greater than the paper bag covering, but this is counterbalanced by the length of time it will last.

The fruit prospect about Vineland is certainly of the most encouraging nature. Large orchards of choice pear trees are laden with excellent fruit; we observed many pear trees broken down with the weight of the fruit. An unusually large crop of berries were shipped to the Philadelphia and New York markets from this place, and such a thing as "hard times" seems to be unknown among the thrifty fruit growers of Vineland.—*Ohio Farmer.*

The Entomological Club.

The Club on Entomology, connected with the American Association, held its sessions on the day preceding the general meeting. Prof. J. A. Lintner, of Albany, president, delivered an address, telling of the great advances made in the study of insects and the increasing interest manifested in the subject. At the last session of the club the names of 280 entomologists were reported. Investigation since has increased the list to 835 persons engaged in the study of entomology in the United States.

At the afternoon session many specimens of insects were exhibited, among others some from California of the *Pseudohazis eglanteriana.* Prof. Samuel H. Scudder, of Cambridge, presented specimens and a description of the operations of the *Retina brustiana*, an insect now ravaging the pine trees of Nantucket and other evergreen trees in different places. Prof. Comstock, United States Entomologist, exhibited specimens of the larger species of the same genus.

Prof. August R. Grote, Director of the Museum of the Buffalo Society of Natural Science, stated that he believed the damage done by Paris green was greater than that done by the potato bug. His opinion was based on a careful study of its effects on horses, cattle, sheep, chickens, and even men and women. He referred to the laws in Germany restricting the open and promiscuous sale of such poisons, and thought it the duty of the members of the club to do all in their power toward educating the people up to the bad effect of this and kindred poisons, aniline dyes, etc., with a view to effecting legislation. Prof. Comstock presented specimens of an insect which preys on the eggs of the bark-louse, taken from the maple. Prof. C. V. Riley, of the United States Entomological Commission, gave an account of two species of moths affecting the yucca. Professor Samuel H. Scudder told of a fossil insect of a very singular shape, obtained from tertiary rocks. Prof. W. S. Barnard, of Cornell University, showed specimens of a small bug which kills bees and butterflies much larger than itself. He also gave an account of the pear bug-louse, which causes a certain blight to the pear tree. Prof. William Saunders, editor of the *Canadian Entomologist*, gave an account of insects he had seen caught by the bidens, not heretofore supposed to be a carnivorous plant.

New Theory of Sea Level Changes.

In an interesting article by Warren Upham, in the *American Naturalist*, on the "Formation of Cape Cod," in which he shows that it is due to glacial action, the author presents the following theory of the causes of the changes in sea levels:

The plains of Cape Cod are further like those of Long Island, Martha's Vineyard, and Nantucket, in being indented by narrow arms of the sea, which reach one to two miles inland, filling the lower end of long depressions that continue across the plains to the north, being either dry or occupied by small streams. The plains and valleys which thus generally border the terminal moraines on their south side appear to have been formed by the same floods which deposited the large amounts of modified drift along the edge of the ice sheet. Much of their finer gravel and sand was carried forward by the descending currents, and spread in these gently sloping plains, while the valleys of drainage seem to have been made by the same waters at their lower stages.

The continuation of these valleys below our present sea level calls up one of the most complex but at the same time most important and interesting questions connected with glacial geology. This feature shows plainly that when these valleys were formed the sea did not reach so high upon the land as now; and if we extend our inquiries we find that everywhere around the world the glacial period was marked by most extraordinary changes in the relative heights of land and sea. These remarkable oscillations, which had one extreme at the equator and the other at the poles, appear to have been changes in the level of the ocean. It seems not unlikely that an eighth part of the earth's surface had become covered with ice, and if we consider a slope of one half a degree to be needed to give it motion, an estimate of four miles for its average depth does not seem to be too great. The removal of the water thus taken from the sea and stored up in accumulations of ice would lower the surface of the ocean more than half a mile. At the same time this vast accumulation of ice in high latitudes must draw the sea by gravitation away from the equator toward the poles. This cause appears to have retained the sea level at about its present height near the lower limit of the ice sheet, while in arctic regions it rose much higher than now. Marine shells in the modified drift show that the sea thus stood fifty to two hundred feet above its present height on the coast of New Hampshire and Maine; five hundred feet in the valley of the St. Lawrence, and one thousand to two thousand feet higher than now along the west coast of Greenland. Everywhere in high latitudes, both in the northern and southern hemispheres, we have proof of such a submergence of the land when the drift was accumulated, increasing in amount the nearer we go to the poles. On the other hand, the coral islands of the tropics are witnesses of the depression of the sea in this period, amounting to three thousand feet, or perhaps more, at the equator, while different evidence shows that at the mouths of the Mississippi, Ganges, and Po rivers, it was at least four hundred feet lower than now. If we reflect upon these widespread changes of sea level that marked the glacial period, occurring only where they would be produced by taking water from the sea to form ice sheets and by gravitation through their influence, and if we compare these recent simultaneous changes with the general stability of the continents, we seem compelled to attribute them to movements of the sea rather than of the land.

Because of the attraction of accumulations of ice that still remain about the poles, where probably little or none existed in tertiary times and at the epoch immediately preceding the glacial period, the sea along the eastern coast of the United States appears to be lower now than during those periods, uncovering the tertiary border of the Southern States and leaving pre-glacial deposits with marine shells, apparently Post-pliocene, fifty to two hundred feet above our present sea level, under the terminal moraine and modified drift of Long Island. The entirely unstratified character which marks many portions of the terminal deposits of the ice sheet, reaching quite to the sea shore, and the still lower extension of the channels which appear to have been cut by the floods formed at its melting, indicate that at the south coast of New England the sea was depressed in the glacial period below its present height. The submarine channel of Hudson river shows that after this time it sank five or six hundred feet lower than now, apparently because the south part of the glacial sheet had been melted, greatly diminishing its attractive force at this latitude. With the more complete departure of the ice the sea level has been restored to approximately the same condition as before the glacial period, being still rising on the eastern coast of the United States at the rate of about a foot, or less, in a hundred years.

MISCELLANEOUS INVENTIONS.

Mr. Dabney C. T. Davis, of Greenwood, Va., has invented a light, cheap, and easily adjustable shade, that may be fitted to any style of hat, and removed at pleasure. It is designed for keeping off the rays of the sun and inducing a current of air to pass around outside of the hat and in contact with it in order to keep it cool.

Mr. William C. Egan, of New York City, has invented an improved fastening for ladies' and children's shoes, whereby the trouble and annoyance resulting from the use of buttons, lacings, or other devices may be avoided and the appearance of the shoe improved. The invention consists in providing a shoe with elastic insertion and alternating scalloped edges, provided with studs on the points for receiving a lacing.

A simple, easily adjusted, and efficient device for securing watch stems in the pendant, has been patented by Mr. George F. Dobiecki, of Brooklyn, N. Y. It consists of a pin passed through a hole made in the pendant, through the ears, and through the bushing, and engaging an annular groove or notch in the stem. Freedom of movement is allowed the stem; but it is held in the pendant unless released by withdrawing the pin.

An improvement in the construction of toe weights (or side weights), such as are used attached to horses' feet for inducing an increased tendency of the horse to throw his feet forward and increase his speed in trotting, or otherwise regulating the gait of horses, has been patented by Mr. Hope Redmon, Jr., of Cynthiana, Ky. The invention consists in a grooved weight, wedge shaped in the cross section, and provided with a spring catch, combined with a toothed clamping hook, having a shoulder and toe on its lower end, by which it is secured in a suitable rabbeted slot in the horseshoe.

Mr. Isaac A. Powell, of Elk Falls, Kan., has patented improvements in the construction of apparatus for heating water for steaming feed, scalding hogs, and for laundry purposes. The water chamber is made of wood, and from the bottom over a central opening rises the fire chamber, the sides of which are corrugated to increase the heating surface without increasing its height beyond a safe point, and its top is covered by a concave or inverted conical crown, from which rises the flue pipe, which is carried through the top of the water chamber. The apparatus has a grated fire basket, adapted to fit up into the fire chamber, and it has an opening on one side for supplying fuel to the fire without removing the basket entirely from the fire chamber.

Mr. Lafayette Smith, of Millersburg, Ind., has invented an improved eaves trough hanger, which consists of a flat sheet metal bar, from which depends a perpendicular bar or rod whose lower end embraces a round or flat cross bar set horizontally across the trough and firmly secured thereto with solder.

Mr. Edmund R. Banks, of Cynthiana, Ky., has patented an improvement in coffee and tea pots, in which the construction is such that the coffee and tea can be steeped and the pots placed upon the table without its being necessary to strain the coffee and tea. The invention consists in the wire gauze cup suspended detachably from a hook attached to the cover of the pot.

An improvement in wisp brooms has been patented by Mr. James H. Flynn, of Schenectady, N. Y. This invention consists in fastening the under edge of the cap to the wisp by wrapping it with wire, and then drawing the cap up over the wire and fastening its upper edge by wrapped wire, which is concealed within the lower end of the handle. The handle is made of a paper tube wrapped or covered with velvet or other fabricated material adapted to fit over the wooden stock, to which it is secured by glue or tacks, etc., and a cap piece nailed to the upper end of the stock. It has a loop, the lower end of which is fastened under the lower edge of the handle, and its upper end under the cap piece.

An improved table for playing ball games has been patented by Messrs. Edwin M. Macy and Rufus Russell, of Longview, Texas. It consists of a bed, upon which the balls are rolled, having at the end spaces for the balls to pass through, and behind these a pit communicating with a return ball alley, also an elastic cushion, against which the balls strike.

An improved double-acting lift pump has been patented by Mr. William Loudon, of Superior, Neb. It consists in providing the upper end of the cylinder, on the outside, with a flange, to which the upper head is screwed or otherwise attached Through this flange are made water ways, through which the water passes upward to enter the cylinder.

The Juice of the Tomato Plant as an Insecticide.

A writer in the *Deutsche Zeitung* states that he last year had an opportunity of trying a remedy for destroying green fly and other insects which infest plants. It was not his own discovery, but he found it among other recipes in some provincial paper. The stems and leaves of the tomato are well boiled in water, and when the liquor is cold it is syringed over plants attacked by insects. It at once destroys black or green fly, caterpillars, etc.; and it leaves behind a peculiar odor which prevents insects from coming again for a long time. The author states that he found this remedy more effectual than fumigating, washing, etc. Through neglect a house of camellias had become almost hopelessly infested with black lice, but two syringings with tomato plant decoction thoroughly cleansed them.—*Gardener's Chronicle.*

The Sand Box Tree.

On the far side of the island (St. Thomas), says Mr. Moseley, I saw several "sand box trees (*Hura crepitans*). The tree is one of the Euphorbiaceæ, allied to our spurges, and has a poisonous, irritant juice; but its most remarkable peculiarity is its fruit. A number of seed capsules, shaped like the quarters of an orange, are arranged together side by side as in an orange, so as to form a globular fruit. When the fruit has become quite ripe and dry, suddenly all the capsules split up the back, opening with a strong spring, and the whole fruit flies asunder, scattering its seeds for a distance of several yards, and making a noise like the report of a pistol.

The Boomerang.

This curious weapon, peculiar to the native Australian, has often proved a puzzler to men of science. It is a piece of carved wood, nearly in the form of a crescent, from 30 to 40 inches long, pointed at both ends, and the corner quite sharp. The mode of using it is quite as singular as the weapon. Ask a black to throw it so as to fall at his feet, and away it goes full 40 yards before him, skimming along the surface at 3 or 4 feet from the ground, when it will suddenly rise in the air 40 or 60 feet, describing a curve, and finally drop at the feet of the thrower. During its course it revolves with great rapidity, as on a pivot, with a whizzing noise. It is wonderful so barbarous a people should have invented so singular a weapon, which sets laws of progression at defiance. It is very dangerous for a European to try to project it at any object, as it may return and strike himself. In a native's hand it is a formidable weapon, striking without the projector being seen; like the Irishman's gun, shooting round a corner equally as well as straightforward. An engraving of one of these curious implements was published in these columns some time ago.

The Objects of Study.

The duties of the teacher are tersely set forth in the New York *School Journal* as follows:

His business is to develop, discipline, and train the powers by which knowledge is gained; besides, in performing this work he will lodge in a secure and usable form all the useful knowledge possible. He will make as his great leading object the training of the mind; he will next direct the pupil's attention to his own mental processes, to show him when he thinks accurately; this is sometimes called *teaching to think;* he will teach the pupil to arrange and classify his knowledge; he will teach the pupil to give good expression to his knowledge. These being the objects the teacher aims at, he requires study in order that he may secure these objects; they may be set down as the objects of study. And if a person has no teacher, he still needs all of the above effects, and to produce them he uses study. It is plain, then, that study is the indispensable means to be employed to obtain education.

SCIENTIFIC EDUCATION.—It would certainly be a great boon to the world if the general level of scientific education could be raised, so that each young man or young woman, when he or she issues from school doors, should have enough definite knowledge of the great laws of the physical universe to instantly denounce blue glass theories and attempts at perpetual motion, not from the pride of knowledge, but from the feeling that error, credulity, and superstition should be combated with truth.—*Prof. John Trowbridge.*

Huxley on Pluck and Endurance.

At the distribution of prizes for proficiency in intellectual and physical exercises, at University College, London, recently, Professor Huxley spoke to the boys, dwelling especially upon the value of industry and physical capacity for hard work in the competition of every-day life. The chief value of their success in schoollay, he said, in the evidence it afforded of the possession of those faculties which would enable them to deal successfully with those life conditions they were about to meet. Asking what sort of fellows were the prize winners, he continued:

Is there, in all the long list which we have gone through to-day, the name of a single boy who is dull, slow, idle, and sickly? I am sorry to say that I have not the pleasure of knowing any of the prize winners this year personally—but I take upon myself to answer, Certainly not. Nay, I will go so far as to affirm that the boys to whom I have had the pleasure of giving prizes to-day, take them altogether, are the sharpest, quickest, most industrious, and strongest boys in the school. But by strongest I do not exactly mean those who can lift the greatest weights or jump furthest—but those who have most endurance. You will observe again that I say take them altogether. I do not doubt that outside the list of prize winners there may be boys of keener intellect than any who are in it, disqualified by lack of industry or lack of health, and there may be highly industrious boys who are unfortunately dull or sickly, and there may be athletes who are still more unfortunately either idle or stupid, or both. Quickness in learning, readiness, and accuracy in reproducing what is learnt, industry, endurance—these are the qualities, mixed in very various proportions, which are found in boys who win prizes. Now there is not the smallest doubt that every one of these qualities is of great value in practical life. Upon whatever career you may enter, intellectual quickness, industry, and the power of bearing fatigue are three great advantages. But I want to impress upon you, and through you upon those who will direct your future course, the conviction which I entertain that, as a general rule, the relative importance of these three qualifications is not rightly estimated, and that there are other qualities of no less value which are not directly tested by school competition. A somewhat varied experience of men has led me, the longer I live, to set the less value upon mere cleverness; to attach more and more importance to industry and to physical endurance. Indeed, I am much disposed to think that endurance is the most valuable quality of all; for industry, as the desire to work hard, does not come to much if a feeble frame is unable to respond to the desire. Everybody who has had to make his way in the world must know that while the occasion for intellectual effort of a high order is rare, it constantly happens that a man's future turns upon his being able to stand a sudden and heavy strain upon his powers of endurance. To a lawyer, a physician, or a merchant it may be everything to be able to work sixteen hours a day for as long as is needful without knocking up. Moreover, the patience, tenacity, and good humor, which are among the most important qualifications for dealing with men, are incompatible with an irritable brain, a weak stomach, or a defective circulation. If any one of you prize-winners were a son of mine (as might have been the case, I am glad to think, on former occasions), and a good fairy were to offer to equip him according to my wishes for the battle of practical life, I should say, "I do not care to trouble you for any more cleverness; put in as much industry as you can instead; and oh, if you please, a broad, deep chest, and a stomach of whose existence he shall never know anything." I should be well content with the prospects of a fellow so endowed. The other point which I wish to impress upon you is, that competitive examination, useful and excellent as it is for some purposes, is only a very partial test of what the winners will be worth in practical life. There are people who are neither very clever nor very industrious, nor very strong, and who would probably be nowhere in an examination, and who yet exert a great influence in virtue of what is called force of character. They may not know much, but they take care that what they do know they know well. They may not be very quick, but the knowledge they acquire sticks. They may not even be particularly industrious or enduring, but they are strong of will and firm of purpose, undaunted by fear of responsibility, single-minded, and trustworthy. In practical life a man of this sort is worth any number of merely clever and learned people. Of course I do not mean to imply for a moment that success in examination is incompatible with the possession of character such as I have just defined it, but failure in examination is no evidence of the want of such character. And this leads me to administer from my point of view the crumb of comfort which on these occasions is ordinarily offered to those whose names do not appear upon the prize list. It is quite true that practical life is a kind of long competitive examination, conducted by that severe pedagogue, Professor Circumstance. But my experience leads me to conclude that his marks are given much more for character than for cleverness. Hence, though I have no doubt that those boys who have received prizes to-day have already given rise to a fair hope that the future may see them prominent, perhaps brilliantly distinguished, members of society, yet neither do I think it at all unlikely that among the undistinguished crowd there may lie the making of some simple soldier whose practical sense and indomitable courage may save an army led by characterless cleverness to the brink of destruction, or some plain man of business, who, by dint of sheer honesty and firmness, may slowly and surely rise to prosperity and honor when his more brilliant compeers, for lack of character, have gone down, with all who trusted them, to hopeless ruin. Such things do happen. Hence, let none of you be discouraged. Those who have won prizes have made a good beginning; those who have not may yet make that good ending which is better than a good beginning. No life is wasted unless it ends in sloth, dishonesty, or cowardice. No success is worthy of the name unless it is won by honest industry and brave breasting of the waves of fortune. Unless at the end of life some exhalation of the dawn still hangs about the palpable and the familiar—unless there is some transformation of the real into the best dreams of youth—depend upon it, whatever outward success may have gathered round a man, he is but an elaborate and a mischievous failure.

Blowing Up River Snags.

Mr. R. R. Hunt describes, in the *Transactions of the New Zealand Institute*, the method practiced on the Waikato River to remove the snags which obstruct the navigation and have repeatedly led to the wrecking of river craft. The Waikato Steam Navigation Company, the main sufferer, determined to use dynamite for clearing away the obstructions. The work, as far as the dynamite was concerned, was of the ordinary character, but two special provisions were adopted in the preliminary operations. First, a boat was secured by double moorings above the site of the snag, so that by paying out the moorings the boat could be suffered to drop down stream exactly over the snag; second, for examining the stump, use was made of what has been called a "hydraulic telescope," viz., a plain wooden tube with a piece of glass at the bottom, and two handles, by which the tube could be held steadily to the eye. By the aid of this instrument the snag could be clearly seen, and the best part for boring the hole could be chosen. This was an important point, as if, in the absence of the power of selection, the hole was accidentally bored into a wrong part of the snag, the dynamite was practically wasted, the due effect being only felt when the hole was made in a sound part of the timber.

The inspection having been made, a hole was bored with a 1½ inch steel auger to a depth of 3½ feet below the summer level of low water. A charge of dynamite, varying from 3 ounces to 24 ounces, was then inserted and exploded by a fuse. As soon as the fuse was lighted the ropes were hauled on and the boat drawn up stream some 50 feet, which was found in all cases sufficient to protect the occupants from injury on the explosion taking place. Then the ropes were paid out to the same length as before, and in this way, with the use of two ropes, the boat was certain to return to the exact spot it had previously occupied. This was an important matter in saving time, as it was difficult to discover through the rippling water the exact site of the snag, which it was necessary to revisit in order to ascertain whether or not the charge had done its work. It was found to be false economy to use too little dynamite, as the explosion then only shattered the stump, and a second operation necessitated double or treble the amount to clear it away entirely. As a rule, half a pound of dynamite was required for a stump 2 feet in diameter; but a snag 4 feet in diameter was only removed by a charge of 1½ pounds. It was remarked that the stumps were invariably cut off at the bottom of the auger hole, leaving a flat surface, as from a cross-cut saw, and it has been suggested that a similar mode of felling large trees would save many serious accidents to the men employed. The cost of blowing up a snag by dynamite is about one third of that required for removing it by sawing. On an average three men will blow up eight snags a day.

Inefficiency of Steel Armor Plates.

A series of experiments were commenced recently at La Spezzia, Italy, in the presence of Herr Krupp, the representatives of the Terre Noire Works, and others, to test the resistance of steel armor plating against a 100-ton Armstrong gun, and the respective merits of the projectiles furnished by Armstrong, Gruson, Whitworth, Terre Noire, and San Vito. Two projectiles were to be fired against each of four Terre Noire plates, 9 feet by 4 feet 8 inches, and 2 feet 4 inches thick, at a distance of 500 feet from the gun. The two best were to be tried against the steel furnished by Saint Chamond. The terrible efficiency of the projectiles first tried thwarted these arrangements.

The first round was fired with a projectile (San Vito) from the government manufactory of Fossano, made of chilled Gregorini cast iron, weighing 2,022 pounds, the charge being 550 pounds of powder. The shell was projected with the velocity of 1,715 feet per second. It struck the target and rebounded, and shivered in pieces, after piercing the plate to a depth of 14 inches and carrying away a third of it. The second round was fired with a Whitworth projectile weighing 2,110 pounds, made of compressed steel, with a hardened point 3 inches long. The steel pierced the plate 22 inches, and carrying away a third of it, passed through the backing, remaining itself almost intact. The third round was fired with an Armstrong projectile weighing 1,946 pounds. The steel penetrated the plate 12 inches, completely shattering and dislodging it, and rendering the target unfit for further practice, but failing to penetrate the backing. Although a government commission on the subject has not reported its opinion, the general conviction is that these experiments fully proved the utter inefficiency of steel plates for defensive purposes.

New Discovery in Connection with Carbolic Acid.

BY JOHN DAY, M.D.

Several important additions have recently been made to our knowledge of the chemistry of carbolic acid, some of which are possessed of great interest to us as medical practitioners. For instance, Städeler has shown that it is a constant constituent of the urine; Brieger has shown that it is a normal constituent of the contents of the bowels; and Baumann has discovered that it is one of the products of the putrefaction of albumen. For an interesting account of these and other discoveries in connection with carbolic acid, I would beg to refer you to an editorial article in the *Medical Times and Gazette*, of October 12, 1878, entitled "The Pathological Excretion of Carbolic Acid." I have myself devoted a good deal of attention to the chemistry of carbolic acid, and in the course of my investigations have found that it is a powerful deoxidizing agent—a property which has not, that I am aware of, been previously recognized.

I will show you a few experiments by way of proving that my view on this point is correct. Guaiacum resin, when oxidized, is changed from its normal color, which is reddish brown, to a deep blue, and this effect can be produced by a number of oxidizing substances. I have chosen, as sufficient for my purpose, solution of permanganate of potash, black oxide of manganese, tincture of iodine, and the vapor of a solution of chlorine. I will now oxidize some guaiacum resin with the different substances I have named, and then deoxidize it and restore it to its normal color by the addition of carbolic acid. That this is simply a process of deoxidation may be shown by the ease with which the guaiacum can be again oxidized. I can offer you another proof of the deoxidizing power of carbolic acid by adding a drop or two to a solution of permanganate of potash, when you will find that it will be instantly reduced and decolorized.

I will show you one more experiment in proof of the deoxidizing properties of carbolic acid, and it is one which I think will interest you, as it is a little suggestive of the action of carbolic acid on the iron in the blood, when it is administered internally. This bottle contains a weak solution of persulphate of iron, and to show you that it does not contain a trace of the protosulphate I will add a few drops of a solution of red prussiate of potash, a salt which has no action on persulphate of iron, but quickly turns the protosulphate blue. By the use of this test we have not, as you may perceive, produced any change of color in the solution; but on the addition of a little carbolic acid you will find that a deep blue reaction will occur, thus showing that the persalt of iron has been reduced to a protosalt.

If you will permit me to trespass on your time for a few minutes longer, I will show you a very curious reaction which carbolic acid is capable of effecting, and it is one which has not yet, I think, been mentioned in any work on chemistry. When carbolic acid is added to tincture of iodine no perceptible change takes place, but when carbolic acid is added to tincture of iodine freely diluted with water, the fluid is almost instantly decolorized, and a compound is formed which is incapable of acting on starch and turning it blue as free iodine does. Now, it has struck me that this combination of carbolic acid and iodine might form a good antiseptic dressing for wounds. Indeed, the main object of my paper has been to excite a discussion on a theory I wish to place before you regarding the action of carbolic acid as an antiseptic.

The investigations of Pasteur, Tyndall, Sanderson, Lister, and others, have clearly shown that putrefactive changes never take place without the presence of bacteria; and, further, that bacteria are dependent on oxygen for their existence. Now, it has occurred to me that the deoxidizing properties of carbolic acid offer a fair explanation of its *modus operandi* in the antiseptic treatment of wounds. During the reading of this paper Dr. Day demonstrated by several experiments the correctness of his conclusions.—*Australian Medical Journal.*

The Music of the Spheres.

Light comes in undulations to the eye, as tones of sound to the ear. Must not light also sing? The lowest tone we can hear is made by 16·5 vibrations of air per second; the highest, so shrill and "fine that nothing lives 'twixt it and silence," is 38,000 vibrations per second. Between these extremes lie eleven octaves; C of the G clef having 258⅝ vibrations to the second, and its octave above 517¼. Not that sound vibrations cease at 38,000, but our organs are not fitted to hear beyond those limitations.

If our ears were delicate enough, we could hear even up to the almost infinite vibrations of light. Were our senses fine enough, we could hear the separate keynote of every individual star. Stars differ in glory and in power, and so in the volume and pitch of their song. Were our hearing sensitive enough, we could hear not only the separate keynotes, but the infinite swelling harmony of these myriad stars of the sky, as they pour their mighty tide of united anthems in the ear of God.—*Rev. H. W. Warren, Recreations in Astronomy.*

THE preserving of fruits, vegetables, etc., is an industry of very large proportions in this country, and the processes of manufacture have become so perfected there is but very little material wasted. The skins of the fruit are converted into jellies; the peach stones are sold to druggists; the tomato peelings and the very scrapings of the table go to the catchup makers. The entire process of desiccation occupies about three hours.