followers of Darwin. Mr. Howorth, in *Nature*, suggests some of them, and they appear to us to be worthy of attention. The gardener who wants his plants to blossom and yield fruit, takes care that they shall avoid a vigorous growth. He knows that this will inevitably make them sterile; in order to induce flowers or fruit, he checks the growth and vigor of the plant by pruning or depriving of food, and if he have a stubborn pear or peach tree, which has long refused to bear fruit, he adopts the hazardous but often most successful plan of ringing its bark. Large fleshy oranges have few seeds; the shriveled starvelings, on the contrary, are full of them. The same law appears to hold in the animal kingdom. "Fat hens won't lay," is an old proverb. Ewes, sows, and cows must be kept lean or they will not breed, and it is said that, to make Alderney cows fertile, they are actually bled. What is commonly known to be true of plants and animals is especially true of man. Individuals and classes are known to be affected by generous diet and good living; everywhere the rich, luxurious, and well fed classes are rather diminishing in numbers or are stationary; while the poor, underfed, and hard worked are very fertile. The same cause has operated to extinguish the savage races, which have decayed and died out when brought into contact with the luxuries of civilization, notwithstanding every effort has been made to preserve them. It is luxury and not want, too much vigor and not too little, that has destroyed these tribes. It appears to be true that, in stead of the strong surviving the weak, the tendency among the strong, the well fed, and highly favored, is to decay, become sterile, and die out, while the weak, the under fed, and the sickly are increasing at a proportionate rate.

These facts make it incumbent upon the supporters of the doctrine of natural selection to search for some explanation that will reconcile them with their theories. Darwin would hardly suggest that we must go back to the savage state in order to attain the highest stage of development; and yet it is perfectly notorious that savages cannot survive the effeminate luxuries of the civilized races. We submit these objections, not as subscribing to them, but by way of caution to those who have been too ready to subscribe to the Darwinian doctrines.

A NEW WATER METER.

Messrs. G. H. Fairchild and Co, of 18 Mercer street, New York, have recently brought out a water meter, which, it is stated, in a recent trial at the Jersey City Water Works, gave results showing a marked superiority over other instruments, the percentage of variation in its registering being at all times and under all pressures, very small, and whatever variation was noticeable being in favor of the consumer. It is said that its accuracy is all that could be desired.

The experiment referred to was the fifth of a series made to test the working qualities of the meter, and during its progress the extremes of pressure were one, and eighty pounds. Through the whole range between these extremes, the meter worked with singular uniformity.

The instrument is constructed on the principle of compensating centrifugal force, and dispenses with diaphragms, plugs, pistons, floats, valves, tilting buckets, and the other devices by which the solution of the difficult problem of measuring water automatically has hitherto been sought.

It is said to be strong, safe, and durable, that it cannot be stopped or corroded, and that it delivers the water in an unbroken stream, without absorbing so much power as to diminish the throw from a hose to any noticeable extent.

The experiment, which occupied some two hours, was witnessed by a number of experts, who expressed themselves highly pleased with the results shown.

The size of the meter which delivered a $1\frac{1}{16}$ inch stream is about that of an ordinary gas meter. Under the ordinary pressures it will deliver about 70 gallons per minute. It has a back motion as well as a forward one, and may be applied to measuring liquors as well as water.

The large waste now prevalent in the use of water renders either enforced economy or increased supply an imperative necessity in most large towns and cities. The invention of a simple, economical, and accurate meter, such as that herein described, is therefore a matter of much importance. It is is believed that further trials, soon to be made with the meter, will not only confirm but surpass the results already obtained.

IMPROVEMENTS IN MARBLEIZING PAPER AND OIL-CLOTH.

Mr. Thomas Carson, of Brooklyn, N. Y., has recently taken out patents for marbleizing paper and oil cloth for table covers, etc., the process being in substance as follows:

For paper, the process consists first in providing the paper with the ground colors, by applying any required plain color thereto by means of brushes or other means, or it may be colored at the time it is manufactured; then a bath of water is provided, and the color which is to most predominate being ground in oil and mixed with dammar varnish, is floated on the water bath, and broken by rapidly stirring with a stick. Care is taken that the varnish be mostly used with this color.

Then the veining colors, also ground in oil and mixed with a small amount of varnish, or, in some cases, none at all, are floated on the bath, and rapidly stirred with a stick.

The color mixed mostly with varnish does not break up so fine as the one mixed mainly with oil; therefore the former becomes the most prevailing color, and the other forms what are called the veins.

When the bath is thus prepared, the paper, being tacked on a board, is dipped edgewise in the bath and then turned down flat therein, so that the liquid in the bath will flow over the whole surface, from one edge to the opposite one, and drive the air away, thereby preventing air bubbles, which would be confined under the paper, if placed flatwise on the liquid, and cause blotches.

The paper is then taken out and laid, with the side which has received the floating colors up, to dry, after which it is varnished, and may be polished if preferred. By a judicious selection of colors the paper may, it is claimed, be made in exact imitation of the most beautiful colored or antique marbles, such, for instance, as the jasper, agate, malachite, lapis lazuli, gold stone, verde antique, Spanish, Pyrenese, Sienna, Brocatelle, Lisburn, Egyptian, etc.

This paper may be arranged in beautiful mosaics for a variety of purposes, as a veneer for walls, fronts of counters, mantels, book bindings, etc.

Very light and thin paper will serve as well or better than thicker, as it is more easily made smooth upon the wall to which it is attached.

Preferably the varnish is not put on till the paper has been put on the wall or other surface to which it is to be applied.

In marbleizing oil cloth the inventor applies the marbleizing colors previous to putting on the finishing coat of varnish. The marbleizing process is analogous to that described for paper, and therefore need not be described in detail, though it is covered by a separate patent.

SCIENTIFIC INTELLIGENCE.

CLARIFYING SUGAR BY ALUMINA.

To clarify sugar solutions, in a manner to adapt them for examination with the polariscope, says the *American Chemist*, is a somewhat difficult matter. Mr. Scheibler advises the use of hydrate of alumina, which has given him extraordinary results. He prepares the hydrate in considerable quantity by adding, to a not too concentrated solution of sulphate of alumina, or alum, an excess of caustic ammonia; he allows the precipitate which forms to subside, decants or removes by a siphon the supernatant liquid, and washes until every trace of the salt or the ammonia has disappeared, and also until red litmus ceases to turn blue. The bulky jelly of hydrate of alumina which remains should be kept in a well corked bottle. The manner of applying the clarifying hydrate is to introduce into a flask holding 50 C.C., 13·024 grammes of the sugar to be tested; add by means of a pipette three to five C.C. of hydrate of alumina, shake and filter. This yields a liquid extraordinarily clear or white, with a partially changed color, which may be perfectly polarized. The same hydrate of alumina can be used for clarifying a great variety of colored liquids and may also serve to purify potable waters.

ARSENIC IN PYRITES AND SODA.

H. A. Smith gives in the *Chemical News* some startling investigations in reference to the persistence with which arsenic in the crude material adheres to the various products even through the third and fourth stage of manufacture. He finds that 100 tuns of hard Norwegian pyrites contains one and a half tuns of arsenic before burning, and half a tun after the roasting. One hundred tuns of the same pyrites will yield 140 tuns of sulphuric acid containing one and a half tuns of arsenic; and after it has been used in making hydrochloric acid, there will be found in the latter nearly one per cent of arsenic. The sulphate of soda in Le Blanc's process was found to yield about four hundredths of one per cent of arsenic. No arsenic was discovered in the soda ash.

PRECAUTIONS AGAINST A TOTAL ECLIPSE OF THE SUN IN 1699.

The preparations made by the governments of the present age to have every phase of a total eclipse studied and recorded contrast favorably with the superstition that prevailed a few centuries ago. For instance, we find the following in one of our German exchanges: The Elector of Darmstadt was informed of the approach of a total eclipse in 1699, and published the following edict in consequence: "His Highness, having been informed that on Wednesday morning next at ten o'clock a very dangerous eclipse will take place, orders that on the day previous, and a few days afterward, all cattle be kept housed, and to this end ample fodder be provided; the doors and windows of the stalls to be carefully secured, the drinking wells to be covered up, the cellars and garrets guarded so that the bad atmosphere may not obtain lodgment, and thus produce infection, because such eclipses frequently occasion whooping cough, epilepsy, paralysis, fever, and other diseases, against which every precaution should be observed."

THE JUDD LABORATORY.

The recent gift of a laboratory to the college at Middletown, Connecticut, at a cost of $100,000, by Mr. Orange Judd, is an event that ought not to be passed over in silence. It is not many years ince Mr. Judd was a poor student at this college, seeking to lay the foundation of a knowledge of the natural sciences, which would be of value to him in after life. The difficulties he then encountered and the obstacles he had to overcome made a deep impression upon him, and it is greatly to his honor that, after the lapse of twenty-five years, he has not forgotten the resolve then formed, that if he were ever able he would lighten these difficulties and remove these obstacles for the benefit of the generations of students to come after him. The Judd Laboratory and Hall of Science was inaugurated at the last Commencement of the Middletown College. It is sixty-two feet front, ninety-four feet deep, and five stories high. The walls and portico are of Portland sandstone, the cornices and dormer window frames are of iron, the roof, slate; and an iron and brick floor separates the laboratory from the museum, so that the building is essentially fireproof. The basement, ten feet high in the clear, is chiefly above ground, and furnishes abundant room for heating furnaces, storages, assay work, and technical chemistry. The lecture room is handsomely fitted up with every convenience for illustration and comfort, and it is provided with a private entrance for visitors and for women when their sex is admitted to the college course. The laboratory is replete with every modern improvement, and as this is the latest, so it also appears to be the most thoroughly equipped school for scientific study in the country. Too much praise cannot be accorded to Mr. Judd for this munificent contribution to the cause of scientific education in our country.

ASTRONOMY AT CONSTANTINOPLE.

The chief astrologer of the Sultan has little occasion to cast the horoscope of the future, as less faith is entertained for that sort of prognostication at the present time than formerly, so he is chiefly occupied in computing the official almanac, and doing real astronomical work. They are actually giving lectures in physical science in Turkish, by Mussulmen professors, though there are not wanting devout men in Islam who maintain that such teaching is contrary to Scripture. The manner of computing time in Constantinople, is a sore puzzle to foreigners. As the day begins at sunset and has to be divided into twenty-four hours, there is a general setting of watches every evening, otherwise nobody would know at what time their railroad and steamboat departures would take place, and things generally would be out of sorts. The chief use of expensive clocks and watches is working out the canonical hours of prayer. Some undevout Englishmen have recently set up a noon gun at the arsenal for the convenience of foreigners.

METEORIC IRON FROM VIRGINIA.

Dr. J. W. Mallet, Professor of Chemistry at the University of Virginia, has recently examined three specimens of meteoric iron found in different localities, but evidently fragments of the same mass. The etched surfaces gave beautiful groups, known as Widmannstättian figures; and carefully conducted analyses yielded the following results:

	NO. 1.	NO. 2.	NO. 3.
Iron.....	88·706	88·365	89·007
Nickel.....	10·163	10·242	9·964
Cobalt.....	·396	·428	·387
Copper.....	·003	·004	·003
Tin.....	·002	·002	·003
Maganese....	trace	.....	trace
Phosphorus..	·341	·362	·375
Sulphur.....	·019	·008	·026
Chlorine.....	·003	·002	·004
Carbon.....	·172	·185	·122
Silica.....	·067	·061	·056
	99·872	99·659	99·947

Dr. Mallet does not consider the chlorine as a constituent of the iron, but traces it to the earth in which the specimens were embedded. Particular attention was given to the identification of the minute quantity of tin recorded in the analysis, as the presence of this metal in meteoric iron has been disputed by chemists, who have examined many specimens. There appears to be no doubt of the extramundane origin of meteoric iron, and as the revelations of the spectroscope become better known, we may eventually be able to trace those that are seen to fall, back to the sources from which they came.

RATES FOR TELEGRAPHING PUBLIC BUSINESS.—The Postmaster General has, in accordance with the Telegraph Act of 1866, fixed the rates of telegraph communication between the several departments of the Government and their officers and agents, which have priority over all other business. These new rates are exclusively confined to public business. One cent per word is named for each circuit of 250 miles or less. All the words of the communication transmitted are to be counted excepting the date and place at which such communication is filed. The rate for signal service messages and reports is two cents per word for each circuit or distance, irrespective of the length of the same. The rates took effect July 1st.

A PIECE of carelessness at the rolling mill in Paducah, Ky., recently came nearly being productive of very serious results. There was about half a tun of molten iron on the ground, the top of which had partially cooled and looked dark A negro approached it with a bucket of water, which he threw on the hot iron. The explosion that followed was terrific. The hot iron was thrown all over the mill in large flakes, endangering the lives of many of the hands, and setting fire to the building. The fire was extinguished before any damage was done. The negro who was the cause of the mischief was unhurt, but his clothing was pretty badly burned.

THE CARROLL COUNTY AGRICULTURAL SOCIETY (Maryland) announces its third annual fair to take place at Westminster, Carroll Co., Md,, on October 3, 4, 5, 6, and 7. The Society has published an extended list of prizes for successful efforts in all branches of agricultural economy, as well as in other useful pursuits. A most commendable feature is the awarding of subscriptions to magazines and periodicals, as premiums, thus widely disseminating practical knowledge of industrial subjects.

THE cabs in New York City are painted dark red, and striped sparingly with black. Vermillion broad lines, and carmine glazed on vermillion, are still used to some extent. Blue on panels, and for broad lines on the carriage part, may be occasionally met with.

THE value of the new money order system between the United States and Great Britain will soon be increased by the admission of France into a tripartite arrangement of the same nature.