small size, because by this process the specific gravity is lowered to that of Gaudin's product. The same also holds good of quartz, beryl, etc.

The French syndicate referred the matter to M. Friedel of the Ecole des mines, Paris, supplying him with samples of the stones for examination. He reported the presence of the round and pear-shaped bubbles, and determined the hardness and specific gravity to be about the same as of the true ruby. On analysis, he found them to consist of alumina, with a trace of chromium for the coloring-matter. The cleavage was not in all cases distinct; and the rough pieces given to him as examples of the gem in its native state had all been worked, so that nothing could be learned of their crystalline structure. When properly cut according to axes, they showed the annular rings. The extinction by parallel light was not always perfect, which he believed to be due to the presence of the bubbles. He states that he himself has obtained small red globules with these inclusions by fusing alumina by oxyhydrogen light; and, although having no positive evidence, he believes these stones to be artificially obtained by fusion.

On the receipt of M. Friedel's report, the syndicate decided that all cabochon or cut stones of this kind shall be sold as *artificial*, and not precious gems. Unless consignments are so marked, the sales will be condsidered fraudulent, and the misdemeanor punishable under the penal code. All sales effected thus far, amounting to some 600,000 or 800,000 francs, shall be cancelled, and the money and stones returned to their respective owners.

The action taken by the syndicate has fully settled the position which this production will take among gem-dealers, and there is little reason to fear that the true ruby will ever lose the place it has occupied for so many centuries. These stones show the triumphs of modern science in chemistry, it is true; and although some may be willing to have the easily attainable, there are others who will almost want, what the true ruby is becoming to-day, the unattainable. One will be nature's gem, and the other the gem made by man.

I presented this paper at the meeting of the New York academy of sciences, Oct. 4.

GEO. F. KUNZ.

A DULL BOOK.

WITH the exception of the members of the Royal geographical society, perhaps no body of men has done more to advance our knowledge of the geography of the earth's surface than the American missionaries taken as a class. Explorer after explorer has acknowledged his indebtedness to them for the most important successes of his exploration. Yet how little they have written, and how worthless, comparatively speaking, is that little! The present volume is no exception to this rule. The author had abundant opportunity to see and learn, and he undoubtedly saw and learned a great deal. Every page of the volume attests his knowledge of the country of which he is writing; but somehow he has not told of the things one wishes to know, while he has encumbered his book with facts that have little or no interest, and, what is more to be regretted, he has said what he has said in the most wretched English.

There are a few interesting passages in the volume, especially one where he describes the harem, or shrine, of the Imam Reza at the city of Khorasan, more often called Mashad. Singularly enough, he did not see the shrine itself, and got his description second-hand, from an artist whom he employed to paint a representation of it for him. The book further contains the most recent description of the government and social state of Persia that we have: it therefore has a value not dependent on the amount of interest one feels in its perusal. There are, in addition, good accounts of his journeyings in the region between the Black and Caspian seas; but, unfortunately, these regions have been so recently described by more entertaining, though not more competent writers, that this portion of the work lacks the charm of novelty, to say the least.

One other objection to the volume is to be found in the new and fantastic spelling of proper names adopted by the author. He says in his preface that in the orthography of Persian and Arabic names he "endeavored to adhere to the Persian and Arabic forms. In some instances this, however, did not seem to be expedient." One wishes that he had more often retained the more usual spelling. The best feature of the book, and one which goes a good way towards giving it a value at the present time, is the good map of Persia and its border regions, prepared by the author. In its preparation, special attention was given to the details of the eastern border. In conclusion, we are heartily sorry that the book was not published eighteen months ago, when it would have received more attention.

Persia, the land of the Imams. By JAMES BASSETT. New York, *Scribner*, 1886.

NOTES AND NEWS.

ONE of the tasks, says *Nature*, Sept. 23, undertaken by the British museum since printing has taken the place of writing in the Catalogue, is the publication of certain important sections of the Catalogue in separate parts. Thus the entries

under America, Cicero, Luther, London, and many others, have already appeared. The last of these is one of special scientific interest: it is a reprint of that part of the Catalogue which is classified under the head 'Academies.' The definition of academies for the purpose is, 'learned and scientific societies.' The entries fill five parts, making a thick folio volume of about one thousand pages. In the great written Catalogue, which is well known to all readers, twenty-eight volumes were given to this one subject. The headings have been thoroughly revised, and the names of a number of societies have been expunged, to be placed under more appropriate headings. Thus, agricultural societies, schools, political clubs, etc., which had crept into the Catalogue by degrees in course of time, have all been omitted. As it is, the total number of entries is about 32,000. 'London' is the longest sub-heading: it fills nearly 200 pages, with about 6,500 entries. Paris, St. Petersburg, and Berlin have about 3,000 entries each; Vienna and Amsterdam, about 1,000. Towns are used for sub-headings, and under these are arranged alphabetically the names of the societies issuing the publications. The old sub-headings of countries have been abolished. Formerly the sub-headings would read thus: 'Academies, etc., — Great Britain and Ireland, — London, Royal society.' The towns are now arranged alphabetically, regardless of countries. Only completed series are fully entered: works in progress are, according to the rule of the museum, catalogued with the date of the first volume. and the words 'in progress.' The work covers the greater part of the scientific literature of the world. When the catalogue of 'periodical publications' is finished, there will be little relating to science which cannot be found under appropriate heads in one or the other. It seems like looking the gift-horse in the mouth, but we cannot refrain from observing that the value of these five volumes would be enormously increased if some approximation to a subject index could be added to them. It would be a simple task to have headings, 'Chemistry,' 'Microscopy,' 'Geology,' etc., under which were given the names of the towns where societies on these subjects are to be found. The student would then have before him at a glance the names of all the societies on the globe working at any particular subject. Instances will present themselves to every student in which the first name of a society, and that by which it has to be sought in the Catalogue, does not always indicate the sphere of work.

— Two valuable papers, — 'The six inner satellites of Saturn,' and 'Observations for stellar parallax,'— the results of recent work with the 26-inch equatorial, have just been published by Professor Hall as Appendices I. and II. of the Washington observations for 1883.

— The statue of Liberty on Bedloe's Island, New York bay, when completed, will be illuminated at night in a decidedly novel manner. The torch of the statue will contain eight electric lamps, of six thousand candle-power each, the light from which will be thrown directly upward, making a powerful beam and cloud illumination. Four or eight lamps, of six thousand candle-power each, will reflect their light upon the statue, illuminating it, and causing it to shine forth in bright relief.

— The reduction of aluminium by means of the electric current, now carried on by the Cowles company of Cleveland, O., is not effected by the voltaic arc, as is generally supposed. In the Cowles process, a connection is established between the carbon terminals through the medium of a mass of finely pulverized carbon and other materials, the terminals being drawn some distance apart after the circuit has been established. By this system the intense heat of the arc is modified, and diffused through a large area of minute particles, keeping them at a constant incandescent heat, thereby effecting the reduction of the most refractory materials.

— The Journal of the Society of arts states, that, from an official report lately issued, it appears that the production of manganese in Russia is steadily increasing. The exports for the first four months of this year amounted to 9,000 tons, as against 4,500 tons for the corresponding period of 1885. This is shipped principally from Poti, where it is conveyed by the Trancaucasian railway from the mines, in order not to interfere with the petroleum trade of the neighboring port of Batoum. Owing to the bad condition of the conveyance used in transporting it from the mines at Tchiatoor to the Transcaucasian railway, large lumps of ore only can be carried, the result being that the smaller pieces, which are equal to two-thirds of the total quantity extracted, are wasted, although equal in quality to that exported.

— From one ton of ordinary gas-coal may be produced 1,500 pounds of coke, 20 gallons of ammonia water, and 140 pounds of coal-tar. By destructive distillation the coal-tar will yield 69.6 pounds of pitch, 17 pounds of creosote, 14 pounds heavy oils, 9.5 pounds of naphtha yellow, 6.3 pounds naphthaline, 4.75 pounds naphthol, 2.25 pounds alazarin, 2.4 pounds solvent naphtha, 1.5 pounds phenol, 1.2 pounds aurine, 1.1 pounds benzine, 1.1 pounds aniline, 0.77 of a pound toluidine, 0.46 of a pound anthracine, and 0.9 of a

pound toluene. From the latter is obtained the new substance known as saccharine, which is 230 times as sweet as the best cane-sugar, one part of it giving a very sweet taste to a thousand parts of water.

— Pleuro-pneumonia is reported to be raging with unprecedented violence among cattle in Montgomery county, Penn. Eighteen cases have occurred in one township.

— Recent evidence obtained in one of the ice-cream poisoning cases in Michigan, known as the Lawton case, confirms the views expressed by Dr. Vaughan, that it was due to tyrotoxicon. It appears that the cream was frozen in an old wooden building, which had been previously used as a meat-market, but had been unoccupied for some time, and was in a most unsanitary condition, admirably adapted to pollute the cream and render it poisonous.

— Cholera appears to be on the increase in southern Europe. Our last report announced its presence at Pesth, where, since that time, numerous cases have occurred. Sardinia is now said to be infected.

— At a recent meeting of the state board of health of Michigan, an analysis was presented of five hundred deaths, at ages between eighteen and sixty-five, which occurred in the Michigan mutual life-insurance company during eighteen years. The chief causes of death, in order of frequency, were lung consumption, pneumonia, typhoid-fever, apoplexy, heart-disease, cancer, Bright's disease, and quick consumption. The average age of the decedents from typhoid-fever was 38.5 years; from lung consumption, 40.17; from apoplexy, 51.10; from cancer, 48.90; and from Bright's disease, 54.50. Those who died from consumption were of more than average height, of light weight, and had a small expansion of chest. The average height was 5 feet 11 inches, while the weight was but 139.45 pounds, and the expansion of the chest but 2.93 inches. This character of organization should lead its possessor to great care in his mode of life and surroundings. While, of course, it does not necessarily denote a tendency to tuberculous disease, it is at least a suggestion which is well worth attention and consideration.

— Some faint idea of the prevalence of small-pox in London last year can be gained by the statement that eleven thousand persons suffering with this disease or recovering from it were transported by steamer between London and Purfleet, where the floating hospital was located. This hospital had at one time four hundred patients within its walls for treatment, and not infrequently a hundred would seek admittance, being carried from the city by one of the three steamers which were assigned to this service.

— The Massachusetts state board of health reports that their chemist has found the following adulterations: milk, adulterated by the addition of water and coloring-matter, and by the abstraction of cream; spices, addition of starch and other foreign powders; cream-of-tartar, substitution of starch, gypsum, and other cheaper substances; baking-powders, alum; honey, substitution of cane-sugar and glucose; molasses, addition of glucose and presence of tin; maple sugar and sirup, presence of glucose; confectionery, terra alba, poisonous coloring-matter, fusel oil, and arsenical wrappers; canned fruits, vegetables, and meats, presence of metallic poisons. Opium, cinchona, and other drugs have also been found adulterated. Since 1882, when the law was passed providing for the inspection of food and drugs, one hundred and seventy-five complaints have been made to the courts for violation of its provision.

— Prof. W. H. Pickering and assistants witnessed the eclipse of the sun, Aug. 29, at Grenada; and of that event the professor writes, "The eclipse passed off successfully, and we lost only 45 seconds out of the 226 through clouds. I had eighteen assistants selected from the islanders, and they all did very well. I think my results will be very satisfactory."

LETTERS TO THE EDITOR.

***Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The source of the Mississippi.

IN the issue of *Science* for Sept. 24, Mr. Pearce Giles, in advocating Captain Glazier's claim to the discovery of the true source of the Mississippi, says,—

"There is nothing to be found in Schoolcraft's narrative to show that he penetrated south of Itasca. He speaks of an inlet to Lake Itasca leading from a smaller lake to the south, but clearly did not visit that smaller lake, and hence did not 'discover' it. Nor was it known to exist by Mr. Nicollet, who came after him. The latter explorer states that there are five creeks falling into Itasca. Captain Glazier discovered six, the sixth originating in a lake (not a lakelet) about five miles to the south of Itasca. This lake was not known to Nicollet. It lies nearly due south of the western arm of Itasca. He visited the others (which are mere ponds), but missed the most important one, probably owing to difficulty of access, the soil around it and for some distance from it being extremely swampy, and its inlet to Lake Itasca completely hidden by the densest vegetation. Such an inlet could not have been known to exist, except from the information of the Indian whose hunting-ground was in the immediate neighborhood. The 'infant Mississippi' flows from this lake, unknown until Captain Glazier forced his way into it in 1881."

Elsewhere Captain Glazier has told us that this lake is "about a mile and a half in greatest diam-