York, recently, is as follows: 'Seismoscopes and Seismological Investigations,' T. C. Mendenhall; 'On the Primary Specializations of the True Fishes,' E. D. Cope; 'A Study of the Behavior of Metals under Variations of Temperature,' William A. Rogers; 'Chemism in its Relations to Temperature and Pressure,' T. Sterry Hunt; 'On the Mechanical Origin of the Structures of the Hard Parts of the *Mammalia*,' E. D. Cope; 'Progressive Series in Chemistry,' T. Sterry Hunt; 'Kilauea, a Basalt Volcano,' J. D. Dana; 'Circulation of the Sea through New York Harbor,' Henry Mitchell; 'On a Study of Color Contrast,' Ogden N. Rood; 'On the Relative Variability of Men and Women,' 'On a New Form of Reproduction in Medusæ,' and 'On the Lucayan Indians,' W. K. Brooks; 'Experiments in Measurements of Statical Electricity in Absolute Units,' and 'On Potential as measured by Work, a Mathematical Discussion,' A. M. Mayer; 'A Comparison of Antipodal Faunas,' Theo. Gill; 'On a Discovery Recently made in Connection with the Flight of Birds,' W. P. Trowbridge; 'On the Determination of Star Magnitudes by Photography,' E. C. Pickering; 'On the Constant of Aberration,' A. Hall; 'The Cretaceous Coals of Western North America,' and 'The Future of Gold and Silver Production,' J. S. Newberry; 'The Temperature of the Moon,' S. P. Langley; 'On a Method of Making the Wave-Length of Sodium Light the Absolute Standard of Length,' A. A. Michelson and E. W. Morley.

— The increase of interest in the sciences centring about a scientific education in England is well shown in the announcements of lectures to be given in connection with the Association for the Education of Women at Oxford. The three courses are, on mind, its conditions and functions, by Mr. W. L. Courtney; on the outlines of the history of education, by Mrs. Scott; and on elementary physiology, by Mr. Dixey.

— It is encouraging to see the appearance of new editions of books of acknowledged excellence. Macmillan's publishing-house has just prepared new editions of Lotze's 'Metaphysics' and of Sidgwick's 'Principles of Political Economy.' The latter contains some emendations and omissions from the text of the first edition, and the preface credits Schönberg with exerting an influence on the author's economic thought. The new edition of Lotze is in two volumes, handsomely gotten up, and offered at a very low price. We trust it will be widely read, for the *Spectator* only expressed the opinion of all philosophical workers when it said, "No man of letters, no specialist in science, no philosopher, no theologian, but would derive incalculable benefit from the thorough study of Lotze's system of philosophy."

— The Industrial Education Association is about to issue leaflets giving concise information on points of its work regarding which questions are continually asked. The first will be ready in a few days, and will state compactly what the argument for manual training is.

— Several of the commissioners of Chinese customs, in their reports for the past year, which have just reached this country, says the London *Times*, refer to the competition in the English market between teas from India and China. The commissioner at Hankow says that at that port for the year the fine teas bought for England have lost all around. "All tea-buyers say that Indian tea is the tea of the future for people who can afford to pay for a good article. There is no reliable market for choice China tea. Cheap tea — 'beautiful two-shilling tea' — bought here to land at sixpence a pound, is what seems to be wanted. It can be sold at a price to suit any pocket, and can be made quite drinkable and given a body by the addition of a few pennyworths of good, full-flavored Indian." Similarly the commissioner at Foochow remarks that one feature of the tea trade of the year has been the neglect of teas over a shilling a pound in the London market almost throughout the season. This discourages the production of the finer kinds of tea in China. Year by year the competition of the Indian teas displaces the finer qualities of the China leaf, "in spite of which there are many of experience in the trade who maintain that if the old quality were again forthcoming from China she would soon recover the position she seems to be losing in the world's consumption of this article." In Shanghai the commissioner reports an increase in the export of tea, but says it is due to the improved demand in England and Russia for low-grade teas, but the merchants have lost no medium and fine quality teas, the rates for them being unprecedentedly low. "This depreciation in their value in England is partly assignable to a falling-off in the Russian demand for fine tea; but the want of keeping properties in China leaf, probably owing to hasty and imperfect preparation, has also a good deal to do with it." Fine China teas have not been bought for Russia because of an increase in the import duty, and, in place of increasing the price to the retail purchaser, an inferior leaf has been purchased."

— The German Academical Union, in its last general meeting at Berlin, laid down the following principles of reform for the German schools: (1) The children are in many ways overburdened by the present scholastic system; (2) There is not sufficient harmony between the school and the home life; (3) The training of the body is not attended to in proportion to that of the mind; (4) The exclusive privileges belonging at present to the classical schools, as securing an entrance to the learned professions, ought to be extended to the modern schools; (5) There ought to be an easy access from the elementary schools to the middle and higher schools; (6) The *Einheitsschule* is the most pressing need of the present time.

— The forty-third annual meeting of the Massachusetts Teachers' Association will be held in the Girls' High-School building, Boston, Friday and Saturday, Nov. 25 and 26. The following programme is published: — Nov. 25, 'English in Secondary Schools,' by William R. Shipman, D.D., professor of rhetoric, Tufts College, discussion to be opened by W. C. Collar, head master of Roxbury Latin School; 'What the Public demands from the Public Schools,' by N. A. Calkins, superintendent of schools, New York City; 'The Care of Children,' by Henry C. Hardon, master of the Shurtleff School, Boston; 'The Care of Our Younger School-Children,' by Ann E. Newell, Alger Primary School, Boston; 'Can the Principles of Civil Government be taught in Schools?' by Albert Bushnell Hart, Ph.D., instructor in history, Harvard University, discussion to be opened by Ray Greene Huling, principal of the High School, New Bedford; 'Some Notes on Secondary Schools in Europe,' by George A. Bacon, Ph.D., editor of *The Academy*, Syracuse, N.Y.; 'Arithmetic in the Grammar School,' by Francis A. Walker, Ph.D., LL.D., president of the Massachusetts Institute of Technology, discussion; 'Modifications needed in the Grammar-School Curriculum,' by A. P. Stone, LL.D., superintendent of schools, Springfield, discussion; 'Language,' by George I. Aldrich, superintendent of schools, Quincy, discussion to be opened by Larkin Dunton, LL.D., head master of the Normal School, Boston; 'Sight-Reading,' by Mary I. Lovejoy, principal of the Broadway School, Chelsea, to be followed by class exercises, illustrating progressive stages in the first, second, and third years, discussion to be opened by William T. Harris, LL.D., Concord. Nov. 26, 'Report of the Committee on Necrology,' by Nathaniel T. Allen, chairman; 'Grammar-School Education' (report of the Committee on Educational Progress), by Ray Greene Huling, chairman; 'Character as an Object of School-Education,' by Louisa P. Hopkins, supervisor of schools, Boston, discussion to be opened by Robert Swan, master of the Winthrop School, Boston; 'How to secure the Better Preparation of Teachers,' by Ellen Hyde, principal of the State Normal School, Framingham, discussion to be opened by A. G. Boyden, principal of the State Normal School, Bridgewater.

LETTERS TO THE EDITOR.

*** The attention of scientific men is called to the advantages of the correspondence columns of* SCIENCE *for placing promptly on record brief preliminary notices of their investigations. Twenty copies of the number containing his communication will be furnished free to any correspondent on request.*

The editor will be glad to publish any queries consonant with the character of the journal.

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

Amnesia.

IT seems to me that cases of amnesia like those mentioned in *Science* for Nov. 11 are not very rare; certainly three such cases have fallen under my own observation within the last twenty years.

One was of a lady who suffered from violent puerperal convulsions, followed by fever, which rendered her practically unconscious for ten days. After her recovery she found that she had lost entirely the recollection of every thing that happened during the week before her sickness.

In another case two gentlemen of my acquaintance, while driving across a railroad, were struck by the engine. One of them was instantly killed: the other was so seriously injured that he was unconscious for twenty-four hours, and for several weeks lay at the point of death; after his recovery he never regained the recollection of going to drive on that fatal morning.

In another instance a gentleman well known to me was thrown from his carriage by a runaway horse and by collision with another team. He was rendered insensible for fifteen or twenty minutes, and after regaining consciousness, although he remembered his horse running away with him, he never had any recollection of the collision or of falling.

In each of these cases there seems to have been some relation between the length of the period of unconsciousness after the sickness or accident, and the memory-blank before it.

JOSEPH HALL.

Hartford, Conn., Nov. 12.

Changes in Indian Languages.

THAT unwritten languages might change more rapidly than those which are preserved in books is very evident, though the verses of Chaucer and Spenser would puzzle the modern school-boy. Yet the vocabulary of an unlettered people has elements of stability in its comparatively few words, and often in the songs and ceremonies preserved through many generations. How rapidly they may change is not so easily proved, for this requires accurate vocabularies made long ago, which must be carefully compared with a language at a recent period. A moderate basis may be found for such a comparison in the case of some of the New York Iroquois, who early attracted the attention of learned men, and from this may be drawn a few suggestions.

I make this comparison now, in the case of the Mohawks, between Father Bruyas' lexicon, written about A.D. 1700; the 'Mohawk Prayer-Book' of 1769; and Schoolcraft's 'Notes on the Iroquois,' written in 1845. The later prayer-book of Rev. Eleazar Williams might also be cited, as the work of an educated man brought up as a Mohawk; but its marked differences from all other books printed in that language would require a good deal of comment. Father Bruyas' lexicon is of radical words, and deals with phrases and verbs much more than with nouns and adjectives; yet I make the comparison on the latter. In a little over one hundred words common to both Schoolcraft and the missionary, fifty-one differ almost entirely, while fifty-eight are either alike, or so nearly so as to have the resemblance apparent. Perhaps half of the latter number are modified forms of the same words. These represent the changes of an existing Indian language in about a century and a half, so far as they may be called changes. About one fourth are the same as they were in A.D. 1700; another fourth are partially changed; nearly one-half differ entirely.

It is to be remembered in this, that, in a language whose words are often descriptive, several words might represent the same object, and often do so, while a writer may choose but one of these. Many synonymes appear in Bruyas' vocabulary and in the 'Mohawk Prayer-Book.' One of these words, once common, might disappear and be succeeded by another, not new, but for a time obscure. In Schoolcraft's vocabulary each English word has a single Mohawk word as its equivalent. There may have been many others which do not appear.

The 'Mohawk Prayer-Book' of 1769 was the work of several hands, and has comparatively few of the words found elsewhere. I have not made a close comparison, but have noted twenty-five names agreeing with Bruyas, and thirty with Schoolcraft, while it has very many given by neither. It is hard to catch or represent the Iroquois inflection, and so spelling has made a difference where the word is clearly the same, though possibly changed. Thus 'ice' was rendered *Gawisa* in 1700, *Owiese* in 1769, and *Oise* in 1845, the latter perhaps approaching our own word. Some words which I have classed as similar are much farther apart than these, often differing greatly.

As this paper is only suggestive, I note some changes in the Onondaga language, based on a comparison of Zeisberger's dictionary, made subsequent to 1750, and Schoolcraft's vocabulary of 1845. In comparing nouns and adjectives common to both, out of one hundred and fifty, I find eighty-six entirely or widely different, and sixty-four the same or plainly similar. In regard to the nature of these changes, the same remarks apply as to the Mohawk. Relatively the latter might be called a written language, and had changed much less in a century and a half than the Onondaga had in less than a century. In a sense the latter might seem almost a new language. Many words in it, of course, are new, as those of animals and articles of which their fathers knew nothing, and doubtless others were assumed for familiar things when some one hit on a new characteristic. The word for 'hog' is expressive of its voice, and is better rendered by Zeisberger as *Kweas kweas* than by the modern *Quis quis*. *Git git* does very well for a hen, and others as good might be cited. The Oneidas and Onondagas formed different names for the elephant, yet easily understood by both; the one calling it 'that great naked animal,' and the other terming it the 'long nose.' The Onondaga name for the black raspberry is descriptive, 'the plant that bends over,' and many are quite as picturesque. This shows how a vivid imagination could readily multiply or change names among a primitive people, and how verbs might persist long after nouns had vanished. Place such a people by themselves, amid new scenes, and how quickly their speech might alter! The Onondagas have not moved over twenty miles in two hundred and fifty years, yet how much their tongue has changed in less than half that time! A migration to new and distant homes would have produced many new words, and then the language would have remained much the same for a time, waiting for other disturbing causes.

W. M. BEAUCHAMP, D.D.

Baldwinsville, N.Y., Nov. 11.

Distillery-Milk.

AFTER the grain is mashed (corn comprises three-quarters of the grain used), it is cooled and run into the fermenting-tubs, where the yeast is added. The period of fermentation is seventy-two hours the first three days in the week, and ninety-six hours the last four days, which include Sunday; this length of time being considered by the government sufficient to ferment all of the saccharine. It is during this period that the acetic acid is formed, unless very great care is taken. It does not necessarily follow that acetic acid appears but acetic fermentation occurs more often than otherwise.

At the expiration of the fermenting period, the 'beer' (the entire mass in fermentation) is run through the 'still' at a temperature supposed to evaporate all the alcohol and fusel-oil; which vapor is run into a worm from the top of the still, and the 'slops' run from the bottom of it. The mash or beer can be distilled so as to leave little if any alcohol or fusel-oil in the slops, or feed; but in general practice there is a trace of alcohol and fusel-oil left in the feed.

I have tested slops coming from a still when the instrument varied from 0 to 3 per cent alcohol. No test was made for fusel-oil. So large a per cent of alcohol as 3 per cent is unusual, and it would be found very unprofitable to the distiller. The slops are fed to the cows while hot. Each cow's ration is thirty-six gallons a day. If the water was evaporated from that quantity of slops, it would leave about twelve pounds of grain; or, in other words, there is 2,400 per cent more water than grain in the slops.

With the entire system in practice to-day, the food is not desirable for milch-cows, but it might be made so. But the sanitary conditions at Blissville and Chicago were a thousand times more harmful to the cows, and necessarily to the milk also, than the food upon which they were fed. I speak from observation of cows under good and bad sanitary conditions and care, fed on distillery slops.

The Germans would be horrified to see any kind of animals surrounded by the conditions at the places named. Europeans excel Americans in the sanitary condition and care of their stables and stock, etc.