

sition. In extreme contrast to this was a valve which had been in work for twelve years. It had a specific gravity of 75½ lbs. to the cubic foot, and was probably seven eighths or one inch thick when new, the portions still sound retaining their original elasticity. This valve, however, was constructed of a mixed rubber, and Mr. Syme considers that rubber to which a metallic pigment is added, in addition to the usual quantity of sulphur for thorough vulcanization, is best adapted for the construction of air pump valves, the specific gravity being from 72 lbs to 77 lbs. per cubic foot. He thinks that pure vulcanized rubber is dissolved and worn away more rapidly when acting in oily water than the "mixed," which is protected by a pigment impermeable by oil or fluid grease. The general conclusions drawn from the examination of these specimens were that circular valves should be allowed to rotate, and that the angles of the apertures in the grid plate and the edges of bearing bars should be rounded off, as when these are left too sharp and the valve beats always in one position, the rubber is cut, and the oil getting in produces a viscid effect in each incision.

Speaking of oblong foot or discharge valves, Mr. Syme says they should be of a third quality mixed rubber from 92 lbs to 102 lbs. per cubic feet, and not above three quarters of an inch thick, because within certain limits the thicker they are, the shorter their life, from the fact that, being fixed along one side, when thrown back the difference in stretching between outer and inner curves tends to break the valve—this quality of rubber having too little elasticity to withstand extreme bending for any length of time. In modern compound engines the cause of the destruction of rubber air pump suction and discharge valves is the large quantity of lubricant—oil or grease—which permeates or saturates the steam before passing through the two cylinders, and all of which passes over the faces of the rubber valves among a much smaller proportion of water than in the older condensing engines. In order to prevent this destructive action as much as possible, Mr. Syme suggests that these valves should be constructed to work without bending—rising and falling as some feed pump valves do; by which arrangement it would be possible to employ a heavier rubber, and one better adapted to withstand the action of solvents.

Referring to the applications of rubber for packing joints in steam pipes, Mr. Syme showed the rapidly destructive effects of high pressure, high temperature, and lubricated steam on best red rubber. A flange joint of a supply pipe immediately under the injecting lubricator (best sperm oil) was packed with red rubber one sixteenth of an inch thick, the pressure in the pipe being 40 lbs. In three to four months it was eaten through to the bolt holes—in six months quite through. Joints of the same thickness, used for the high pressure cylinder covers, further away from the lubricators, stood from six to nine months before being eaten through to the bolt holes, while those in connection with the low pressure steam lasted two years and more. This shows that superheated, high pressure steam, permeated with best sperm oil, destroy vulcanized rubber very quickly, a result which might have been anticipated when it is known that rubber vulcanized at about 300° Fah. becomes quite soft in hot air at 460° Fah.

We shall probably return to this subject in a future number, and give illustrations of various applications of india rubber in mechanics, with some proposed improvements by Mr. Syme.—*English Mechanic.*

EXPERIENCES OF A BUREAU OFFICER.

[Extract from a speech of Hon. S. S. Fisher, late Commissioner of Patents.]

In one of my earliest interviews with Secretary Cox he had called my attention to the act of March 2, 1853, and suggested that no one should be nominated who had not passed a rigid examination. Indeed, he proposed that we should go farther. A tremendous pressure was, of course, being made for the removal of clerks from all the bureaux of the department. There were some drunken, ignorant, and worthless men in all of them, but the ax was not to be laid at the root of all such trees. On the contrary, those whom we were most earnestly besought to remove were frequently among the most intelligent, experienced, and skilful employes. Their offence was not that they were incompetent, but usually that they had spoken against the impeachment of the late President. This view, which they shared in common with not a few members of the dominant party, was by no means to be overlooked or atoned for by reason of their admitted capacity or valuable experience. As it really seemed as if the outcry for the creation of vacancies for the hungry crowd must in some way be satisfied, and as there was good reason to believe that a large part of the hostility to individuals arose in great measure from the fact that they were in while their accusers were out of office, the Secretary proposed that a thorough examination of the entire department should be made under the act of 1853, and that men should be dismissed for incompetence rather than for a variation in the shade of their Republicanism.

The act of 1853, after providing for the appointment of four classes or grades of clerks in the various departments, proceeds as follows: "No clerk shall be appointed in either of the four classes until after he has been examined and found qualified by a board, to consist of three examiners, one of them to be chief of the bureau or office into which he is to be appointed, and the two others to be selected by the head of the department to which the said clerk will be assigned." Here is authority amply sufficient for the inauguration of a thorough civil service reform. It is obvious that the examination here referred to may be made as searching as desired; that every precaution may be adopted to insure its entire fairness; that such examinations may be either

mere pass examinations, or may be made competitive, and that the President of the United States, as the executive head of the government, might if he chose, without further hesitation, issue a general order controlling all the departments, and establishing therein the principle of competitive examinations. There were circumstances which rendered the application of this statute to the Patent Office a matter of comparative ease. If I had been an applicant for the office of Commissioner, and had obtained it by reason of the active exertions and warm recommendation of Senators and congressmen, I should upon taking office have many debts to pay. It would have been hardly the fair thing to say to one of my Congressional friends that his candidate could not be received on his recommendation, but that he must first pass the ordeal of a stringent examination. He would have replied, "Why you were yourself appointed upon my recommendation. You have passed no such examination. If my indorsement was good enough to make the head of a bureau, it ought to be amply sufficient to guarantee the fitness of one of his subordinates." And then he would, perhaps, gently remind the reluctant officer that the influence that could make might also unmake, and that he must of course "provide for his friends." But it is obvious that if this gentleman's nominees were appointed without proper examination, that the independence of the office was lost, and that other members would demand the same consideration for their indorsement of their candidates, until the old system was fully inaugurated.

It was my good fortune not to have a single debt of this kind to pay; to feel conscious that the man did not live who could ask for office for himself or friend as the price of word or deed on behalf of my nomination. There was no reason, therefore, why a stringent examination should not be provided for all who wished to keep their places, as well as for all who longed for those places and besieged our doors to obtain them. Such an examination was made. To say that it caused a commotion would be to state the effect of the order in very faint terms. Some came to it with fear and trembling and even with tears, others came with curses; some refused to come at all, but preferred to resign at once. Of the latter, one man, in order to heap coals of fire upon my head, while tendering his resignation, begged me to accept a small copy of the Bible. In the volume was a slip of paper containing the beatitudes in Latin, with a note requesting me to take notice that it was from no want of education or fear of the result of an examination that the donor declined to submit himself to the rule. The Latin quotation was evidently copied from a Latin Testament, and was unfortunately copied wrong, containing a blunder that no scholar of the language could have made. This examination resulted in several dismissals, and these immediately brought to our doors the inevitable Congressmen. We were told that our examinations were a humbug, or that they were so arranged as to kill off the particular men who were dismissed. Our good faith was more than doubted, and our common sense was broadly questioned. One gentleman who appeared as the champion of the most worthless, reminded me that he was a member of the Committee on Appropriations, and that the former Commissioner had experienced much difficulty in obtaining the necessary funds to carry on the business of the bureau. As this argument failed to reverse the inexorable figures of the examining committee, he took his hat and departed in wrath.

Another of the dismissed, having pined me unsuccessfully with a Senator and a member of the House, proceeded to take the matter into his own hands, and wrote to me about once a week, calling upon me to repent of my sins, to read my Bible more, to do justice to him and reinstate him in office, to turn out his enemies, or prepare to meet him at the tribunal of an unprejudiced judge in another world. I give one of the shortest of these letters entire: "Is it not singular," says the writer, "that you should have selected to be dismissed one so thoroughly radical as myself—the only one in the four model rooms of the same religious profession as yourself—one kind to the poor, even beyond his means, and recommended by the best of men? Remember, I am writing to a person who professes to delight in truth, and one who will shortly stand before a supreme tribunal. Can you there be justified?"

Another says: "Now, S. S. Fisher, if your Masonry is greater than your religion, God will curse you. Repent before it is too late. See Psalm 101, verse 5. Reform the draftsman's and model rooms, dismiss the superintendents, and then pray, and may be God will hear you."

Another laid his complaint before the Secretary of the Interior, and said: "Allow me to call your attention to the accompanying letter of Mr. Wade, and to say that notwithstanding that letter and my long service in the Republican party, I have been dismissed by Mr. Fisher. The late Commissioner of Patents was removed in consequence of his politics not being of the proper stamp, and Mr. Fisher was put in his place because his are of the proper stamp, and yet Mr. F. selects me for dismissal. I wish you would have Mr. F., who doubtless has been urged to this by some personal or political enemy, to reconsider his action and have me reinstated, that I may not be taunted or triumphed over by political enemies." The sublime coolness of this appeal will be better appreciated when it is added that in an examination in which the highest mark was 100 and the lowest 1, this man received 14, and his utter inefficiency was notorious to every one who had dealings with the office. In the application of the system of pass examinations to applicants for admission to the bureau there were found to be many practical difficulties. In the first place the law was sixteen years old. It had been nominally observed in many of the departments, until at length it had notoriously become a mere form, was habitually

disregarded, or totally ignored, and was found to be convenient only for the purpose of getting rid of some man who was sacrificed by an unfair application of it, or it was manipulated for the benefit of some favorite who was allowed to slip through its meshes. It was in bad repute. Instances were current, and were authentic, in which the examiners had been requested to make the proposed test a mere formality. Many who had been subjected to it were able to tell of trifling questions concerning routes of travel or the state of the weather, or the health of their families, or the welfare of their aged parents, which comprised the total examination as to their education or capacity.

THE APPLICATION OF STEAM TO CANALS.—NO. 5.

BY GEORGE EDWARD HARDING, ESQ., C. E.

We close the list by calling attention to the arrangement for applying steam power to canal boats, which has been recently designed and practically operated in the United States by Mr. Thomas Main, mechanical engineer, of New York, and presented in longitudinal section and plan on the diagram. It will be seen that it possesses all the happy features for obtaining propulsion by steam on narrow channels, for which many have striven, but none before fully accomplished; but, as has been justly remarked by a modern writer, "an invention is progressive in a regular series." There may be a long order of elementary principles developed without the occurrence of a single practical result, so far as any useful application is concerned, but the perfect machine will be found by somebody. Analyze the diagrams, and there will be found a propeller placed in the bow of the boat (its advantages are readily seen), working in a channel underneath the vessel. The peculiar sloping of the channel is the most convenient arrangement for overcoming any tendency to create a wash, which has been, in some form or under some name, the object of several inventions. The high pressure machinery and tubular boiler is the very locomotive engine so strongly urged by Mr. Fairbairn, only in this instance the inverted cylinder and upright boiler economize the space to the utmost. In fact, the general position of both the channel and the motor interferes least with the cargo bulk; and the water, after passing the propeller, is deflected in the line of least resistance, and passes under the entire length of the boat, to form scarcely a ripple upon the surface, while the channel sides are a safeguard against any lateral waves. It may be asked if the peculiar shape of this channel does not cause friction of the water, and great loss of power. This would certainly be inconvenient in any case of high speed, but in the slower movement of canal traffic we shall not find any appreciable loss from this cause.

A boat constructed on this principle has been for some time regularly employed upon the Erie Canal in America, carrying, besides the machinery, 200 tons of cargo, at a rate of three miles per hour, including lockages, or seventy-two miles in twenty-four hours, consuming only a ton of coal, at \$5, against \$28.50 for two horses' towage for the same distance—a saving of half the wages of crew, and transporting the goods in the same proportion of time—and, additional to its own cargo, it can tow a similar loaded barge at very nearly the same speed. This boat can go through a lock in six minutes, against twelve minutes required for a horse boat, and is then handled by one man with ease. There is no injurious action on the banks, and the boat can leave the canal and proceed as quickly and safely on river navigation with her self-contained power. In twelve months, such a boat, 70 feet long by 16 feet wide, and 9 feet depth of hold, with an 8 inch cylinder, driving a 4½ feet propeller, can pay for her entire cost from the saving over horse boats, to say nothing of the certainty and dispatch which alone insures the confidence of the mercantile community, and is the foundation of extensive patronage.

Every comparison between the expense of steam *versus* horse carriage that is attainable, gives great economy to the former system; and, sooner or later, with her canals enlarged, and steam propelled boats giving a system of trackage indefinitely superior, cheaper, and more regular, than anything hitherto dreamed of, England's internal navigation will take a position worthy of those talents that conceived them. The party of croakers who are ever found in opposition to improved communication, will, with the present employes and certain railway interests, loudly cry out against any innovation trenching on this special province, and predict sad disaster to the country by any interference with the ancient customs now cherished so fondly; but if the step is not now taken in the spirit of enterprise, it will be forced upon the country as a necessity, after other nations shall have led the way.

Notwithstanding the immense amount of freight conveyed by railways, now burdened nearly to their utmost limits, we find trade, with its gigantic strides, tasking the carrying capacity of the canals, in spite of their many disadvantages, and ever steadily increasing in its demands. In 1835, before the opening of the London and Birmingham Railway, the through tonnage conveyed on the Grand Junction Canal was 310,475 tons, and in 1845, after ten years opposition of this road, the tonnage had increased to 480,526 tons; while, at the annual meeting of the canal proprietors, in 1860, the receipts for the previous six months had been the largest ever experienced.

America, at the present moment, is alive to the necessity of canal improvement. Nearly \$4,000,000 have recently been recommended by the Canadian Canal Commissioners for the enlargement and construction of slack water navigations. And, within a few weeks, the Legislature of New York have introduced a bill offering a reward of \$100,000 for the best plan of canal navigation, in the substitution of steam, or

other motive power, for animal labor; and England should not remain backward in the race, especially since to her canal system she owes so much of her present prosperity and greatness.

The cumbersome barge, with snail-like advance, feebly contrasts with the iron horse, thundering by with its speed and power. Yet, improved as they should and must be, canals will always continue to form an essential part of internal communication, to be missed quite as much as roads, railways, or even the telegraph itself.

In conclusion, the author expresses his sincere regret that this glance at the canal systems, and the mechanical methods which have been suggested as applicable to the propulsion of their boats, had not fallen into abler hands. Its compilation has been gathered from many sources and authorities, with but limited time spared from usual avocations. But, trusting that it may at least draw attention to a most important field in the economy of nations, such as it is, this paper is presented, in the hope of a favorable reception.

PHRENOLOGY AND SPIRITUALISM.—A LIVELY DISCUSSION.

At an ordinary fortnightly meeting of the Anthropological Institute, in London, the Secretary read a paper, written by the Rev. Canon Calloway, M.D., of Springvale, Natal, Western Africa, on "Dreams, Sympathy, Presentiment, and Divination, among the Natives of Natal." He began by saying that in all ages and in all parts of the world, certain strange phenomena have been seen, which by some have been ascribed to delusion, by others to imposture, by others to disembodied spirits, and by others again to the devil. The author argued that these phenomena probably had a natural source, and were probably due, in great part, to the mental condition of the observers; at the same time, he held it to be utterly unscientific to deny the existence of spirits, and the possibility of their playing any part in the affairs of man. He then proceeded to explain that certain changes in the state of the brain will cause men to see spectral illusions, and that a man who wakes very suddenly out of a dream, with the image of the person he saw in the dream still impressed upon his brain, sees that person at the moment of awakening, and believes, therefore, that he sees a spirit. Some spectral appearances he could not explain in this way, such, for instance, as the ghosts sometimes seen in haunted houses, by persons who slept therein, without knowing the house to be haunted.

In the course of his paper, he described the clairvoyant powers of some of the Zulus, and finally narrated how some of the natives went to consult a woman, in whose presence the spirits were said to talk with audible voices. A native Kraal among the Amadunga, on the Tukela, having had some quarrel with their people, settled with a relative among the Amal-longwa. After settling there, a young child of theirs was seized with convulsions; so some cousins of the child went a day and a half's journey to consult a woman who possessed spirits. The woman had never seen the inquirers before. The cousins sat on the floor of the hut, and the woman in the center, in broad daylight. Soon a voice, like that of a child, was heard near the roof of the hut, and this voice told the cousins that they had come to seek the advice of the spirits about a child suffering from convulsions; the voice also told them all kinds of things about their private family affairs, and told them what to do to cure the child. The natives then returned home, followed the instructions given, and the child recovered.

Dr. Calloway offered no explanation of this case, and he closed his paper by saying that, although these phenomena "cannot be ascribed to the direct agency of good or evil spirits alone, yet they may be intimations that not only can the soul of man look out upon the world around him, and become cognizant of it through the organs of sense, but that it can look in another direction, and, without the organs of sense, obtain a knowledge both of what is going on in the world beyond the sphere of the senses, and even look into futurity, and hold communion with the invisible world of spirits."

Mr. J. W. Jackson, F. A. S. L., of Glasgow, said that, in the first place, he did not think that the author had sufficiently explained his subject by the aid of phenomena, well known to men of science, for all the phenomena of dreams can be reproduced by means of phreno-mesmerism. He knew that subjects like these were much tabooed by the Anthropological Society, still they formed a part of the study of the science of man. When a man is in the mesmeric sleep, the operator has but to excite the organ which leads to dreamlife; if it be desired to show him somebody in distress, the operator has but to touch the organ of benevolence; if veneration be excited, he will perhaps fancy that he is in church; if the organ of philoprogenitiveness be touched, and the subject be a lady, she will perhaps fancy that she has an imaginary baby, and will begin to nurse it with the greatest care. Dreamlife is a reversal of the waking state. In the former, objects excite ideas; in the latter, ideas place objects before the consciousness. Community of sensation may also be produced by mesmerism; and what the operator feels and tastes, the patient will also feel and taste; this is the case sometimes when the operator does not touch the patient, but is on the opposite side of the room. Two minds may be united in the same way, and then thought-reading takes place. They might assert that these things did not take place; but they do occur, and every mesmerizer has his thoughts revealed to him, at one time or other, by his subjects. The paper just read was interesting, because of its bearing upon the state of the psychology of the savage; although the savage had a coarser physique than the European, he is more susceptible, perhaps, to psychological influences than the white man, because he lives nearer to nature; and all over the world, where men live

closer to nature, they are more susceptible to mesmeric influences. There is no question that many of the phenomena now taking place among spiritualists throw much light upon what is taking place among the natives of Natal, and many of the things described in the paper now occur in our midst. He had seen heavy articles moved about in opposition to the law of gravitation, notwithstanding all that Professor Tyndall and others might say to the contrary; at the same time, he would not say that spirits moved them. These things are taking place around and about us. What is the value of the opinion of a man on this subject who has never seen these things? He had seen them, and knew them to occur. Many spiritualistic facts are mesmeric in their origin. He should like to hear a paper read before the society on the medicine men of North America; also, if some of our Indian officers would give a paper on mesmeric phenomena among the Hindoos, it would be interesting, for India is a great storehouse of extraordinary psychological phenomena. The great thing is for the writers of such memoirs to state what they know without fear. Dr. Calloway had not been afraid to speak the truth that was in him, and that was the great merit of his paper.

Mr. W. G. Dendy said that the spiritualists must not have the tether that evening. As regards Dr. Calloway's paper, what was true in it was not new, and what was new was not true. Dr. Calloway was egregiously wrong in writing it, and he ought to be ashamed of himself; Mr. Jackson, also, was a great man in stating things of which he was not ashamed. He wished that Sir John Lubbock had been present that evening to defend the savages, for many of the facts mentioned in the paper were mere humbug. He thought that Mr. Jackson was correct in much that he had said about dreams, but when he said he could excite a particular organ, he thought it was an entire mistake; it was the same great error that Gall and Spurzheim fell into. By mapping the skull, it was not possible to map the brain underneath it. Phrenologists place the organ of color in the forehead, whereas the nerves from the eye go a long way back into the center of the brain, so to have all that humbug stated at that meeting was too hard to bear. He thought that when their old friend, Dr. Donovan, ceased attending their meetings, that he and phrenology had gone out together. He very much regretted that such a farrago had been placed before them to discuss, and he rose to inveigh against the paper.

Major S. R. T. Owen said, that whether the brain could be mapped out or not he did not know, but almost all the experiments mentioned by Mr. Jackson he had personally tried, again and again; he knew them to be true, so took to himself all the blame awarded by Mr. Dendy.

Mr. Prideaux said that he had seen the phenomena of what is called phreno-mesmerism, and thought that they were produced by the belief of the operator; the operator believed that a certain part of the head was connected with certain organs, and because of this belief the phenomena were produced. Phrenology itself must be proved by facts, and not by opinions, and if Mr. Dendy would bring painters and color-blind people to him, whom he had never seen before, he would look at their heads, and would separate one class from the other.

Mr. Charlesworth said that the paper was all rubbish, and wholly unworthy of discussion. The society would have been much better employed in discussing phrenology and mesmerism than the facts in that paper.

The President said that the subject was one which well deserved investigation, and it was one which labored under an immense amount of prejudice. In some ages, great credulity was the rule, and in others, a great degree of skepticism; every pretence at a ghost was once believed in, and now, perhaps, we go too far in an opposite direction. He wished that some test could be applied to the phenomena, and he thought that the whole question was one which came within the province of the Anthropological Society. He thought there were certain cases of ghost seeing not readily explainable by any theory put forth that evening, such as those instances where people had died in foreign lands, say in India, and appeared to one or more friends at home at the moment of death. Those cases, he thought, could not be got over. The paper was valuable as showing how the opinions of savages agree with our own on such subjects. It was a fair subject for inquiry, and prejudice should be laid aside. Could not some scientific test be applied to these things? He rather thought with Mr. Jackson, and attributed more value to the paper than had been done by some of the other speakers, though he did not exactly see the connection of phrenology with the subject. He thought that the society should scientifically study the subject, try it by tests, and dismiss prejudice as much as possible.

Mr. Prideaux asked permission to speak a second time, and said that the phenomena were real. He had had some talk with the Bishop of Winchester about them, and the bishop expressed his opinion that the phenomena were governed by exact laws, like everything else in nature, only as yet we do not know the laws. One difficulty in the way of scientific investigation is the uncertainty and fugitive nature of the phenomena; the presence of persons adverse to their occurrence interferes very much with the effects produced. Their strange nature was no argument against them, for if eclipses only took place once in a century, the testimony as to their occurrence would be disbelieved. He was quite ready to take his share of obloquy in all matters connected with mesmerism and spiritualism, but with respect to the latter subject he was not satisfied as to the cause of the phenomena.

MEDICINE stains may be removed from silver spoons by rubbing them with a rag dipped in sulphuric acid, and washing it off with soap-suds.

Duration of Animal Life.

The duration of the life of any particular animal depends on its kind of structure, elementary and anatomically, as well as upon its place and mode of subsistence. Some have their lives extended to a century, whilst others live but a few hours. If we examine the longest lived, such as some reptiles, the whale, some kinds of birds, the elephant, and man, we will find the tissues of which they are composed, are so slowly changed, under the normal condition of their lives, the growth, absorption, and renewal of them being of such a character, that the induration which makes the decrepitude of age, is slow in taking place. The land tortoise, a reptile well known for longevity, is constructed of a gelatinous muscular fiber, with comparatively soft bones and shell. He lives on vegetable matter, moves about slowly, becomes fat, and is torpid during the cold weather. With few enemies to molest him when encased in his shell, those that pass from the egg state to this defence live year after year in lazy security, and answer the purpose of their creation. They do not harden and grow stiff by excessive labor as do man, the horse and the dog, and thus become prematurely old. Fish, particularly the larger kinds, attain great age. Whales are supposed to live a century. But little accuracy can be expected in computing the years these monsters roam through the different seas, but evidence from harpoons bearing ship marks, and dates, found imbedded in captured whales, is conclusive that the adult whale will live the greater part of a man's life without undergoing much change. The slow propagation of these monsters, the softness of their muscular fiber enveloped in fat, their food, all tend to that slow assimilation and expenditure of nutritious matter, which is most consistent with a long life.

The peculiar life element, nitrogen, plays an important part in the duration of animal existence. Where the food consists almost entirely of nitrogenous compounds, such as flesh, the greater amount of vitality imparted to such as live on this food, hurries them through their existence, other conditions being equal, in a shorter time than those which feed on a less stimulating nourishment. The tortoise and the whale are supported by vegetable, and other matter, that contains but little nitrogen compared with the food of carnivorous animals. The whole lion tribe, whatever may be their magnitude and organization, soon show symptoms of age. The exertion necessary to procure food, strains every muscle to its greatest tension, and these muscles need constant supplies of highly animalized matter to restore their waste. This wearing away, and renewal, hardens the tissues that are thus constantly in a state of action until they become unfit to perform their perfect functions, and at a period, early, compared with the time it took to bring them to maturity, these carnivora fall into decay. An old, worn out lion is not unusual in the jungle. The buffalo, rhinoceros, and hippopotamus, less stimulated by their vegetable food, and less exercised in its procurement, live to a greater age.

Without bringing other examples in proof of the kind of food and exertion necessary to maintain life having an influence upon longevity, the laws that operate to this end, when duly considered, will show the harmony of the whole animal economy. The time appointed for the individuals of each race to live, seems adjusted to the accomplishment of their peculiar work. The ephemera, in the sunshine for a few hours, fulfil their function and die. Their larvae are longer in coming to maturity, but one short season rounds the whole existence, from the embryo to the perfect insect, and during these stages, whether it has been created for devastation or to be devoured by some other, the wave of life has swelled and subsided. All that remains can rest until another season, when by the air and the sun it will be set in motion to repeat the same phenomena. Other beings, having purposes to accomplish that cannot be embraced in so short a period, have a slower organization.

It would be curious to trace the connexion between the elements of the air and influences of the sun in the life process, and to accurately determine how much nitrogen, one of the elements of the air, and the principal constituent of all the vital parts of animals and plants, has to do with the duration of organic existence. That kind of structure requiring altogether food of which this element constitutes the greatest part, such as the viscera and flesh of animals, should, with the vigor imparted to it by such aliment, live as long as that depending on the scanty supply of nitrogen obtained from vegetables, is not consistent with the idea that the decrepitude of old age is nothing more than the hardening of tissues by the amount of resistance they have had to overcome. The life force is most rapidly and most powerfully expended in the carnivora, and if they are such as by their habits require a daily supply to meet the exercise to which they are daily subjected, their lives must be shorter than those as continually, although not as powerfully called into action, that feed upon vegetables. In the latter, the life processes being slower, induration is later in causing decrepitude.—James B. Coleman, M. D., in *Beecher's Magazine*.

Curious Egg.

A correspondent informs us that, a few weeks since, at Westford, Mass., he saw a newly broken egg, having the usual quantity of white and a yolk, and, in addition, another (smaller) egg, an inch or more in diameter. The inner egg contained white only.

The hen who laid this egg is a mere tyro in science, and a little learning, in egg laying as in other things, is a dangerous thing. No doubt the hen's idea was, that by putting an exterior jacket on the inner egg, superheating might be achieved, and the egg would hatch itself. But she carelessly omitted to put the yolk in the inner shell. She must experiment further before she applies for a patent.