New Inventions.

An improved Device for Attaching and Supporting the Ends of a Spring Bed Bottom, and for adjusting the tension of each separate spring, has recently been patented by Mr. Hiram Pitcher, of Fond du Lac, Wis.

Mr. John S. Henshaw, of Goshen, Ky., has recently patented an improved Gate, which is so constructed that it may be opened and closed by a person in a vehicle or upon horseback, with as much facility as when on foot. It can be used as any ordinary gate in case of any mishap to the self-opening arrangement, and will fasten itself securely when shut, and retain its place when opened.

Mr. James W. T. Cadett, of Surrey County, England, has patented an improved Pneumatic Arrangement for facilitating the uncapping or exposing and capping or shutting the lenses of photographic apparatus. The apparatus has a box, which contains a bellows, acted on by a spring, and provided with a pipe opening into the pneumatic tubing. On a spindle acted by the said bellows is secured a shutter, which projects beyond the box. By pressing an air bulb in communication with the tubing, the bellows is actuated, and the shutter or cap is moved, so as to uncap or expose the lens, as required.

Mr. Freeman F. Reynolds, of Villa Rica, Ga., has patented an improved Washing Machine, having several novel features. It is constructed so as to wash the clothes quickly and thoroughly, and without injury.

An improved Saddle Stirrup has been patented by Mr. John M. Freeman, of Parkersburg, Ind. This invention consists in connecting the loop of the stirrup strap to the stirrup by a pin on one end of a swinging plate, which plate is pivoted at the inside of the stirrup in such position that it will be moved by the foot of the rider when the foot is bent, as it would be in case of accident.

Mr. Mercer Hemmingway, of Owensborough, Ky., has patented an improved Medical Compound for the prevention and cure of hog cholera.

Mr. Cornelius Young, of Sandy Hill, N. Y., has devised an improved Roll Suction Box for Paper Making Machines, which consists in the combination of the troughs with the rubber rollers and the sides of the suction box to form water seals for the said rollers, and in the combination of the hard rubber pulleys or wheels with the adjustable partitions of the suction box, and with the cross strips and the rubber rollers to assist in carrying the wire cloth.

A novel Drill Tooth Attachment has been patented by Mr. Silas Frank, of Hagerstown, Md. This is an improvement in the class of seeding machines whose boots or drill teeth are pivoted to the drag bars and have a spring attachment, which allows them to yield or assume an oblique position whenever the point of the tooth encounters an unyielding obstacle.

A National Law Governing Adulteration Needed.

We are glad to see that the subject of adulterating articles of food and drugs is attracting the attention of our newspapers as well as that of the public. The New York *Grocer* and the *Grocer and Country Merchant*, of San Francisco, have both opened their columns to the evils of adulteration, and the former journal calls for national legislation on the subject, and suggests that the time is a favorable one to direct public attention to its importance, to prevent or regulate the adulteration of foods and drugs, and providing the necessary machinery for its enforcement. The most advanced and enlightened nations have found it necessary to enact such laws, and have succeeded in enforcing them to a very satisfactory extent. In this country individual States have attempted to legislate upon the subject, and have in almost every instance failed to accomplish good results. On the contrary, they have only succeeded in making discriminations against their own citizens that have, or might have, accrued to the benefit of those of other States. If a sugar refiner in New York city is permitted to use adulterants with impunity, while one in Jersey City is prohibited from doing so, simply because he is in a different State, the discrimination might be disastrous to sugar refining in New Jersey. A law to be practical must be national. The power to enact such a law is as clearly contained in the clause of the Constitution "to regulate commerce between the States," as is that to govern transportation. The necessity for its exercise, we think, is manifest to all who have given attention to the subject. On every side may be found adulterated food products and drugs. Only within the last month the adulteration of sugars and sirups has attracted unusual attention. The extent to which milk is adulterated is one of the most flagrant impositions upon the consuming public. Coffees and spices have long been favorite articles for the adulterator's art. Even the product of the busy bee is now sophisticated to such an extent as to multiply the yield to such proportions as would exhaust the honey of the entire vegetable world and utterly appal this most industrious of all insects. There is some hope in a more conscientious public opinion, but there is no power so quick to develop that public opinion as the strong arm of the law. We would not follow fully the English or Canadian laws, but a modification of them might be made to suit our requirements. We believe the sooner we come to adopt such a law the sooner will this flood tide of adulterated trash be stayed. It is a fallacy to say that the people demand these cheap and nasty goods. It is a mistake to suppose that a poor man wants poor things to eat or adulterated drugs to use, and it is a libel on the people to say so.

THE NATIONAL ACADEMY OF SCIENCES.

The fall meeting of the National Academy of Sciences was in session in the chapel of Columbia College, this city, during the four days ending November 8. This, unlike the spring meeting, which is always held at Washington, was devoted almost exclusively to scientific work; the exceptions falling on the morning sessions of the first and second days, when at government request, the claims of the three rival exploring parties in the Western Territories were under investigation, in order to determine the best methods of securing the thorough economical survey of those regions. The session was secret, and the results will not be made public until the report of the association has been submitted to the authorities at Washington. Professor O. C. Marsh, vice president, occupied the chair, made vacant by the death of Professor Henry.

The first paper was read by Dr. Henry Draper, on "The Solar Eclipse of July 27, 1878," the results of which have already been laid before our readers. The next paper, on "The Early Types of Insects," was read by Professor Samuel H. Scudder; a technical review of the course of development in the insect world, arriving at the conclusion that the laws of succession of the insect tribes are similar to those long known to hold in other groups of the animal kingdom, and that the facts obtained by observation are in the main such as the theory of descent demands. Professor Charles S. Peirce followed with an address "On the Acceleration of Gravity at Initial Stations."

The second day Professor William P. Trowbridge discussed the inapplicability of the old theory of the turbine water wheel to the newer constructions instituted by Boyden and Francis. While the newer constructions of these inventors had gone into use, the old methods were still described by Weisbach, Rankine, and others, and with these the student was alone familiar. Professor Trowbridge described the three classes of turbine wheels, and deduced formulas applicable to these classes by which the maximum of efficiency and velocity could be gained. He characterized the plan of the wheel obtained by Francis, and now in general use, as one of those happy intuitions by which practical scientific men, in this country especially, have accomplished such remarkable results.

General Henry L. Abbot described his method of securing instantaneous photographs of torpedo explosions, and discussed the value of photography in the study of instantaneous phenomena. Professor Alexander Agassiz followed with an account of the embryology of the gar pike, his observations leading him to the belief that this fish does not differ in its development from bony fishes generally, as naturalists had been led to think. He also described the arrangement of his Zoological Marine Laboratory at Newport, R. I. Thus far it has been more successful than his father's more ambitious attempt at Penikese Island. Professor Stephen Alexander, of Princeton, closed the day's proceedings with a proposed demonstration of the eleventh axiom of Euclid.

The third day's scientific work began with another mathematical paper by Benjamin Alvord, Paymaster General, U. S. A., on the "Intersection of Circles and the Intersection of Spheres." Of more general interest were the observations of Mr. George Davidson, Astronomer in charge of the United States Survey of the Pacific Coast, on "Instruments of Precision at the Paris Exhibition." These observations were made under difficulties, since, both at the manufactories and at the Exhibition, no careful examination of work was permitted him. In summing up his conclusions, Mr. Davidson said that while he saw much of deep interest at the Exhibition, there was no single instrument that he would recommend for imitation. "What he principally learned was what not to copy, and he was convinced that we do not need to go to Europe for such instruments. Our own observers and mechanicians working in harmony are thoroughly competent to lead in the scientific race, for both appreciate the fundamental ideas of simplicity—fewness of parts, harmony of proportion in the accuracy of division and level, adequacy of optical power, and mathematical precision in the bearing of the moving parts."

In the afternoon, Prof. O. N. Rood, of Columbia, described his attempts to obtain a quantitative analysis of white light. In the subsequent discussion, Professor Peirce said that the observations of Professor Rood opened up a new branch of physics, and promised wonderful developments. Heretofore the science dealt only with rude methods of comparison. In this branch there was a departure to new and delicate methods—some, in fact, being among the most delicate known to physical science.

Professor Alexander gave a recapitulation of some of his views on the origin of the forms and present state of many of the clusters of stars, and several of the nebulæ, the source of solar heat, and the drift of the stars. Prof. J. S. Newberry discussed several mooted points in geology; and Prof. E. D. Cope, "The Character of the Theramorphous Reptiles." For the fourth day's work—in progress as this goes to press—the programme announces papers by Professors Cope, Alexander, and Guyot.

How to Get Pure Teas.

A delegation of Baltimore tea merchants lately had an interview with the Chinese embassy at Washington, chiefly with reference to the introduction of pure teas from China, to supplant in American markets those which are colored or adulterated. The Minister said through his interpreter that the various brands of tea sold in America and Europe are unknown to and not used by the tea consumer in China. They are specially prepared by the Chinese tea exporters for the foreign market. They are colored by the use of chemicals; and the process, together with the peculiar methods of fixing up tea for foreign markets, not only renders the plant less palatable and beneficial, but more expensive. The adulteration and coloring of teas for the foreign market, he said, are wholly in consequence of the demand which has existed for such teas; and the Minister expressed the opinion that if Boards of Trade in New York and China would make known the fact that pure teas are not only better but cheaper, it would benefit both producer and consumer. There is, he said, really only one kind of tea plant, and from this both the green and black teas are produced. The equivalents for the two terms "green" and "black" do not signify to the Chinese the color of the tea, as in America, but have reference to the period of gathering, "green" indicating to them, as in "green corn," not a color, but a state of immaturity.

Yung Wing, who has traveled extensively in the tea districts of China, said, in answer to an inquiry, that he saw no reason, except the want of Chinese labor, why tea could not be profitably grown in America, but that it is wholly a question of labor. Chinamen are employed even in Japan to superintend the work of culture and preparation, and would be a necessary part of the same work here. Expert Chinamen would, however, not come to America as long as the present outcry against them is maintained on the Pacific coast.

New Mechanical Inventions.

An improvement in Valves has been patented by Mr. John Patterson, of Salem, Mass. The object of this invention is to furnish an improved valve for attachment to water and steam pipes, so constructed as to prevent leakage. It consists in two or more valves formed or secured to a common valve stem and fitted to valve seats in a globe or shell.

An improved Machine for Paring Peaches, which is simple, convenient, and effective, has recently been patented by Mr. William S. Plummer, of East Portland, Oregon.

Mr. Willis L. Barnes, of Charlestown, Ind., has invented an improved Ballot Box, which is so constructed that the mechanism can be operated only when a ballot has been placed upon the receiving fingers, and, when operated, will deposit the ballot in the box, close the box, register the ballot, and sound an alarm.

Mr. Elon A. Marsh, of Battle Creek, Mich., has patented an improved Lathe for Turning Regular Forms, the novel feature of which consists in a cylindrical bed, and a head stock, tail stock, and rest adapted to the bed.

A Machine for Skivring or Chamfering the Edges of Leather, particularly counters for boots and shoes, has been patented by Mr. Morton M. Clough, of Marlborough, Mass. The invention consists in an adjustable elastic bed, carrying a stationary knife, against which the leather is forced by a feed roller above the bed.

An improvement in Cotton Gins has been patented by Mr. James B. Hull, of Live Oak, Fla. This invention relates to a novel construction of cotton gin specially applicable to ginning sea island cotton having a long fiber. The chief features of novelty consist in the construction and arrangement of a guard plate with respect to the brush, the roller, and the chute, for separating the dust brushed off the roller from the lint.

An improvement in Keys for Musical String Instruments has been patented by Mr. Ferdinand Z. Nicolier, of New York City. This is an improved key for musical string instruments, which facilitates the tuning of the strings and retains them at any desired tension. The invention consists of an inclosing sleeve, secured permanently to the finger board, and having a recessed key spindle, with strong steel springs placed sidewise, so as to bear on the inner surface of the sleeve and produce the retention of the key in fixed position.

Messrs. Louis Prenot and George Marchal, of New York City, have patented an improved Machine for Forming Wooden Heels for Boots and Shoes, which is so constructed as to form the heels rapidly and accurately. It is quite simple in construction.

An improved Machine for Granulating or Cutting Grain, such as oats, wheat, barley, corn, etc., has been patented by Messrs. William Eberhard and Robert Turner, of Akron, Ohio. It is simple in construction, convenient, and effective, doing its work rapidly and well.

An improvement in Combing Machines has been patented by Messrs. Thomas H. Rushton and James MacQueen, of Bolton, England. This patent covers improvements upon the combing machines for which letters patent were granted in England to Josué Heilmann, on the 25th day of February, 1846, No. 11,103. It consists in improved machinery for imparting the requisite advancing and retrograde motions to the detaching and piecing rollers; also in a novel form of nipping apparatus.

An improvement in Sewing Machines has been patented by Mr. Louis Evans, of Pittsburg, Pa., of that class which have a double pointed shuttle, and are adapted to sew either backward or forward by a simple reversal of the machine. It consists in the peculiar construction and arrangement of the feed devices, the shuttle, and other parts, which cannot be properly described without an engraving.

An improvement in Treadle Powers, designed to utilize the full effective force of the body in a treadle movement, has been patented by Mr. Isaac M. Rhodes, of Hancock, Mich.