frogs, and where he noticed for the first time the facts that led him to his fertile discovery.

M. Brown-Sequard delivered a communication on *rigor mortis* at the last meeting of the Academy of sciences. It is known that this phenomenon is generally ascribed to an hypothetical coagulation of myosin after death. Dr. Brown-Sequard shows, that, if blood is injected in rigid limbs, rigor disappears immediately, and appears again if the blood introduction ceases. This fact has been noticed by him, even twenty-eight days after death. If, during the first eight hours after death, a limb is maintained in a state of constant agitation by means of some mechanical contrivance, no rigidity appears. It is to be noted, also, that cadaverous rigidity does not affect nervous excitability. Dr. Brown-Sequard does not believe in the theory of myosin-coagulation, and thinks that muscular tissue retains, after death, a particular sort of vitality.

M. Succi, concerning whose fasting experiment I gave you some particulars in my last letter, has victoriously achieved his feat, and is getting on quite well. He intends to renew the experiment in Paris. However, he is not considered as much more than a humbug; and to persons of a scientific turn of mind his experiment does not seem to have been conducted in a serious manner. As E. de Cyon remarks in a short but 'telling' paper on the subject, there is no proof whatever that M. Succi has not been able to feed himself secretly.

Among new books I must say a word of the memoirs published during the competition for fellowships in the medical school. Some subjects are interesting; for instance, 'On progress of teratology since Geoffroy Saint Hilaire' (by Princeteau), 'Muscular work and heat' (by Tapie), 'The origin of heat and power in living organisms' (by Lambling), 'Alkaloids of animal origin' (by Hugounenq), 'Pigments and coloring-matters of animal economy' (by Villejean), 'Air' (by Morelle), 'Calorimetry and thermometry' (by Malosse). Generally speaking, these memoirs are good and substantial, and they give a good idea of the present state of science concerning the questions to which they refer.

The professors of the different schools are coming back to Paris, and preparing their winter work. In the medical school some considerable material changes are being made. The new laboratories are ready, in the new building in front of the medical school, and the professors entitled to occupy them are going to move their instruments and books. Professor Vulpian visited his laboratory the other day, and was happy to see that he was to benefit by the change. The fact is, that the old rooms he has occupied in some old houses close to the school these many years are quite inappropriate for laboratory work, space and light being very scarce. In the new building, although he will have nothing very extraordinary, he will be much better off. But our best French laboratories are small and inconvenient when compared to German ones. Nevertheless, France can boast of many great physiologists, such as Magendie, A. Bernard, Vulpian. Fine laboratories do not create genius, but they help a good deal in making work easier and more accurate. V.

Paris, Oct. 15.

NOTES AND NEWS.

THE *Quarterly journal of economics*, announced by President Eliot of Harvard at the last commencement as having its origin in a fund of fifteen thousand dollars given to Harvard for the purpose by John E. Thayer, Esq., has appeared. While primarily an economic periodical, its prospectus does not exclude from treatment current topics in other branches of political and social science. In outward appearance the new *Quarterly* is very attractive, and the contents of this first issue are of excellent character and quality. Professor Dunbar, the editor, writes the opening article on 'The reaction in political economy.' To him "this movement appears to be no revolution, but a natural reaction, probably salutary, and destined to promote ultimately a rapid but still orderly development of the science, upon the lines laid down by the great masters of what is called the deductive school." In view of its historical and ethical aspect and its directing the attention of the economic world to new problems, Professor Dunbar thinks that the importance of this movement can hardly be overrated; but nevertheless it is not an absolute break, as is sometimes supposed, in the continuity of economic thought. The second article, by Mr. Arthur T. Hadley of Yale college, treats of 'Private monopolies and public rights.' It deals principally with the railroad problem. Mr. S. Dana Horton, whose reputation is international, writes learnedly and clearly on 'Silver before congress in 1886.' It is a strong argument for immediate action by congress in order to put an end to the 'present amorphous and anomalous state of affairs.' Following the leading articles come valuable notes and memoranda, and an interesting letter on economics in France by Arthur Mangin. The bibliography for the quarter is appended, carefully classified, and in an appendix is included a partial translation of Wagner's review of Cohn's 'System der national-ökonomie,' from a late number of the *Jahrbücher für national-ökonomie u. statistik*. The first number is in every way commendable, and we can

heartily congratulate all students and readers in the great fields of political and social science that it has been found possible to found in a single year two American quarterlies to deal with those subjects, and both of the highest order of merit.

— A hand-book of school superintendents, for 1886 and 1887, has been issued by The writers' publishing company, No. 21 University place, New York.

— In the last number of the *Philosophische monatschrifte*, Professor Schaarschmidt announces that Professor Natorp of Marburg will hereafter be associated with him in the conduct of that journal.

— 'A manual of lithology,' by E. H. Williams, jun. (New York, *Wiley*, 1886), may be of value to engineers and others who wish to know something of the names and composition of the commonest rocks in a superficial way; but its title, 'A manual of lithology,' is certainly not warranted by any thing which it contains. The author regards only the macroscopical characters of minerals and rocks, which modern students know are, by themselves, most unsatisfactory and often misleading. After a few preliminary definitions, the commonest rock-forming minerals are mentioned, and a few of their characters given with more or less accuracy in tabular form. Then follows an enumeration of the principal rock-types, with the briefest possible description of each. The nomenclature here is quite antiquated, and employed apparently with no knowledge of the recent advances in petrographical science. The author's difficulty in distinguishing between crystalline and amorphous bodies leads him throughout the work into curious blunders. Why the peridotite rocks should have been placed in the group of 'special rocks,' it is difficult to see. Altogether this little book is very unsatisfactory, even for the extremely limited field which it attempts to cover.

— A fatal case of poisoning by bisulphide of carbon has recently occurred in England. The patient was a shoemaker, who was under the influence of liquor at the time that he drank the poisonous liquid. Although a physician was in attendance within fifteen minutes after the bisulphide was taken, and applied the proper treatment, the man died in two hours.

— A correspondent of the *British medical journal*, who has had large experience in the treatment of hydrophobia, says that the usual duration of the disease, from the time of attack to death, is from three to five days. He had but little difficulty in administering liquids, if they were of a dark color, and given from a vessel which was not transparent, so that the contents would not be seen until the vessel was placed to the lips.

— Dr. Joseph Jones of New Orleans recommends most highly the drinking of large quantities of fresh milk in cases of arsenical poisoning. His explanation of its action is, that it dilutes the poison, encloses it in its coagula, sheathes the inflamed surface of the mucous membrane, and, when the stomach is capable of absorption and digestion, it forms an aliment of the greatest value. His experience includes more than thirteen cases, all of which recovered.

— Dr. Morse of Amissville, Va., claims to have treated one hundred and twenty-five cases of diphtheria without a fatal result in a single case. Although he employs other remedies as adjuvants, he attributes his success to bicarbonate of potassium, which he gives to an adult in doses of from ten to twenty grains every two hours, with the view of saturating the system as soon as possible.

— A student at an Arkansas college, while making hydrogen gas, applied a match to the tube from which the gas was escaping, and, the air not having been expelled, an explosion followed which burst the retort, the pieces of glass flying in all directions. One of the student's eyes was injured at the time; and as the trouble was lately increasing, the eye having in the mean while become blind, and as it was feared the sound eye might be sympathetically affected, the diseased eye was removed, and embedded in the tissues was found a piece of glass 15 millimetres long, 12 wide, and 1½ thick.

— The Marchant steam-engine, now being introduced in England, shows a remarkable advance in efficiency, unless there be some undiscovered source of error in recent tests made. According to reports published in the London *Electrical review*, in a run of six hours and a half the engine developed ninety-eight horse-power upon a consumption of fuel of 77.54 pounds of coal per hour, or 0.791 of a pound of coal per horse-power hour. The accuracy of the methods employed in making the tests has been questioned by experts, and the resulting controversy will only be ended by further and more extended tests under conditions satisfactory to all. The action of the engine is as follows: the steam, at its initial pressure, passes from the boiler to the high-pressure cylinder, whence one third of the steam is taken to the low-pressure cylinder, expands, does its work, and is exhausted into the vacuum maintained in the condenser, converted into water, and finally conducted to the pumps as feed-water; the other

two thirds of steam, on leaving the high-pressure cylinder, passes into another, is expanded at two-thirds the stroke, and, having exerted its power, proceeds to a pump, where it is again expanded. After this the two-thirds steam is compressed in the last pump into the one-third feed-water; this latter process is carried on at the expense of engine-power, which is exerted not only in forcing the steam into the feed-water, but in compressing a cushion of air maintained at a proper pressure by means of air-pumps. This cushion or air-spring, on the return stroke, renders up its stored energy by pushing or returning the combined feed of steam and water back to the boiler.

— The next meeting of the Indiana academy of sciences will be held at Indianapolis, Dec. 29. It is proposed that the papers presented to the academy be grouped according to the topic; that is, that all papers upon geology be brought together, and all upon biology, etc. Those who desire to present papers should, at their earliest convenience, send the titles of their communications to the secretary, Mr. Amos W. Butler, Brookville, Franklin county, Ind.

— The new U. S. cruiser Boston. Mr. Gould's yacht Atalanta, and Mr. Vanderbilt's yacht Alva, are to be furnished with dense-air ice-machines, which are now being built at the Delamater iron-works in this city. In these machines, which require no chemicals, the air is compressed and expanded between the limits of twelve and four atmospheres' pressure, being used over and over again in what is called a 'closed cycle.' In the ordinary cold-air ice-machines the air is compressed and expanded between the limits of the normal atmospheric density and three or four atmospheres. The lower limit of density in the new machines — four atmospheres — is produced and maintained by a small auxiliary air-pump, which is automatically thrown out of action when the proper pressure is reached, resuming again when, through leakage, the pressure is reduced. It is said that with these machines ice may be produced at a cost of two dollars per ton.

— The electric motor is destined to play an important part in the history of railroads in this as well as other countries. Although not yet out of the experimental stage, electric street railways are rapidly gaining ground in public favor. Chicago, Baltimore, Philadelphia, Minneapolis, Toronto, and other cities already have electric street-railways in successful and profitable operation. About a dozen new roads are in course of construction, and a score or two more are projected. Montgomery, Ala., will be the first city in the world to have a complete electric street-railway system. In this city it is expected that a new and powerful Daft electric motor will soon be making trial trips on the Ninth Avenue elevated road, hauling a train of four or five cars; and on a branch of the Third Avenue road a passenger-car equipped with Sprague motors has been making experimental trips during a great part of the summer.

— The contributions to the mineral wealth of the world from the mines of Victoria, Australia, up to the beginning of the present year, show the very respectable total value of $1,052,635,824. This is divided as follows: gold, $1,047,129,274; tin, $3,239,524; copper, $920,000; antimony, $824,466; silver, $350,840; coal, $84,738; iron, $61,045; lead, $25,937. During the past year there was a total of 26,192 persons engaged in mining in Victoria, of which number 4,950 were Chinese. It is noticeable that of the latter there were only 202 engaged in quartz-mining, the rest working at the alluvial or placer diggings.

— The tincture of the chloride of iron, diluted with water, is very generally used as a tonic. Recent experiments have shown that when thus diluted it acts very injuriously upon the teeth. This is explained by the fact that the peroxide formed in the alcoholic solution is precipitated when water is present in such a flocculent form as not to adhere to the surface of the teeth, and consequently the free hydrochloric acid can act upon the lime salts of the teeth without let or hinderance. When the tincture is given without water, no action takes place; the peroxide which is then formed is of the anhydrous form, and so compact as to adhere to the teeth, and protect them from the action of the acid. These experiments have resulted in determining that there are three menstrua which can be used as diluents of this tincture, which will produce no injurious effects upon the teeth: they are alcohol in some form, vichy water, and a simple sirup.

— Professor Legge states that he has found two embryos in a single blastoderm in a fowl's egg at the third day of incubation.

— A remarkable death has recently occurred in Paris, in which the cause would never have been discovered had not an autopsy been held. A young girl was found dead in the street, and was at first supposed to have been the victim of foul play. When the post-mortem examination was held, the larynx was found to be closed by lumbricoid worms, which had been vomited, but had not been ejected from the mouth.

— The report of the director of the Leander McCormick observatory of the University of Virginia,

for the year ending June 1, 1886, states that the great equatorial has been chiefly employed in the examination and sketching of southern nebulae. The nebula in Orion, and the Trifid and Omego nebulae have received special attention. 351 observations of miscellaneous nebulae have been made, resulting in 226 drawings, and the discovery of 233 nebulae which are supposed not to have been hitherto detected. Only a few nights have been suited to the micrometrical measurement of double stars; 76 observations have, however, been made. Observations of three comets have been made. Tuttle's comet was observed at only one other observatory, Nice, in France; and Barnard's comet of 1886 was observed at this place three weeks later than elsewhere. The small equatorial has been employed in revising the catalogue of stars south of 23°. The observations for the revision of the 23° zone are now practically completed. The director, Ormond Stone, expresses the opinion that the past year has been, without exception, the poorest for astronomical observations which he has ever known. Not only have there been an unusual number of cloudy nights, but even on clear nights the definition has been almost always extremely poor.

— An interesting combination of the Coulier-Aitken theory of the control of dust on cloud-formation with Thomson's investigation of the effect of surface form on evaporation has lately been made by Dr. Robert v. Helmholz. He finds that a definite and perceptible cooling of a mass of moist air below its dew-point is needed before any condensation begins, and ascribes this to the facility with which the first-formed water-droplets would evaporate on account of their sharply curved surfaces; so that super-saturation is needed to begin their formation. At the same time, the degree of super-saturation ordinarily needed is less than that required in dust-free air, because the dust particles diminish the surface-curvature of a given minute volume of water; and also, at the beginning of condensation, the particles may prevent evaporation from the surface of water that is attached to them. Filtered air has been carried to tenfold super-saturation without a trace of mistiness.

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.*

Ely's Labor movement in America.

ALTHOUGH I have never before written any thing in reply to the censures of a reviewer, I feel moved to say a few words about the critique of my 'Labor movement in America' which appeared in *Science* for Oct. 15.

There are several reasons for this departure from my ordinary course. First, other authors have established the precedent, and *Science* has already published statements in reply to severe criticism of a book. While an author should doubtless decline to discuss his own capacity or general qualifications for his task, it may be very proper for him to call attention to positive misstatements of his reviewers. I am inclined to think it desirable that this should become general, as it would perhaps lead people to read a book carefully before reviewing it, — a thing which may be regarded as exceptional at present. Second, while it is doubtless not worth while to notice those who fail to distinguish between a torrent of personal abuse and serious criticism, it cannot be incompatible with one's self-respect to point out the errors of fact in a critique written by a person like N. M. B., who evidently desires simply to give expression to truth, and not to vilify an author. Third, a review is read by many who never see the book reviewed; and it may even be my duty to correct serious misapprehensions to which the article by N. M. B. must give rise, especially as they relate to such grave and pressing problems of the hour.

N. M. B. says that I seem to uphold "the extremists in their contention that all the evils of the present state of society are due to private property and the lack of proper co-operation in production and distribution." This is simply inconceivable to me; for the exact opposite is stated, I think I may safely say, fifty times in the book reviewed. I can find no more rational explanation for this astounding assertion of N. M. B. than that during a nap between chapters it came to him in a dream. If I held the opinion attributed to me, the remedy for social evils would be the abolition of private property; in other words, the socialistic programme. Is it not a little strange, that, with one exception, the sharpest attack on the book should have appeared in the organ of the socialistic labor party, while other reviewers complain because I leave nearly every thing to sympathy and benevolence, and furnish no adequate room for the activity of the state? The truth is, I point out many causes for the evils of present society, as intemperance, imperfect ethical development of man (which N. M. B. acknowledges, thereby falling into self-contradiction), unchastity, ignorance of the simplest laws of political economy, extravagance, and, in fact, 'the wickedness of human nature.' When, in his reproof of me because I failed to see so deeply as an ancient sage, N. M. B. goes on to ask labor agitators and 'their allies among professed political economists' whether the social, political, economic, and ethical elevation of men at large, and the human nature that is in them, is not what is wanted, he repeats my own words. I have dwelt at length on this point because I regard the accusation brought against me as a serious one. While I would not reproach N. M. B. with malevolence, I do bring against him the charge of culpable negligence. This is not the only case where the reviewer dwells on objections to the programmes of labor organizations, which I have pointed out, in such manner as to convey the impression that I have failed to see them. He does this in the discussion of the financial platform of the knights of labor. N. M. B. still labors under the delusion that men in masses in this country strike, and do all sorts of dreadful things, because some one 'snaps his fingers.' No doubt, he has read it in his daily paper; but for a man of scientific pretensions to repeat it, shows a strange ignorance of human nature and of the operations of the mind of