presently perceives, is merely an exhibition of the highest literary skill, for it preludes the suggestion of the most novel theory thus far propounded in regard to the mythology of any Indian tribe. This theory, which is sustained with much ingenuity and learning, supposes that the myths current among the north-eastern Algonquins are in great part derived from, or colored by, the legends of the Norse mythology. The author assumes that the Norse colonists, who dwelt for three centuries in Greenland, having there at one time as many as a hundred and ninety villages, taught these ancient legends to their Eskimo visitors and dependants, by whom the stories were in turn communicated to their Algonquin neighbors. He points out many resemblances in the personages and incidents of the two mythologies which are certainly remarkable; and he even traces the name of the mischief-making semi-deity Lox of the Abenakies to the evil-working Loki of the Edda tales. At times, however, he finds these resemblances of folk-lore extend to so much wider limits, both in the old world and in the new, that he is disposed to refer them to a far earlier and more primitive intercommunication, prevailing at the time when one pre-Aryan race inhabited both continents.

There is nothing incredible, or indeed improbable, in either theory. Without necessarily adopting them, — and the author himself has not fully made up his mind about either of them, — students of folk-lore may be grateful to any thoughtful fellow-worker who can suggest new lines on which their inquiries may be conducted. They will not, of course, forget the more common explanation, which supposes that similar beliefs may often arise from mere similarity of circumstances. Given the striking resemblance which Mr. Leland himself has well pointed out, between the regions inhabited by the Norsemen and by the Abenakies, and in the character and pursuits of the two races, can we then account for all the coincidences of their folk-lore? Half a dozen resemblances of words, like that between Loki and Lox (which, by itself, may be a mere accident), would suffice to settle this question and to establish Mr. Leland's Norse theory. The decisive value of language as a test in ethnological investigations could hardly be better exemplified than by this statement, the force of which every one will appreciate. Until this test has been satisfied, the author's theory remains only an ingenious and plausible suggestion.

Mr. Gatschet's work, as might be expected from his former publications, is of a purely scientific character; but in this sphere it takes a wide range. It is based on an ancient legend of the Creek or Maskoki Indians, which is partly mythological, and partly historical. This legend, of which the text and translation are given at the close of the present book, is to be more fully elucidated in the forthcoming volume. As it treats of the origin of the Creek nation, and their journeyings from the west, with their wars and other adventures among the people whom they encountered until they arrived at the eastern region in which they were found by the whites, the author has deemed it a suitable basis for a full description, not only of the Maskoki tribes themselves, but also of the surrounding communities. His first or introductory volume thus comprises an account of all the southern tribes of the United States, from the Atlantic seaboard to the western limit of Louisiana, so far as these are known. The history and character of each tribe, and its ethnical relations, are clearly explained. The classification is based on language, which the author justly considers to be the only scientific method. He has devoted much attention to the languages of the Maskoki stock, and gives abstracts of the grammatical characteristics of several of these tongues, which will be of much use to students of philology. The systems of government of the various tribes, their social usages, their modes of warfare, and their religious views and rites, are described with many interesting details. The volume forms a thesaurus of authentic information concerning the southern races, and will hold a high position as an authority on the ethnology of these tribes, and the archeology of the region which they formerly inhabited. The more extended notice which its contents deserve must be deferred until the appearance of the second volume.

RECENT CHEMICAL TEXT-BOOKS.

Traité pratique d'analyses chimiques et d'essais industriels. By Raoul Jagnaux. Paris, *Doin*, 1884. 12+503 p. 8°.

The elements of chemistry. By F. W. Clarke. New York, *Appleton*, 1884. (Appleton's science text-books.) 10 + 369 p, illustr. 8°.

Lessons in chemistry. By W. H. Greene. Philadelphia, *Lippincott*, 1884. (Lippincott's science series.) 357 p., illustr. 8°.

A short text-book of inorganic chemistry. By Dr. Hermann Kolbe. Translated and edited by T. S. Humpidge. New York, *Wiley*, 1884. 16+606 p., 1 pl. 8°.

JAGNAUX's little book treats chiefly of the analysis of minerals, metals, and alloys. Although it is not intended for beginners, according to the author's preface, the details of the various processes are often described with great care; and, moreover, a considerable amount of descriptive chemistry, mineralogy, and metallurgy is introduced, which any practical chemist in need of such information would certainly prefer to look for elsewhere in a more complete form. While the methods described are in the main those usually followed in certain cases, one cannot help wondering at the author's choice of method, or at his strange omissions. Thus he describes for the commercial assay of manganese only the method of Levol. Under the head of 'Potash and soda' he mentions no indicator but litmus, directs that this should be used with carbonates and bicarbonates, and says nothing of the convenience of a normal alkaline solution. For the volumetric determination of iron he directs the use of a solution of potassic permanganate, obtained by fusing manganic dioxide with potassic hydrate and potassic chlorate, dissolving in water, and adding nitric acid until the liquid has a purple color. The author calls attention to the novelty of certain methods, but he gives nowhere any discussion of the accuracy attainable by these or the older methods; so that the reader is unable to judge of their merit without actual trial.

A very convenient feature of the book is the frequent introduction of tables showing the composition of the more common substances, both natural and artificial.

In his 'Elements of chemistry' Prof. F. W. Clarke presents briefly but clearly the more important chemical theories, together with the usual amount of descriptive chemistry. The student who wishes more extended information will find useful references to larger works or more special treatises. The hundred or more experiments which are described seem to be well chosen, and, as a rule, require but simple apparatus and inexpensive material.

A brief sketch of the carbon compounds is introduced, but the author fails to improve the opportunity thus offered to explain the isomerism peculiar to them. Although he illustrates (p. 307) the structure of certain metameric compounds, he passes over in silence the existence of isomeric propyl, butyl, and amyl alcohols. The fundamental facts of isomerism would seem more important to the beginner than the structure formulae of naphthalene, anthracene, pyridine, or chinoline, or the composition of populin, fraxin, phloridzin, aesculin, all of which he gives.

In the excellent advice to teachers with which Dr. Greene prefaces his 'Lessons in chemistry,' he says that "the object of a limited course in chemistry is not to make chemists of the pupils, but to teach them what chemistry is, what it has accomplished, and what it may accomplish."

This object he has kept steadily in view in writing the book. While many of the more common elements are treated quite fully, he has very properly omitted entirely all description of the rarer elements with which many of the elementary text-books are encumbered.

The space devoted to the compounds of carbon is unusually large. Although the treatment of the subject is necessarily brief, the student cannot fail to get some notion of the broad field upon which so large a number of chemists are now at work.

While we can hardly discuss in detail the facts given, and the method of presenting them, we may say that the old formula of Kekulé for benzol seems quite as well justified by facts as the prism formula of Ladenburg, which he gives, and that by its means the facts of aromatic isomerism are more readily rendered intelligible. We would also note that one or two statements with regard to the higher fat acids are misleading or erroneous.

The plates introduced by Professor Clarke and Dr. Greene, to illustrate spectrum analysis, are such distressing caricatures of nature that they might better have been suppressed.

Dr. Kolbe tells us in the preface to his short text-book that it has been written "to recall to the memory of students who have attended a course of lectures on experimental chemistry, what they have seen and heard," and that in writing it he has adhered to the general principle which should lead the lecturer in chemistry, and that is, "to give to his hearers an idea of chemical processes and the most important chemical theories without burdening their memories with a large number of mere facts." Admirable as this principle may be, it does not seem to have led the author, in this case, to give us any thing particularly novel, at least as far as the descriptive portions of the book are concerned. Its style, it is true, is fresh and entertaining; and yet we can hardly agree with the editor in thinking that it will supply any definite want among teachers or students. Aside from the purely descriptive portion, which certainly is admirable, the book seems to possess a decided disadvantage, in that the necessary theoretical introduction is unsatisfactory. It is true that the editor has done his best to remedy its defects by introducing

into the text brief statements of the laws of Gay-Lussac, Arogadro, Dulong, and Petit, and by adding an appendix upon the determination of atomic and molecular weights. Still, it strikes us that these alterations in the text might have been carried farther with advantage. As it is, the student can hardly fail to be confused by the passage from equivalent to atomic weights; and the book should have recalled to his memory a discussion of molecules and molecular weights in order to make the transition intelligible. The subsequent chapter upon valence makes this omission all the more noticeable.

NOTES AND NEWS.

Commander Bartlett's annual report on the operations of the U. S. hydrographic office makes a good showing for activity and enterprise. Lists of light-houses and 'notices to mariners,' in which bearings are given in degrees from true north, instead of magnetic bearings in points, as formerly, have been liberally published; the official correspondence with other hydrographic offices has been increased; and a complete set of the charts issued by all nations is kept on file, and is always at the service of the public for the determination of any questions relating to hydrography. The only vessel engaged in making surveys during the year was the Ranger, on the west coast of Mexico and Central America; but it is strongly recommended that new surveys be undertaken in several regions where they have long been wanted. The charts of the northern coast of South America are mostly based on old Spanish surveys dating back to 1794. 'Watson's rock,' latitude 40° 17′ north, longitude 53° 22′ west, in the path of North-Atlantic traders, has been reported so many times that its existence ought to be definitely settled or unsettled. The recommendation of previous hydrographers with regard to surveys of the Caroline and Marshall Islands, in the equatorial Pacific, should no longer be neglected: they lie in the belt of the trade-winds and westerly current, the natural highway of vessels crossing the ocean to Japan, China, and the East Indies, and require immediate examination. In the North Pacific alone there are over three thousand reported dangers that need decisive observation. In many cases the same island has half a dozen different positions, with as much as fifty miles between the extremes. It is urged that every naval vessel be provided with modern sounding-apparatus, by which even deep-sea measures can be quickly made, and required to sound wherever the charts show no depths reported within twenty miles on any side; and it is desired that a ship should be fitted out expressly to make investigations into ocean temperatures at all depths, and thus obtain data necessary to complete the determination of the actual oceanic circulation.

— In an attractive volume entitled 'Higher education in Germany and England' (Kegan, Paul, & Co.), which may be read through at a sitting, Mr. Charles Bird has given an account of what is done in Stuttgart, Germany, for the promotion of higher education. In a recent visit to the capital of Wurtemberg, it occurred to him to describe the educational equipment of a German town, and to institute a comparison between what is already done in Germany, and what is hoped for in England. All three varieties of high schools, — the gymnasium, the real-gymnasium, and the real-school, — corresponding very closely in their purposes to our colleges and scientific schools, are maintained in Stuttgart; but the university is wanting. There is, however, a *Polytechnicum*, which, as most of our readers are aware, has nearly the same relation to the real-schools as the universities have to the gymnasia.

The book, being written by an expert for a specific public purpose, is excellent reading. Among many things which we might cull, we select a table showing where the school population of Stuttgart may be found. It is estimated that one-seventh of the population, or 17,000 persons, should be under instruction; and of this number, 15,550 are thus accounted for: —

At universities	100
At the polytechnic	350
At the baugewerk schule	600
At the art school	300
At the two gymnasiums	1,300
At the real-gymnasium	900
At the realschule	1,100
At the two girls' high schools	900
At the burger school for boys	1,000
At the burger school for girls	1,000
At the volkschulen for boys	4,000
At the volkschulen for girls	4,000
Total	15,550

Higher than elementary, 7,550; elementary, 8,000.

How would our American towns bear comparison with Stuttgart?

— It is now proposed to carry the railway-trains across the English Channel on steamers; and the London, Brighton, and South coast railway company is having constructed at Glasgow two propellers suitable for the purpose.

— Stenographic notes of Sir William Thomson's course of eighteen lectures at the Johns Hopkins university, on molecular dynamics, were taken by Mr. A. S. Hathaway, B.S., Cornell university, lately a mathematical fellow of the Johns Hopkins university; and these notes, with additions subsequently made by the lecturer, have been carefully reproduced by the papyrograph plate process. A bibliography of the subjects considered will also be given with the lectures. In all, there will be about three hundred and fifty pages quarto. A few copies are offered for sale at five dollars net. The edition is strictly limited to three hundred copies; and orders should therefore be sent at once to the publication agency of the Johns Hopkins university, Baltimore, Md.

— A third series of Johns Hopkins university 'Studies in historical and political science,' comprising about six hundred pages in twelve monthly monographs devoted to American institutions an