and report on the matter. The advocates of the permanency of water as a medium for color-painting cite in support of their views the fact that the ancient Egyptians, whose pictures in some cases are apparently as fresh and bright to-day as when first executed two or three thousand years ago, used water-colors. Old manuscripts, illuminated in water-colors several centuries ago, do not appear to have diminished in brilliancy. On the other hand, there are undoubted cases of fading of pictures by Turner and others, owing to prolonged exposure to sunlight. A comparison of collections of oil and water color pictures of equal age, however, seems to show that the former are at least as liable to fade as the latter. Such colors as ochres and siennas are permanent in both mediums, while lakes are fugitive in both, and the madder colors are generally considered lasting. A few years ago, Mr. Holman Hunt took much trouble to investigate the purity of artists' colors, which, he found, were frequently adulterated. The results he communicated at the time to the Society of arts. It is now suggested that a more extended official investigation should be made of the whole subject, on the lines which he then indicated, including in the research the action of the electric light, as well as that of sunlight, upon pure and adulterated pigments, and mixtures thereof. W.

London, Aug. 15.

NOTES AND NEWS.

THE two hundred and fiftieth anniversary of the foundation of Harvard university will be celebrated on the sixth, seventh, and eighth days of November next. On Saturday, the 6th, undergraduates day, the students of the university will celebrate the event by literary exercises in the morning, athletic sports in the afternoon, and a torchlight procession in the evening. On Sunday, the 7th, foundation day, the anniversary of the passage by the general court of the colony of Massachusetts Bay, of the memorable vote, "The court agree to give four hundred pounds towards a school or college, whereof two hundred pounds shall be paid the next year, and two hundred pounds when the work is finished, and the next court to appoint where and what building," there will be commemorative exercises, under the direction of the college authorities, in Appleton chapel, conducted in the morning by Rev. Francis G. Peabody, and in the evening by the Rev. Phillips Brooks. On this day clerical graduates of the university are requested to refer in their pulpits, if the circumstances permit, to this act of the infant colony, and the benefits which have followed from it. On Monday, Nov. 8, alumni day, the graduates of all departments of the university, and guests, will meet in Massachusetts hall, at 10 A.M., and proceed thence to Sanders' theatre, under escort of the undergraduates, where an address will be made by James Russell Lowell, and a poem delivered by Oliver Wendell Holmes, and honorary degrees will be conferred by the university. In the afternoon the association of the alumni, composed of all graduates of the college, with their invited guests, will have a collation in Memorial hall. It is suggested that the members of Harvard clubs in the various cities of the United States who are unable to attend the celebration at Cambridge should commemorate the day.

— The American public health association will convene at Toronto, Canada, Tuesday, Oct. 5, and continue four days. The executive committee have selected the following topics for consideration at said meeting: the disposal of the refuse matters of cities and towns; the condition of stored water-supplies, and their relation to the public health; the best methods and the apparatus necessary for the teaching of hygiene in the public schools, as well as the means for securing uniformity in such instruction; recent sanitary experiences in connection with the exclusion and suppression of epidemic disease; the sanitary conditions and necessities of school-houses and school-life; the preventable causes of disease, injury, and death in American manufactories and workshops, and the best means and appliances for preventing and avoiding them; plans for dwelling-houses. At the last annual meeting of the association, a resolution creating a section of state boards of health was adopted. A meeting of the representatives of the state boards of health has been called by the secretary of the Conference of state boards of health, on Monday, Oct. 4, and it is expected that the said representatives will on that day organize the section.

— The hydrographic office has received the following note: Aug. 31, at 9.45 P.M., the steamer City of Palatka, Captain Voegel, when a mile and a half north of Martin's industry light ship (off the coast, south of Charleston), in eight and a half fathoms of water, experienced a terrible rumbling sensation, lasting a minute and a half. There was quite a heavy sea from the south-east after leaving Charleston bar at 5.30 P.M. When this rumbling sensation took place, the wave-motion ceased. It was a perfect calm during the rumbling: after that, the usual motion of the south-east swell took place. The wind at the time was south-west, light, weather cloudy, barometer 30° 01′, thermometer 80°. The sensation resembled a

ship scraping a pebbly bottom, and the vibration of the ship was very great.

— A very interesting account of an epidemic of malaria in eastern Massachusetts is given by Dr. L. B. Adams in the *Boston medical and surgical journal*. This epidemic of intermittent fever occurred in the summer of 1885, and its chief force was felt at South Framingham. The infected district contains one-third of the area and one-fifth of the population of the village. Five-sevenths of the houses had cases in them. In some instances every occupant was attacked. A few scattered cases were seen in June and July. At the close of July there was a change of weather and a heavy fall of rain. This was immediately followed by the appearance of many cases. August was colder than it had been for fifteen years, and the rainfall great, more than seven inches. Between the end of July and the latter part of September, when the disease began to decline, more than two hundred cases were seen and reported by the physicians. It was thought by some that the disease was attributable to the drinking-water. The full history of this epidemic, and the views of Dr. Adams, will doubtless be given in the future, and we shall then refer to this subject again.

— Special attention should be paid by bathers to the exclusion of salt water from the mouth and ears. Many cases of inflammation of the ear, followed by severe and lasting trouble, even to deafness, are chargeable to the neglect of this precaution. Incoming waves should never be received in the face or the ears, and the sea-water which enters the ears when floating or diving should be wiped out by soft cotton : indeed, the best plan is to plug the openings of the ears with cotton, which is to be kept there during the bath.

— The new State board of health of Massachusetts is composed of seven gentlemen, two of whom are physicians, — one a regular, Dr. H. P. Walcott, who is president of the board; and the other, Dr. E. U. Jones, a homoeopathist. Dr. S. W. Abbott, a well-known sanitarian, has been appointed secretary.

— Profs. von Frisch and Ullman of Vienna, after careful and exhaustive study, confirm the views of Pasteur as to the possibility of preventing the development of rabies by inoculations with the virus obtained from rabbits, and are now prepared to treat the victims of rabid dogs.

— Sea-bathing is now so generally practised, and death by drowning so common, that every person should familiarize himself with some method of resuscitation; and if each community living upon the seashore or upon the banks of rivers or bays would organize a life-saving service, or obtain instruction in this important subject, many lives which are now sacrificed would undoubtedly be saved. One of the simplest methods of artificial respiration is that which Mr. J. A. Francis has described in the *British medical journal*. The body of the patient is laid on the back, with clothes loosened, and the mouth and nose wiped; two bystanders pass their right hands under the body at the level of the waist, and grasp each other's hand, then raise the body until the tips of the fingers and the toes of the subject alone touch the ground; count fifteen rapidly; then lower the body flat to the ground, and press the elbows to the side hard; count fifteen again; then raise the body again for the same length of time; and so on, alternately raising and lowering. The head, arms, and legs are to be allowed to dangle down freely when the body is raised.

— Two more persons inoculated by Pasteur for the prevention of rabies, after having been bitten by rabid dogs, have died. Of fifty-four persons bitten by mad wolves, fourteen have died.

— One of the leading men of Edgefield county, S.C., is reported to have died this week from rabies, after an illness of but twelve hours. The bite was received in May from a rabid dog, and produced no trouble until the day before his death.

— In a little pamphlet, under date of Aug. 22, the Hon. W. E. Gladstone has given his views on 'The Irish question' as it now stands, with a history of the movement for self-government and an indication of the lessons taught by the recent election. This has been published on this side by Charles Scribner's Sons, New York.

— 'A catalogue of minerals,' by Albert H. Chester (New York, *Wiley*, 1886), is intended to embrace all English names now in use in the nomenclature of mineralogy. It includes species, varieties, and synonymes. Dead and useless names have been omitted, so that the catalogue can be conveniently used as a check-list and in cataloguing collections.

— The weather report for August, from observations taken at Lawrence, Kan., shows that the month was one of the three hottest Augusts on record. There were eleven days with temperature below the average for the season, but the remaining twenty days were excessively hot; and the week from the 11th to the 17th surpassed any week since August, 1874. The July drought was broken on the 1st by a copious shower. There were seven other serviceable rains during the month, but no rain sufficiently heavy to wet the ground to a greater depth than two inches.

— Glanders is said to be quite prevalent among horses at the present time. The New York state board of health has discovered six cases at Middletown.

— The Paris *Conseil municipal* has ceded to the Society of the *Institut Pasteur* for ninety-nine years the ground upon which the institute is built. The following official statement has just been made: The whole number of persons treated by Pasteur is 1,656 (of these, 15 have died); 1,009 of these were French (3 of them died); 182, including 50 bitten by rabid wolves, were Russians (3 of these bitten by dogs, and 8 by wolves, have died); 20 were from Roumania, with one death; of the others, 59 were from England, 17 from Austria, 74 from Algeria, 18 from America, 2 from Brazil, 42 from Belgium, 58 from Spain, 7 from Greece, 8 from Holland, 25 from Hungary, 105 from Italy, 20 from Portugal, 2 from Turkey, and 2 from Switzerland (of all these, not one has as yet died: the total mortality, therefore, is less than one per cent, — a most striking commentary upon the views of those who declare Pasteur's methods a failure).

— At the last meeting of the American association, Eugene Michel Chevreul, on the motion of the section of chemistry, was elected an honorary fellow, the second only on the rolls of the association.

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.*

Dynamite explosions.

IN its issue of the first inst., referring to the recent Chicago explosion, the New York *Herald* publishes, under the heading 'Teachings of the explosion,' an article containing 'some things' claimed to be 'instructive and important,' but which are so incorrect as to be neither. In this article it says, "But we know now, happily at the cost so far of but two human lives, some things that are instructive and important. One is, that a huge mass of dynamite, say ten tons, even when blended with five times its weight of gunpowder, expends its main force downward, thus verifying, on a vast scale, a fact known of the explosion of much smaller quantities of dynamite. Another fact is, that dynamite, even in huge volumes, is less likely to ignite neighboring masses of explosives in such a casualty than an unmixed mass of gunpowder would be. There were ten large magazines close to the Laflin & Rand, and all escaped ignition."

The above statement, that 'a huge mass of dynamite,' in exploding, 'expends its main force downward,' and the deduction that this verifies, "on a vast scale, a fact known of the explosions of much smaller quantities of dynamite," are so scientifically inaccurate as to need correction. The fact is, dynamite explodes with equal force in all directions, and that, at whatever point it meets with the greatest resistance, at that point it is most destructive, whether it is upward, downward, or laterally.

It is a common error, however, that dynamite always 'expends its main force downward,' which arises, probably, from the fact that, in the majority of reported dynamite explosions, it has met with the greatest resistance from the earth, and therefore has exhibited its 'main force' in that direction.

Mr. G. M. Roberts, manager of the Nobel's explosives company, London, writes as follows to the London *Times*: "Nitroglycerine and dynamite do not, when exploded, exert such a force as is popularly believed. To speak precisely, the power developed by the explosion of a ton of dynamite is equal to 45,675 tons raised one foot, or 45,675 foot tons One ton of nitroglycerine similarly exploded will exert a power of 64,452 foot tons; and one ton of blasting gelatine, similarly exploded, 71,050 foot tons. These figures, although large, are not enormous, and need not excite terror. Seventy-one thousand tons of ordinary building-stone, if arranged in the form of a cube, would measure only 90 feet on the side, and, if it were possible to concentrate the whole force of a ton of blasting gelatine at the moment of explosion on such a mass, the only effect would be to lift it to the height of a foot. The foregoing figures are derived from experiments made at Ardeer with an instrument which gives accurate results in measuring the force of explosives."

Supposing these data to be reliable, and in view of the fact that the buildings which stood on the great excavation in Chicago have disappeared entirely, is it not reasonable to suppose that fully as much force was required to lift, splinter, and distribute, in every direction, the materials composing those buildings, overcoming the attraction of gravitation in the act, as was necessary to make the great excavation in the earth, by the expenditure of 'its main force downward'?

This fact of the elimination of the buildings seems to have escaped the notice of the writer of this article.

In verification of our statement that it explodes with equal force in all directions, the following extract from the above quoted authority, Mr. Roberts, is cited: "I have often, by way of experiment, exploded a pound of dynamite suspended from the end of a fishing-rod by a string about six feet long, holding the rod in my hand the while. As there was no solid matter to project, I received no injury, and the end of the fishing-rod was not even scratched. About three feet of the string at the end of the rod was always left uninjured."

Meeting, in the above experiment, with no resistance other than the air at any point, there was consequently no destructive power shown in any direction; but, had there been solid matter above or below or on either side, the 'main force' would have been expended upward or sideways, and not 'downward.'

This experiment illustrates another remarkable feature in dynamite, peculiar to itself, — that of its concentrated or local effects, compared with the more diffused effects of gunpowder explosions.

Quoting again from Mr. Roberts, he says, "The power exerted by an explosion on surrounding objects is in the inverse ratio of the cube of the distance from the point of explosion. Thus, at 100 feet from the exact point of an explosion, the power is only the cube of 1-100 or 1-1,000,000 part of what it is at a distance of only one foot from that point, or, in other words, if the power at one foot from the spot be represented