are given, and these few are not all that could be desired. This 'manual of manipulation' is mostly given up to the discussion of such topics as 'units of mass and force,' 'inertia,' 'corpuscular theory of heat,' 'what is electricity?' etc., closing with several pages of 'odds and ends.' In short, this part is any thing but a manual of manipulation: it is rather a dumping-ground for the disconnected contents of one of the author's note-books. The test-questions and solutions to problems in the author's 'Elements of physics' fill the remainder of the little volume, and will, without doubt, be of value to those teachers who use his earlier book.

The book will prove a disappointment to most teachers. It is really a supplement to Mr. Gage's 'Physics,' but the matter which it contains should have been reserved for use in the preparation of a second edition of that work.

The 'Problèmes de physique' of Jacquier is too meagre for a text-book, too full for a mere collection of problems. It is probably intended to supplement a course of lectures. The reader who is familiar with the ordinary elementary text-books of physics will find little really new or inspiring here, but rather the old, more or less satisfactory demonstrations, without the calculus, of the laws of centrifugal force, the simple pendulum, the flow of liquids from an orifice, the foci of lenses, etc., presented as the solutions of problems. The ordinary student would find this very tedious. The part devoted to heat, with its uncompromising applications of 'binômes de dilatation,' etc., would be salutary exercise, perhaps; but it reminds one of the 'school of the soldier.' We can imagine no one but an enlisted man going through it. Of course, it would be unfair to imply that the author has in no point improved upon the work of other makers of elementary books. His second proof of the law of centrifugal force almost avoids the familiar assumption that unequal things are equal; and his page devoted to showing how the one fluid theory accounts for electric attractions and repulsions would be new and interesting to many readers.

The book concludes with a collection of a hundred and seventy-one 'problems for solution,' given without answers. These, with the exception of seventeen which deal with chemical equivalents, are of about the same character as the problems in the last edition of Everett's 'Deschanel,' and will possibly be welcomed by the weary makers of examination-papers.

NOTES AND NEWS.

Mr. Alexander Agassiz's resignation of his position as a fellow of Harvard college was naturally accepted by the corporation with great reluctance. The *Bulletin* of the university just published contains the formal votes taken at the meeting of Oct. 24, which state "that the wide range of his sympathies and interests, the confidence and affection which he inspired, and the varied information which he possessed both as a man of business and as a man of science, made his services as a fellow of singular value to the university; that his great gifts within the past thirteen years to the scientific departments, and especially to the Museum of comparative zoölogy, which amount to more than half a million of dollars, make him one of the chief benefactors of the university, and entitle him to its profound gratitude."

— The *Harvard university bulletin* for January contains a further instalment of Mr. Winsor's collation of the Kohl collection of early American maps, and the beginning (267 numbers) of another of Mr. Bliss's valuable indexes to map literature, in which the various publications of the London geographical society, together with the two principal London geographical journals, — *Ocean highways* and the *Geographical magazine*, — are treated in the same manner as he formerly indexed *Petermann's mittheilungen*. It will prove exceedingly convenient.

— The Ottawa field-naturalists' club makes a rather remarkable showing for so young a society. It has a membership of about a hundred and fifty, and an annual fee of a dollar. It has just published the fifth number of its Transactions, a pamphlet of a hundred and fifty pages, and yet has no debt. The pamphlet contains some matter of a general interest, particularly an article by Mr. W. P. Lett on the deer of the Ottawa valley, — the moose, caribou, wapiti, and Virginia deer, — and one on phosphates by Dr. G. M. Dawson.

— A course of twelve lectures on geology will be given on Thursday afternoons during February, March, and April, beginning Feb. 12, by Prof. Daniel S. Martin, at No. 58 West Fifty-fifth Street, New York. These lectures are designed especially, though not exclusively, for ladies, and are held in the building occupied by Rutgers female college.

— The Saturday lectures during February and March, under the auspices of the anthropological and biological societies of Washington, will consist of the following: Professor John Fiske, Results in England of the surrender of Cornwallis; Dr. George M. Sternberg, U.S.A., Germs and germicides; the Hon. Eugene Schuyler, The machinery of our foreign service; Mr. William T. Hornaday, Natural history and people of Borneo; Mr. Charles D. Walcott, Searching for the first forms of life; President E. M. Gallaudet, The language of signs, and the combined method of instructing deaf-mutes.

— The *Records* of the Geological survey of India, vol. xvii. part iv., contains a paper on Mr. H. B. Foote's work at the Bilba Surgam caves, in which the

existence of man in a low stage of civilization was ascertained by the discovery of a "well-made bone-gouge, and of two pieces of stag-horn, which have been cut with some sharp instrument."

— Hegnette, in the *Bulletin technologique des écoles nationales des arts et métiers*, describes a new ceramic product from the waste sands of glass-factories, which often accumulate in immense quantities, so as to occasion great embarrassment. The sand is subjected to an immense hydraulic pressure, and then baked in furnaces at a high temperature, so as to produce blocks of various forms and dimensions, of a uniform white color, which are composed of almost pure silex. The crushing-load is from three hundred and seventy to four hundred and fifty kilometres per square centimetre. The bricks, when plunged in chlorhydric and sulphuric acids, show no trace of alteration. The product has remarkable solidity and tenacity; it is not affected by the heaviest frosts or by the action of sun or rain; it resists very high temperatures, provided no flux is present; it is very light, its specific gravity being only 1.5; it is of a fine white color, which will make it sought after for many architectural effects in combination with brick or stone of other colors.

— The Royal academy of sciences of Turin gives notice that the fifth Bressa prize will be given to the scientific author or inventor, whatever be his nationality, who during the years 1883–86, according to the judgment of the academy, shall have made the most important and useful discovery, or published the most valuable work on physical and experimental science, natural history, mathematics, chemistry, physiology, and pathology, as well as geology, history, geography, and statistics. The term will be closed at the end of December, 1886. The value of the prize amounts to twelve thousand Italian lire. The prize will in no case be given to any of the national members of the academy of Turin, resident or non-resident.

— We regret to announce the death of Dr. J. Gwyn Jeffreys of Kensington, Eng., well known for his conchological researches. He died suddenly on the 24th ult. We hope in a future number to give some account of his scientific work.

— Dr. Ch. Amat has devoted some study to the Beni M'zab, — a Berber people whose territory was definitely annexed by France about two years ago, and who are described as active, sober, provident, economical, and intelligent. He remarks that the position of woman was higher among them before the introduction of Islamism. Their cemeteries, containing tombs of large worked stones, with a line of pots, plates, ostrich eggs, etc., about them, are referred to as survivals from the funeral feasts of the ancient religion. These people occupy seven towns, having a population of over thirty thousand, and are engaged in commerce.

— Capt. Poldrugo of the Austrian bark Filadelfia, from Cape Town to New York, reports an earthquake at midnight of Jan. 2, extending in an easterly and westerly direction. At the same time, he saw a large white spot on the water. He was in latitude 1° 10′ north, longitude 24° west, at the time.

— Vol. vii. No. 2, of the *American journal of mathematics*, has just appeared, and contains the following articles: 'A memoir on the Abelian and theta functions,' by Professor Cayley (this is the continuation of Professor Cayley's great memoir, the first three chapters of which appeared in vol. v. of the journal; the present article contains chapters iv.–vii., and treats principally of the case where the 'fixed curve' is a quartic both in the plane and in space); 'Solution of solvable irreducible quintic equations without the aid of a resolvent sextic,' by George Paxton Young of University college, Toronto (Professor Young assumes Jerrard's trinomial form for the quintic, finds the criterion of its solvability, and finally solves the equation in all the possible cases); a note on Maclaurin's theorem, by Hermite; the first part of a memoir on the algebra of logic, by Mr. C. S. Peirce, in which the author studies the philosophy of notation.

— No. 5 of the Izviestiya of the Russian geographical society, contains, among other things, Uspenske's account of the Island of Hainan, obtained from Chinese sources; Iwanow's report of his ascent of the Elbrus; Istomin's ethnographical journey to Archangel, and a long paper by Werestchagin on the Wotjäks. Though this Finnish people has been often discussed and described, the author gives much new and valuable information, especially in regard to mythology, feasts, and folk-lore. The closing number of vol. xii. of the Zapiski contains a long article on Korea by Otano Kigoro.

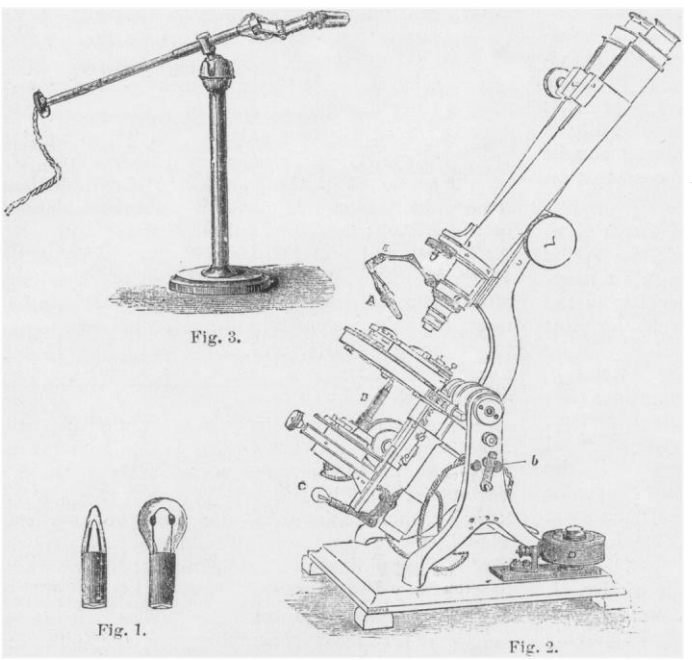
— We observe this note in a late number of the *Athenaeum:* "'PARALLAX' is dead! Dr. Samuel Rowbotham used this name as the author of 'Zetetic astronomy,' and he was well known by it as a lecturer on such subjects as 'the earth not a globe.' The doctor, some years before his death, directed his 'seeking philosophy' to chemistry; but we never heard of any discovery resulting from his search."

— The supplement to the *Berliner astronomisches jahrbuch* for 1887, containing the elements and ephemerides of the small planets for the present year, is already issued, preceding, as usual, the publication of the body of the work. The best obtainable elements of the orbits of two hundred and thirty-seven of these planets are given (two hundred and forty-four was the total number known at the beginning of 1885), as also approximate ephemerides of the same, the positions being given at twenty-day intervals. Accurate ephemerides are now computed by the *Rechnungs-bureau*, and published for only nineteen small planets.

— The 'Nautical almanac' office, Washington, has lately issued a new publication; that prepared for the present year being the first, and entitled 'The Pacific coaster's nautical almanac.' It is the counterpart of the 'Atlantic coaster's almanac,' issued for the first time in 1884, and gives, in addition to astronomico-nautical data, the times of high water at San Francisco, San Diego, Astoria, and Port Townsend, in

Pacific standard time, sunrise and sunset at San Francisco, and lists of lighthouses, lighted beacons, and floating lights, on the west coast of North and South America, including the North and South Pacific islands.

— "Geonomy: creation of the continents by the ocean-currents, by J. S. Grimes (Philadelphia, 1885)," is a book characterized by implications of blindness and conservatism on the part of most physical geographers, by assertions of the great value and originality of the author's earlier works, by a broad ignorance of what others have done, and by utterly impossible physical theories. "The reason why scientic ians have neglected to investigate the laws of the currents thoroughly, and to discover the truth concerning them, is that they have not regarded them as of much importance. Had they suspected that the currents, by their operations, created the continents, they would long since have wrung from them all their secrets" (p. 49).



AN ELECTRIC LIGHT FOR USE WITH A MICROSCOPE.

— Professor Charles Denison of Denver has prepared a series of climatic charts of the United States on the basis of the U. S. signal-service records, giving especial care to the illustration of elements of humidity and cloudiness. The dryer and moister regions of the country are thus clearly separated in a general way, as far as the scattered stations of observation will allow. The need of additional data in the west is sufficiently shown by noticing that Pike's Peak alone, of all its compeers in the mountains, is represented as having its conditions of humidity affected by its elevation. When the Cordilleras are correctly known, the broad colors now admitted will be broken up into very small patchwork. The maps are published by Rand, McNally, & Co., Chicago, and are interesting as being among the first attempts to bring the results of the signal-service records into popular use.

— *Science et nature* describes an electric lamp to be used with the microscope. All microscopists know how difficult it is to obtain good, clear light when working with high-power lenses, and any invention which will tend to lessen or overcome this difficulty will be appreciated by them. For micro-photography, Stearn's lights, illustrated in fig. 1, are decidedly the best. They measure about three centimetres in diameter, but may be made smaller. In fig. 2 there are three lights attached to a binocular, — one above the stage, for illuminating opaque objects; another below, to take the place of the reflector; and a third, much brighter, beneath all, to be used in photography. Each one can be regulated at will. It is not necessary, however, to have a microscope thus modified, for something like fig. 3 can be substituted. In this way one light can be made to serve the purposes of all. Dr. T. Stein describes in the *Zeitschrift für mikroskopie* a similar but less perfect arrangement. There is one important addition, however. In the stage beneath the object there is a spiral of platinum, which becomes heated when the current is allowed to pass through it, — an extremely convenient way of heating an object beneath the microscope.

— The geographical society of Paris awards its prizes as follows: a gold medal to Mr. de Fourcauld, for his expedition to the south of Morocco, and his studies on the western extremity of the Atlas chain; a gold medal to Dr. Neis, for his four voyages to Indo-China and into the unexplored parts of Laos; the Roquette prize to the Danish periodical, *Meddelser om Groenland*, for geological and geographical researches in Greenland; the Jomard prize to Mr. Léroux, for his work entitled "Recueil de voyages et de documents pour servir à l'histoire de la géographie, depuis le xiii^{e} siècle jusqu'à la fin du xvi^{e}," published under the direction of Messrs. Scheffer, member of the institute, and Henri Cordier; the Ehrard prize to Mr. Dumas Vorzet for his charts and cartographic work.

— Mr. H. H. Johnston intends shortly to publish two works, — one on his recent experiences in eastern Africa, and the other a carefully prepared account of the Portuguese colonies of West Africa. The latter book he has had in hand since his return from the Kongo. Mr. Johnston's studies and sketches of Mount Kilimanjaro will appear shortly in the *Graphic*.