nomenclature by dispensing with the degrees of bachelor of letters and of philosophy; we could carry to full graduation some who now pursue partial courses of study; we could obviate criticisms, which proceed not always from so-called "practical" men, but often from persons abundantly qualified to form an opinion, — graduates, not rarely, of our own institutions.

"But while this additional freedom may wisely be conceded," the speaker went on to say, "it is of the last importance that we insist upon those fundamental subjects which any rational theory of a liberal education must include. President Gilman enumerates these as follows: 'It is essential that the candidate who receives that degree should have received much instruction in (*a*) ancient and modern languages and literature, (*b*) in mathematics, (*c*) in the natural and physical sciences, (*d*) in historical and moral sciences.' I need not stop to show why these four classes of subjects are essential: we are not likely to disagree about that. Experience has shown, what one's knowledge of human nature would lead one to expect, that young men, left wholly to themselves, will not apportion their time equitably between these different interests.

"Professor West of Princeton took the trouble, three or four years ago, to summarize the choices of elective studies made by members of a recent class at one of our leading colleges. A more careful administration of the system probably prevents, at the present time, such extreme abuse of liberty; yet these facts are instructive as an illustration of a danger against which we need to guard. The first man in standing omitted two of the classes of subjects named by President Gilman, taking no course in mathematics or in science. The second omitted nearly three, taking no course in mathematics, in science (except botany), in philosophy, history, or political science. The third took no science and no philosophy. The fourth took no course in philosophy, history, political science, classics, modern languages. How can we consider a man liberally educated who has studied, during his collegiate residence, no modern language, no ancient language, no logic, psychology, or ethics, no history, no political or social science? Omissions of like significance occur in the case of each of the ten highest men, while the men at the bottom of the class show a marked inclination to the easiest subjects. We cannot plead the example of the German universities, for we have no such preliminary training as the German gymnasia afford. It is obvious that unrestricted liberty of election cannot be permitted. No degradation of the baccalaureate degree is comparable to that which would come from the general adoption of such a system in our colleges. The degree has at present an approximate uniformity of meaning. This would speedily and totally disappear."

The suggestions which Professor Griffin offered, on the basis of President Gilman's paper, are these:—

1. Diminish the evils growing out of the number of our colleges, and the inferiority of some of them, through an agreement among the strongest and best, which would have the force of an authoritative example.

2. Distinguish sharply between the technical and the baccalaureate degrees, reducing the latter to one, or, at most, two forms.

3. Relax the requirement in regard to Greek, accepting one ancient language as sufficient for the bachelor of arts degree.

4. Allow no elections on the part of students that will prevent a suitable distribution of attention between the four great groups of subjects which have been named.

HEALTH MATTERS.

The Rôle of Potable Waters in the Etiology of Typhoid-Fever.

THERE has long been a consensus of medical opinion as to the *rôle* of drinking-water in the causation of typhoid, and facts to prove an etiological relation are accumulating every year. According to the *Boston Medical and Surgical Journal*, Vaillard has made a communication to the Société Médicale des Hôpitaux, in which he furnishes new bacteriological proofs.

1. In March, 1889, there broke out in the regiment of cavalry quartered at Melun an epidemic of typhoid-fever, but only one squadron was affected. This squadron made use of the water of a particular well which had been contaminated in some unknown way. Repeated examinations of samples of this water revealed the presence of the *bacillus typhosus*.

2. At Cherbourg there was an epidemic of enteric-fever, affecting particularly a military company. The water-supply of this part of the city had been contaminated by typhoid dejections in a manner easily explicable, and samples of this water showed the *bacillus typhosus* in abundance.

3. Similar facts were noted with regard to epidemics which prevailed last year and the year before at Miranda, at Bourg-en-Bresse, and at Chatellerault.

M. Vaillard's method of identifying the typhoid bacillus seems to have been in accordance with the most approved data of bacteriological science.

At the same meeting, Chantemesse stated some facts of interest respecting the influence of Seine water on the prevalence of typhoid epidemics. It was remarkable, that whenever, from accident happening to the reservoirs or mains of the other water sources, the water of the Seine was distributed to the various departments and drank by the inhabitants or the soldiery, an epidemic of typhoid appeared.

This statement was corroborated by M. Schneider at a meeting of the Société de Médecine Publique, Dec. 27, 1889, who also showed, by facts that had come under his own observation as military surgeon, that the use of Seine water for drinking had repeatedly been followed by epidemics of enteric-fever. Such an epidemic has recently prevailed in the barracks of Paris, owing to the temporary shutting-off of the water of the Vanne, which seems to be of exceptional purity.

The Grippe and Cholera.

Fears having been expressed as to a possible connection between influenza and cholera epidemics, Dr. Smolenski publishes, in the Russian *Official Messenger*, an elaborate report upon the subject. He points out that the suspicion is not new, and that in 1837 it was discussed by Gluge ("Die Influenza"), and refuted. In fact, influenza or *grippe* epidemics have been known in Europe since 1173, that is, for more than seven hundred years; while the first cholera epidemic appeared in Europe in 1823, but did not spread that time farther than Astrakhan. Six years later it broke out in Orenburg; next year, in Caucasia and Astrakhan again, whence it spread over Russia, and in 1831 reached western Europe. As a rule, influenza spreads very rapidly; and at St. Petersburg in 1782, says *Nature*, no fewer than forty thousand persons fell ill of it on the same day (Jan. 14). In 1833 its progress was also very rapid, and within a few days it appeared at places so far apart as Moscow, Odessa, Alexandria, and Paris; while cholera epidemics are usually slow in their migrations from one place to another. Moreover, influenza is chiefly a winter epidemic, while cholera prefers the spring and the summer.

Dr. Smolenski has further tabulated all influenza and cholera epidemics which have broken out in the course of this century in Europe; and he comes to the following results: influenza broke out in 1816 in Iceland; 1827, in Russia and Siberia; 1830–33, in Europe generally; 1836–37, in Europe; 1838, in Iceland; 1841–48 and 1850–51, in Europe; 1853, in the Faroe Islands; 1854–55 and 1857–58, in Europe; 1856, in Iceland and the Faroe Islands; 1862, Holland and Spain; 1863–64, France and Switzerland; 1866, France and Great Britain; 1867, France, Germany, and Belgium; 1868, Turkey; and 1874–75, western Europe. As to the cholera epidemics during the same period, they were, 1823, Astrakhan and Caucasia (from Persia); 1829, Orenburg (from Turkestan); 1830, Russia (from Persia); 1831–37, various parts of Europe. The next epidemic appeared in 1846 in Transcaucasia (coming from Persia); in 1847 it spread over Siberia and Russia, and in 1848 it was in Europe; in 1849–52 it was followed by feeble outbreaks all over Europe. The third cholera

epidemic came from Persia again in 1852, and it resulted in a severe outbreak during the years 1853–55 in Europe, followed by feebler outbreaks till 1861. The fourth cholera epidemic came through the Mediterranean ports in 1865, and lasted in Europe till 1868, with feebler epidemics in 1869–74. The latest invasion of cholera was in 1884, when it came again through the Mediterranean ports. As to the cholera epidemic which now begins to die out in Persia and Mesopotamia, it certainly is a danger; the more so, as, out of the five epidemics of cholera which have visited Europe, three have come from Persia.

BURIAL REFORM IN ENGLAND. —After a period of incubation which has been spent in educating public opinion in the matter of the hygienic iniquity of the present system of interment, the group of sanitary philanthropists, with the Duke of Westminster at their head, who have taken up the ungrateful task of bringing the necessary reforms to pass, have at last decided to approach the government with the object of having their contentions indorsed by the Legislature. How far the general public will consent to allow their cherished usages in this respect to be interfered with, we are unable to guess, but the object in view will certainly commend itself to those who have a thought beyond the morrow. What is required, says the *Medical Press and Circular* of Jan. 1, 1890, is the prohibition of leaden and other solidly constructed coffins, the effect of which is to indefinitely retard complete decomposition, and so prolong the period during which the dead are not only æsthetically objectionable, but are an indisputable source of danger to the living, wicker-work or *papier-maché* receptacles alone being used. Tl is is, after all, no very startling innovation, and is not open to the sentimental and theological objections which some persons entertain to the more radical plan of cremation. It is merely a sanitary precaution of an elementary kind; and, whatever the immediate fate of the movement may be, it must sooner or later impose itself. The effect of legislative interference would simply be to hasten and generalize the practice among those who have too much to do in this world to find time to decide upon the material of which their coffin is to be made. We are rather inclined to agree with Sir Spencer Wells in his suggestion that in future only properly cremated remains should be admitted to funeral honors in Westminster Abbey and other national mausoleums. Not only would there result a valuable economy of space, but the very deleterious odor of decomposing sanctity which pervades many sacred edifices would be done away with.

ACTION OF THE LIVER ON POISONS. — Dr. Roger points out that the liver modifies the toxic effects of several poisons, as has already been noted by Schiff, Hegar, Jacques, and Lautenbach. He has performed certain experiments, as we learn from the *Provincial Medical Journal*, which demonstrate clearly its modifying action with regard to nicotine, atropine, quinine, and strychnine; also certain putrid and intestinal poisons, peptones, and some salts, particularly ammoniacal salts. On the other hand, the liver exercises no influence over other substances, such as digitaline, some salts (potash and soda), glycerine, etc. The liver, therefore, like the kidney, possesses an elective action. To control these results, it is necessary that the poison should be absorbed very slowly. In the case of a diseased liver (cirrhosis, fatty degeneration, etc.), in which the parenchyma no longer contains glycogen, the liver does not act on poisons, but it suffices to administer substances capable of forming glycogen, to see the hepatic gland again competent to transform poisons. The action of the healthy liver is continually exerted against toxic substances in the system; it is still more marked in those infectious diseases in which decided toxic effects are produced. Some clinical facts go to prove that many morbid symptoms are due to insufficiency of the liver in regard to poisons.

DOES SALTING MEAT DESTROY BACTERIA? — Professor J. Forster of Amsterdam has published an account of some investigations made in his laboratory by himself and De Freytag, having for their object the determination of the effect of the common process of salting or pickling meat on various forms of bacteria. It was found, as stated in the *British Medical Journal*, that cholera bacilli were soon destroyed under the influence of abundance of salt, usually in a few hours, but that typhoid bacilli, pyogenic staphylococci, the streptococci of erysipelas, and the bacilli of porcine infectious diseases, frequently retained their vitality for several weeks, or even months, in spite of the presence of abundance of salt. The same was also true of the bacilli of tubercle. In some cases these bacilli were found alive after being two months in pickle, their vitality being proved by their capacity for infecting new cultures. Portions of the viscera of a tuberculous animal, preserved for a considerable time in salt, were found capable of causing tuberculosis in a healthy animal when introduced into its peritoneal cavity. Experiments on the spleen of an animal which had died of malignant anthrax showed that salt possessed the power of destroying the bacilli of this disease in about eighteen hours. These, as well as cholera bacilli, were found to require seven and one-half per cent of salt to destroy them. From these facts it would appear that salting or pickling has but little destructive effect on many of the more common forms of bacilli liable to be found in diseased meat.

THE ELECTRICAL PHENOMENA OF THE HUMAN HEART. — A special meeting of the Berlin Physiological Society was called by Professor Dubois-Reymond on Dec. 27, 1889, in order to see a demonstration by Dr. Augustus Waller on man and uninjured animals of the electro-motive action accompanying the beat of the heart. Besides the ordinary members of the society, the leading physicists of Berlin were invited, and Professors Helmholtz and Kundt witnessed the experiments. Dr. Waller, says the *British Medical Journal* of Jan. 11, employed the capillary electrometer magnified 1,250 times, and thrown on a ground-glass screen in one of the lecture-rooms of the Physiological Institute, and demonstrated the electro-motive action of the heart on a horse and on a dog. The horse stood in a courtyard near the lecture-room. Electrodes were attached to his extremities by firm bands, and the wires from the electrodes were passed through the window to the electrometer in the preparation-room adjoining the lecture-room. The dog stood in the lecture-room. In the library of the institute, Professor Dubois-Reymond allowed the demonstration to be made on himself, so that the pulsations might be seen directly through the microscope by all the members present.

THE HEALTH OF LONDON IN 1889. — Remarkable as has been the continual decline of the death-rate in England and Wales in recent years, the decrease of the rate of mortality in London, with its aggregate population of more than four millions, with constantly increasing density, is still more remarkable, says the *Lancet* of Jan. 4, 1890. The registrar-general, in his last annual summary, reported that the death-rate registration in London in 1888 was 18.5 per 1,000, being "far the lowest death-rate as yet recorded in London," the next lowest being 19.8, 19.9, and 19.6 in the three immediately preceding years, 1885, 1886, 1887, previous to which the London death-rate had never fallen below 20 per 1,000. The death-rate in 1889, moreover, again fell, and was considerably below the low rate in 1888. The registrar-general's return for the fifty-second week of 1889 affords the means of calculating that the mean annual death-rate in London in the fifty-two weeks of last year did not exceed 17.5 per 1,000, which was 1 per 1,000 below the rate in 1888.

FLOODS AND THEIR RESULTS FROM A SANITARY STANDPOINT. — We learn from the *Medical Record* that arrangements have been made to hold a tri-State sanitary convention at Wheeling, W. Va., Feb 27 and 28, 1890. Representatives will be present with papers and addresses from Pennsylvania, West Virginia, and Ohio. The object of the convention is to consider the question of floods and their results from a sanitary standpoint, and the best methods of managing the sanitary interests of a given community after such a calamity. Owing to the mutual relations held by these three States with reference to large rivers, and the numerous towns in each one of these States that are annually affected by floods and their results, it has

been thought wise to hold a convention for studying how best to manage the sanitary interests of cities and towns so affected. Every person interested directly or indirectly in this important subject is earnestly requested to be present and assist in discussing the papers, and add whatever information he can to the solution of these practical and most important questions, affecting as they do the health and lives of thousands of citizens of these three great commonwealths annually.

CHOLERA AND EUROPE. — The epidemic of cholera which has for so many months been raging in the valleys of the Tigris and Euphrates and the interior of Mesopotamia has also made considerable inroads into Persia. Reports of the epidemic having crossed the western boundary of Persia have been heard from time to time; but it has now been announced to the Faculty of Medicine of Paris, that there has been an alarming increase of the disease in central Persia and on the Turko-Persian frontier, and that the inhabitants are fleeing toward the north. All those who can afford the journey are trying to reach the Russian ports on the Caspian. Remembering that this is the route into Europe which the cholera has so frequently taken, the announcement, says *The Medical and Surgical Reporter*, must be regarded as one of great gravity.

MENTAL SCIENCE.

THE RAPIDITY OF MENTAL PROCESSES IN INSANITY. — The fact that the change in the mode of responding to the stimuli of the environment, characteristic of a disturbed mental equilibrium, will reveal itself in things important and trivial, has often been emphasized and illustrated. In this respect a comparison of the time required for performing simple mental operations in the insane with similar times in normal individuals is interesting, especially if we take account of the nature of the disease. The chief point in such an investigation is to secure a fair comparison, — a desideratum which former studies have not sufficiently taken into account. The most recent contribution to this field comes from a lady (Marie Walitzky, *Revue Philosophique*, December, 1889), and furnishes interesting results, based upon a sound method. She has chosen for her subjects men of good education—physicians, military officers, bankers, etc.—suffering from mental disease, and compared the times they require for executing certain mental processes with the times required for the performance of the very same processes, tested by the same apparatus, under the same conditions, by healthy physicians and other intelligent persons. The subjects were three persons suffering from paralytic dementia,—a case of remission after intense maniacal excitement; a case of general paralysis (in the initial stage of excitability); and another case observed at two different stages (in the period of remission, and in a state of maniacal agitation). Experiments were also made upon another patient whose disease is not altogether clear, and who was in a condition very nearly normal. The preliminary stages of practice were overcome; though times differing largely from the average always occurred, and had to be rejected. The processes studied were (1) the simple re-action time (with each hand) to a sound; (2) a choice of re-action, re-acting with the one hand to a loud sound, and with the other to a low one; (3) the re-action to a spoken word; (4) the ordinary association of one word with another; (5) the addition of one number to another. The associations were further distinguished as external, e.g., *flour-hour*, *mouth-nose*, in which the link was not logical, but rather accidental; internal or logical associations, such as *table-round*, *house-dwelling;* and assocations fixed by habit, such as *pater-noster*, *Adam-Eve*. Of course, these distinctions are neither absolute nor always easy to apply, and the same association may take place differently in different persons. Each average for each subject is founded upon about a hundred and fifty observations. The most important conclusions are the following: in the three cases of paralytic dementia the simple re-action time is lengthened, .225, .388, and .364 of a second; while in the average of five healthy individuals this average was .188 of a second; while in the other cases, mainly conditions of remission, no essential difference exists, the average time being .201 of a second. The difference in the time of re-action to a weak and to a strong stimulus is about the same in sane and insane, except in the two most pronounced cases of paralytic dementia, where the additional time needed to re-act to a slight stimulus is one-tenth of a second or more. The choice time is (and a similar relation holds of the other times) often three or four times as long in the paralytic dementia as in sanity, but approaches, though it is far from reaching, the normal in the states of remission: dementia, .816 of a second; remission, .629 of a second; normal, .364 of a second. The re-action to words is markedly longer than the normal only in the severest case of dementia, .864 of a second; normal, .285 of a second. The association time is most lengthened in a state of remission approaching melancholy, 1.377 seconds; in the state of remission, as in paralytic dementia, it approaches the normal, .898 of a second (normal, .680 of a second). In mania this time is shortened, .263 of a second. In those cases in which the patient was observed in two different stages of the disease, the same result is confirmed: the association time diminishes, and the choice time increases, as the maniacal agitation becomes more pronounced. The observations respecting the nature of the association are too limited to be separately discussed. These results suggest to the authoress the view, that, granting a reduction in association time to be dependent upon the faculty of unconsciously reproducing the associations fixed in the memory, the automatic function of the mind is increased in the initial stages of mental impairment, and that, parallel with this increase of mental automatism, the activity of the will decreases, its processes being slower. As the intellectual powers fade, the automatic functions also become slow, and finally even the perception of the simplest impressions is slackened. In the period of remission, even at its best, the mental powers do not fully recover: the automatism of the brain becomes normal, but the recovery of the will is incomplete.

A CURIOUS MENTAL TRAIT.—A correspondent of the German Anthropological Society tells of his meeting a farmer by the name of Löwendorf, who had a peculiar habit of writing "Austug" for "August," his Christian name. Some years later he was inspecting a school, and heard a little girl read "leneb" for "leben," "naled" for "nadel," and the like. Upon inquiring, he found that her name was Löwendorf, and that she was a daughter of his former friend the farmer, now dead. This defect was noticeable in the speech and writing of both father and daughter. It appeared in the father as the result of a fall that occurred some time before the birth of his daughter.

NOTES AND NEWS.

WE regret to announce the death of Gustave-Adolphe Hirn, the eminent physicist. He died at Colmar on Jan. 14, in his seventy-fifth year.

— A new kind of butter is now being made in Germany from cocoanut-milk. The Calcutta correspondent of the London *Times* says that the cocoanuts required for this industry are imported in large numbers from India, chiefly Bombay, and that the trade seems likely to attain still greater importance.

— Special attention was called by the United States Hydrographic Office to the unusually early southward movement of ice. Already (Feb. 1) thirty-six reports have been received of ice sighted since Jan. 5, and the positions and dates indicate that the ice season is one of the earliest on record,— nearly a month earlier than usual. This is undoubtedly due in large part to the prevalence of severe northerly gales east of Labrador, coincident with the heavy westerly gales of December and January along the transatlantic route. Masters of vessels should keep well clear of the Grand Banks for a few months, till there is less danger from icebergs and field-ice.

— Professor S. P. Langley, in a paper on the "Temperature of the Moon," in the December *Journal of Science*, states, that, of