:—"The theorem that the orthogonal projections of a point on the circumference of a circle upon the sides of an inscribed circle are collinear is ascribed to Robert Simson by Catalan in his 'Théorèmes et Problèmes de Géométrie Élémentaire,' and he speaks several times of 'la droite de Simson.' This book of Catalan's is, I fancy, better known in the United Kingdom than many other Continental works where the same statement is made; and I conjecture that we have adopted the name from Catalan. It may, however, be the case that we have taken the information from Poncelet's 'Propriétés Projectives,' § 468, where it is said that Servois attributes the theorem to R. Simson. The passage where Servois makes this ascription occurs in Gergonne's 'Annales de Mathématiques,' vol. iv. p. 250, and it is unsatisfactory enough: 'La méthode qui vient d'être indiqué plus haut pour déterminer le point C repose sur le théorème suivant, qui est, je crois, de Simson.' I cannot carry the ascription of the theorem to Simson farther back than to Servois, and though I am not positive that Servois has made a mistake, yet I think it highly probable. The extension of the theorem to the oblique projections is attributed by Catalan to Chasles. It is due to Poncelet, and is given in the section quoted above." THE WRITER OF THE NOTICE

October 27

A Rainbow after Sunset

ON the evening of August 29 the almanac sunset for Ireland south is placed at 6h. 51m. Happening to look out to south-south-east I saw a well-marked, though not very brilliant, portion of a rainbow in a shower cloud just above the horizon. It was not a perfect bow, but what sailors call *a dog*. I looked at the clock and saw that it was 7.15 p.m. Knowing that the sun had set, and being curious to see what could have produced the bow, I immediately went out and examined the western sky. The sun had indeed set, but there was a bright red glow and some flocculent clouds were tinged strongly with a brilliant rosy red. It was plain that the rainbow was caused by reflected light.

Stonyford, Co. Kilkenny JAMES GRAVES

TROPICAL AFRICAN MOUNTAIN FLORA

A VERY interesting collection of plants has been brought to Kew by that intrepid African explorer Mr. Joseph Thomson, made during his late journey into the Masai country. They have been examined by Prof. Oliver, and consist of about thirty-five species from Kilimanjaro at 9000 to 10,000 feet of elevation; a few from a crater near Lake Nairasha at 7000 to 8000 feet elevation; thirty-four from the Kapté plateau at 5000 to 6000 feet; and fifty-eight from Lykipia at 6000 to 8000 feet.

These collections exhibit the mingling of North Temperate types with others characteristic of Southern Africa, for which previous discoveries had prepared us. Of these the most interesting are, as new to Tropical Africa, an Anemone, a Delphinium (very different from the Abyssinian *D. dasycaulon*), and a Cerastium of remarkable habit. Of South African forms the most striking is the handsome arborescent Rutaceous plant, *Calodendron capense*, the "wild chestnut" of Natal, to the north of which it had not previously been found. Of northern forms is a Juniper, another genus unknown to Tropical Africa, and which was found forming groves at an elevation of 6000 to 8000 feet, and itself attaining a height of 100 feet! it is the *J. procera* of Abyssinia. A *Podocarpus* gathered along with the Juniper, and also attaining 100 feet in height, is probably the *P. elongata* of Abyssinia, which, or a near ally, also occurs in South Africa. The only other Conifer previously found in the equatorial regions of Africa is the *Podocarpus Mannii* from the peak of St. Thomas in the Gulf of Guinea. J. D. HOOKER

AN ELECTRO-DYNAMOMETER WITH EXTREMELY LIGHT SUSPENDED COIL

IN my former communications to NATURE it has, I believe, appeared (1) that the induction currents used by Du Bois-Reymond, Duchênne, and other observers for physiological and therapeutical purposes were only arbitrarily and very insufficiently measured; (2) that the simplest and most practical instrument for their measurement is a delicate electro-dynamometer; (3) that in consequence of their extreme smallness, every available method must be employed to reduce the sluggishness of such an instrument without impairing its accuracy; (4) that an instrument of this character, shown by me before the Physical Society at Oxford in June 1882, had answered very well, indeed better than a more expensive apparatus designed by Prof. Kohlrausch for larger currents.

It was, however, objected that there is an insurmountable difficulty in keeping a good contact between the aluminium and silver-gilt wires used in it for suspended coil and suspending wire respectively.

At the British Association meeting in Montreal I was able to show an improved form of the contrivance, in which this difficulty was surmounted; and, in addition, a method of damping the oscillations, which, while improving the insulation, enabled the weight of the suspended coil, on which the force of the torsion couple depends, to be varied between limits practically infinite.

The contact difficulty is met by taking a small plate of ebonite 3 mm. by 5 mm. in size, and tapping into it two small gold screws, long enough to project through, and carry two little nuts on the opposite sides. To the two screw heads the ends of the aluminium coil, bent into rings and filed flat, are firmly screwed; under the two nuts are twisted the ends of the gilt-silver suspension wires; the nuts are then similarly screwed home. Ebonite is elastic enough to render the junction air- and fluid-proof.

The second requirement was attained by coiling the aluminium wire on a thin tube of cork, and immersing it in a vessel filled with petroleum oil. Aluminium is about two and a half times heavier than water, nearly three times the specific gravity of this oil; whereas cork floats on it. Consequently, by properly proportioning the amount of cork relatively to the wire coiled on it, any desired specific gravity from absolute flotation to that of aluminium itself can be obtained. It is even practicable to load the coil, like a Sykes's hydrometer, by dropping

glass beads on a vertical aluminium wire in the axis of rotation. Here they have scarcely any influence on the swing of the coil. The damping effect of the oil, which is contained in a small globular receptacle, like a fish-bowl, between the fixed coils, is very complete and satisfactory. I had the pleasure of presenting the first rough instrument thus made to Prof. Johnson for the physical laboratory of McGill College. W. H. STONE

LIBRARY CATALOGUES[1]

THERE is a wide difference in function between the old "literary and philosophical" libraries, such as are now dying out in various parts of the country, and the "free public" libraries which are steadily, though remarkably slowly, on the increase in England—libraries which lay before readers of all classes Mr. Herbert Spencer's denunciations of what an evil sign of the times their organisation for the diffusion of knowledge is, compared with Lord Brougham's old Society for the same purpose.

The old library was in principle a museum of books, where, after a few readers who might be trusted to handle the choice volumes cautiously and reverently had enjoyed the luxury of making themselves acquainted with their contents, each of such volumes was put up in its place to form part of the "collection" of which the librarian was proud, and from which he was as little anxious to promote abundant issues as the proprietor of Dickens's old curiosity shop was to make sales of its contents!

But the other—the modern—type of library, is a stock of the literature for which either the public itself manifests the greatest appetite, or philanthropists and public educators are most desirous to disseminate and cultivate a taste: the happiest fate wished for any book in such a store being that it should be fairly thumbed to death. The new library is worked on the principle of the city warehouse where the whole stock should be turned over several times in the year; and anything which cannot be "moved" is an incubus upon which the manager's eye falls day after day with more and more impatient determinations.

The catalogues of the respective types of library accordingly should be widely different productions. That of the former should be an accurate register of sizes, dates, and editions; the compiler fairly taking it for granted that its consulter is intimate with the subject he is inquiring upon, and that a difference, even in the edition, from the one sought, may make the book as far from what he wants as Blackstone's "Commentaries" from Cæsar's.

But the main object of the catalogue of the new library is again like that of the commercial advertisement. Its consulters are not such as know exactly what they want, and its maker is anxious to display in it his books and their contents to the best advantage; like the salesman, his greatest triumph being, not to supply a customer with the article most in demand, but to allure him to higher qualifications and raise a new taste which will lead him along tempting paths of expenditure. In drawing it up, accordingly, the librarian will hardly take a better example than that of the commercial world in its advertisements of books; to be followed soberly, however, for it would doubtless raise a distrust in catalogues if they heaped up the favourable critiques which are to be found there. Nor, again, are the frequenters of a free library able to judge from titles which pleased authors' fancies what those authors' books contain, and an important matter is to bring within their ken the contents of volumes many of whose titles are indefinite, some figurative, and not a few positively misleading or absurd. In such an institution, therefore, where the books may not be examined before taking out, or the librarian have a literary discussion with each applicant, time can hardly be better spent than in making the catalogue supply as much as possible this information.

The handsome and carefully-printed catalogue now under notice, giving 100,000 references to 25,000 volumes, has carried this out to a very creditable extent; under most collected essays and doubtful titles giving a list of the subjects and the ground gone over, and under each subject-head referring the reader to the principal works where it is treated upon, or from which information may be picked up, whereas many other catalogues have placed together only those books in whose titles the name of such subject occurs. Thus under the head of Canada, while thirteen titles are quoted containing the name, there are also placed before the reader thirty-two titles which do not contain it. Although there is no book upon a special subject like "Carpets," he is referred to "Manufacturing Industries"; and under that burning subject, "Capital and Labour," though not a book bearing the title is to be found, master or man is referred to sixteen books on political economy. A danger in attempting this is shown, however, by comparing any two such catalogues together. Not half of the books in a large library bearing upon any great subject can be thus quoted, and a very intimate knowledge is required to select those of most general superiority; and even then a shade is unfairly thrown over books of nearly equal ability. Why, for instance, should only four of Hugh Miller's books be quoted under the head of Geology, and only two of those of the Geikies?

Of course this mischief increases as the greatness and importance of the subject increases. It is easy to cite all the books devoted to an account of New Zealand, but useless to attempt to give a full list of those which bear upon Europe or Asia. This catalogue carefully divides Africa into Central, East, North, South, and West, and quotes ninety-four works upon it, while upon America seventy-four make up the selection. The literature of Edward IV. may be fully compiled in a few titles, yet the forty-five works relating to Charles I. and II. do not nearly exhaust the books directly touching upon matters of that period, and sixteen works upon the English Commonwealth is not a great number to refer readers to.

Such a collection of books as the Halifax Library must have its deficiencies. Why are there only two books on the cruise of the *Challenger*, neither of them Sir Wyville Thomson's, whose name is not to be found? And if Lardner's Cyclopædia entire is not now thought indispensable, surely Thirlwall's "Greece" and some of his later books ought not to have been passed over.

It is difficult to see the advantage of the puzzling substitution in this catalogue of *A* for 10,000. It saves nothing till 10,000 is reached, and as soon as 11,000 is reached it takes up more room than the figure which requires no explanation. We are told that the Catalogue enumerates 25,000 vols., but not what substitute is made or to be made for 20,000. Again, if a —— is used to save printing an author's name a second time, why should "Capital and Labour" be printed in full nineteen times, or "United States" 125.

The printing has been unusually well corrected, but we are inclined to ask, were the "wines of Cyprus" in the head of the compiler when he quoted Mr. "Cyprus" Redding as the author of "Modern Wines"?

The date of 1882 on the title-page, while the quarterly reviews come down to the bound vols. for 1883 with tables of their contents, is explained by the first part of the work, consisting of a catalogue of the novels and books in the juvenile department which were "most in demand," being issued at the earliest date possible, Part II. containing all the more important classes not being completed till this

[1] "Catalogue of the Halifax Public Library, Lending and Reference Departments." (Halifax, 1882.)