SMALLEST MATERIAL OBJECT

Invisible Particles with All the Individuality of Planets.

THEY ARE ALWAYS IN CEASELESS MOTION

So Minute that Millions Together Would Scarcely Make a Grain of Sand—How They Transmit Heat and Light.

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The man of science is at one time exploring the depths of space and becoming there conversant with magnitudes so vast as to tax his powers of conception to the utmost. At another time he is engaged in the study of objects far too minute to admit of their direct perception by any of his senses. That potent weapon for the investigation of nature which is supplied by the laws of mathematics is equally available for the discussion of the phenomena presented in such a mighty system as the Milky Way, or for tracing the movements of those atoms of matter so excessively small that they must necessarily elude every endeavor to perceive them.

It was at one time supposed that every substance must be susceptible of indefinite subdivision. If we took a material object, say for example a sheet of paper, and cut it in half, and repeated the operation again and yet again, ever halving one of the portions which was left by the preceding division, it used to be thought that though the fragments of paper must be ever growing less and less, yet it should be possible to continue this subdivision indefinitely, if only sufficient delicacy of manipulation were forthcoming. In other words, the idea was entertained that there could be no piece of paper so small but that it would admit of division again into two other pieces, each of which was still the substance possessing the qualities of paper. But now we know that the indefinite divisibility which is here postulated is not the property of matter as it is in nature. Only a finite number of divisions could be made or conceived before the fragment which he arrived at—though perhaps itself veritable paper—could not receive any further subdivision without ceasing to be paper. Of course it may be said that in the case supposed we are operating upon a substance which is manifestly of a composite character. The result of a subdivision, when carried on sufficiently far, must therefore necessarily disclose the ultimate ingredients of which the composite material known as paper is formed. Let us, therefore, take for our illustration some substance which, as far as we can tell, is absolutely homogeneous, inasmuch as it consists only of a single element. I select for this purpose a piece of iron, and suppose it to be divided into two portions. Let each portion be subdivided again, and yet again, until at last it shall have been reduced to the minutest portions of which our senses can take cognizance. Each one of the little pieces so obtained will still possess all the qualities of iron. We shall further imagine that we are provided with some means for carrying on the subdivision of an iron particle to a point much beyond that which any mechanical appliance at our disposal can effect. We shall even suppose that we are able to continue the subdivision of the iron long after the particles have become too minute to be visible, even in the most powerful microscope. Modern science has, however, taught us that though this subdivision can be carried on so far, yet it cannot be protracted indefinitely. A point would at last be reached where each of the little particles, though still possessing all the qualities of iron, would refuse to admit of any further subdivision. The particle in question may, no doubt, be composed of parts, but if we could separate those parts they would not be iron, they would not in fact be anything like iron. This piece of iron which cannot be further reduced is called an atom. The derivation of this word indicates that the object to which it is applied is a something which cannot be cut. We are thus led to the conception that all matter on the earth or throughout the universe is constituted of aggregations of atoms. The sun itself is no more than an enormously great, though quite definite number of these ultimate atoms out of which all material objects must be composed.

LACK OF INFORMATION.

There is perhaps no other department of scientific research which shows so strikingly man's tremendous ignorance of nature. Any adequate information as to what these atoms of matter really are has been hitherto denied to us. A few facts may be stated. We know at all events that the atoms are so minute that millions of them would be required to be put together to form the bulk of a small grain of sand. It would, however, be quite erroneous to suppose that because these objects are so minute their structure is therefore simple. This is by no means the case. Some phenomena prove unmistakably that the atoms of certain elements, such for instance as those of iron, which I have already used as an illustration, must be anything but simple objects. They should rather be regarded as possessing a highly complex character and as elaborately formed from many different portions, these portions being in many cases animated by rapid and intricate movement. Indeed it would seem that no experience of the grosser objects which alone are perceptible to our senses would be capable of affording any adequate conception of the extraordinary liveliness of atoms. I must try to explain some of their varied activities.

Let us think of the steam in the cylinder of a steam engine. The steam presses upon the piston and thus forces it up to accomplish its work. In our ordinary language we say that this work is done by the pressure of the steam on the piston, and everybody understands what is meant when we thus speak of high pressures and low pressures. If, however, we look a little more closely into the matter, we shall find that what the engineer understands by the pressure of the steam, has to be regarded in a somewhat unexpected light when the ultimate constitution of steam is considered. The water from which the steam is made, is of course, produced by the chemical union between two gases, oxygen and hydrogen. Each molecule of steam is in fact the result of the union between two atoms of hydrogen and one of oxygen. Steam thus consists of molecules too small to be subdivided into lesser particles of the same substance, namely, water. If any subdivisions of a molecule of steam were effected then the parts into which it would be separated would not be water, they would be the atoms of the constituent gases from which that water was made. The steam in the cylinder of the engine is to be regarded as consisting of a vast multitude of these molecules of water. Each of these molecules is in a state of rapid motion. It is hurrying along with a speed which is sometimes slower and some times faster than that of a rifle bullet. Even in a very small portion of space the multitudes of these molecules is prodigious. The number of them which are required to form as much steam as atmospheric pressure as would suffice to fill a lady's thimble is to be represented by many billions. As these molecules are in such close contiguity, and as they are incessantly darting about, it will not be surprising to find that collisions frequently take place between them. The effect of a collision will be to divert each of the impinging molecules from the path in which it was proceeding before the collision took place, so that it bounds off again in some other direction. The new direction is similarly pursued until the molecule is turned aside by the next collision. These encounters are so frequent that each of the molecules will experience millions of collisions in each second.

MOLECULES OF STEAM.

As the molecules of steam in the cylinder dash about with their tremendous velocity they rain incalculable myriads of little blows upon the bottom of the piston. The effect of these impacts is to push the piston upward. Indeed what the engineer calls the pressure of the steam is merely the average of the myriads of little impulsive shocks which are given by the blows of the rapidly moving molecules. If the heat from the boiler is still applied, while the steam generated is not allowed to escape, then of course the pressure will rise. Let us now state what this means in a different manner.

The increase of pressure arises from the fact that the temperature of the steam is increased. As the temperature increases the rate at which the little molecules hurry along also becomes greater. There is in fact a definite relation between the temperature of the steam and the average rate at which its molecules are moving. The greater the temperature the greater the speed; the less the temperature the less the speed. The increase in the pressure within the boiler is equivalent to an increase in temperature of the steam, and this corresponds to an increase of the average speed with which the molecules are animated. But with increased velocities of the molecules there would be a corresponding increase in the vehemence of the blows which they administer to the inside of the boiler and consequently as we say the pressure in the boiler is augmented. Under certain circumstances those blows may become so numerous and so energetic that the tension of the iron or steel of which the boiler is constituted may no longer be able to withstand the strain to which it is exposed, in which case explosion will be the result. This illustration will at all events show to a certain extent how the temperature of a gas is connected with the average speed with which its molecules are animated.

ELEMENTS OF FUSION.

When two liquids, such as brandy and water, are placed together in a tumbler a complete fusion takes place. No doubt in this case the act of fusion is generally accelerated by the way in which one liquid is poured into the other. Fusion would, however, proceed without such assistance; indeed, it could not be prevented if the two liquids are in any way brought into contact. Suppose the water has been placed first in the glass and the spirit being the lighter liquid has been carefully poured on the top. There will be at first a marked difference between the two strata; a gradual blending of the two liquids, by what chemists call diffusion, will, however, at once commence. Notwithstanding the relative lightness of the spirit, it cannot remain permanently distinct from the water as a covering of oil would do under the same circumstances. In due time the spirit descends through the water and the water ascends through the spirit, so that the mixture will ultimately become as complete as if the two liquids had been shaken together in a bottle. Thus we see that the spirit, though actually lighter than the water, gradually sinks downwards, while the water, though heavier than the spirit, gradually makes its way upward.

The explanation of this phenomenon can be readily obtained when we remember that each of the two liquids in question is made up of molecules in motion. Across the boundary which at first divides the upper from the lower stratum a molecule of either liquid occasionally dashes, and by the incessant repetition of this process the blending is ultimately accomplished. It is quite true that the movements of the molecules in the liquid state are not so unrestrained as they are when the matter is in the gaseous state. Each molecule in a gas has, so to speak, a free run between one of its collisions with other molecules and the next. It seems, however, that the molecules of matter when in the liquid state enjoy a much more limited degree of freedom. In this case each molecule can only be detached from its association with some neighboring molecule in order to become associated with a third molecule. Such interchanges of alliance among the liquid molecules are, however, incessantly taking place, and thus it happens that the molecules of the spirit become gradually dispersed through the water, while on the other hand the molecules of the water gradually penetrate through the spirit, until at last the two fluids become completely blended.

ATOMS IN SOLIDS.

A solid substance, such as a piece of cold iron, may seem to our senses to be quite devoid of movement in its ultimate parts. We have, however, the best reasons for knowing that if we had organs of sense some millions of times more acute than those with which nature has endowed us we should find that the molecules even of a piece of cold iron were animated by the liveliest movements. In the case of such a body or of any body which may be termed solid, the movements of the molecules are of much more restricted character than they are in the case of gas or even of a liquid. The extent of the movements of the particles of a solid are confined within very narrow limits. Each molecule, in fact, remains, generally speaking, in permanent association with the other molecules with which it was originally connected. This is illustrated by the obvious truth that if a piece of solid copper and a piece of solid zinc are placed even in the closest contact no fusion of the two substances will take place. The movements of the molecules in the zinc are so narrowly restrained that they do not cross the boundary to any appreciable extent. The molecules of copper are also confined in their movements within the mass to which they originally belonged. If, however, these two metals, instead of being in the solid form had been melted into a fluid state, then the two fluids, if placed in contact, will speedily diffuse one into the other. For under the influence of heat the amplitudes of the movements of the molecules have been so much increased that they are now able to shake themselves free from their original attachments. The atoms of the zinc can thus cross the boundary and enter into the copper, so that the homogeneous material known as brass is the result.

Lord Kelvin has given a striking illustration to show how extremely minute must be the actual magnitudes of the molecules of matter. Imagine that a rain drop the size of a pea were to be magnified into a globe as large as the earth. Let us suppose that each of the molecules in the drop of water were to be at the same time magnified in the like proportion, then we know that the dimensions of the molecules as thus increased would make them larger than grains of shot, but smaller than cricket balls.

TEXTURE OF MATTER.

We may also illustrate the fineness, so to speak, of the ultimate texture of matter in the following way. Think of a plate of copper possessing the same thickness as the page on which this is printed. It is perfectly certain that if we had machinery by which we could beat our copper until the plate was reduced to the thousandth part of its present thickness the thin sheet so produced would still be found to present all the characteristics of copper. Even if the sheet could be beaten out ten times more, so that its thickness were ultimately reduced to one ten thousandth part of that of the original sheet of paper, the substance in the plate would still possess the characteristics, chemical and physical, of actual copper. It can, however, be inferred by an ingenious line of reasoning, given by Lord Kelvin, that if the plate thus attenuated were to undergo a yet further reduction which would make it to be not more than the millionth part of the thickness of this sheet of paper, then the substance would have ceased to be copper in the sense in which we understand the word. It would approximate to a layer of individual molecules, further subdivision of which would be impossible.

Some very interesting results illustrating the minute subdivision of matter can be derived from certain beautiful experiments made by Prof. Boys. Having melted the common mineral-quartz, at an excessively high temperature, he has succeeded in drawing out quartz into fibres of this remarkable substance. The method he employed in this delicate operation is the result of great ingenuity. To produce the fibres he used a little cross-bow wherewith he discharged a light arrow which had been previously attached to the melted quartz. As the arrow flew through the air, it drew out behind it a filament of the fused mineral. In this way Prof. Boys has succeeded in obtaining fibres possessing more tenuity and delicacy than had ever before been attained by human art with any material whatever. The fibres of quartz produced in each discharge of the arrow are about forty or fifty feet long. They are remarkably uniform in diameter, and the strength of these fibres, due allowance being made for their dimensions, is truly astonishing. Drawn quartz thus appears to have a tenacity not less than that of ordinary steel.

DELICACY OF FIBRES.

The thickness of a fiber of silk as wound from the cocoon is about one five-thousandth of an inch. Prof. Boys has drawn fibers of quartz so fine that if 100 of them were twisted into a cable its thickness would be about the same as that of a fiber or unspun silk. But this statement, remarkable as it is, does not give an idea adequate to express the highest order of fineness which has been obtained in certain of the quartz filaments. They have been indeed been drawn with such excessive delicacy that they can no longer be perceived by the naked eye. Indeed, Prof. Boys has assured us that where the end of the fibers gradually tapers off its thickness has become so small that some of these fibers are so fine that they do not possess a thickness of the hundredth thousandth part of an inch. This extraordinary tenuity is strikingly illustrated by Prof. Boys when he says that a lump of quartz the size of a walnut contains sufficient material for a fiber long enough to wrap six or seven times round the whole earth.

These results demonstrate in a striking way the extreme subtlety of the molecular texture of matter. The quartz fiber, though only one hundred thousandth part of an inch in thickness, still seems to be as veritable quartz as was the original lump of mineral before it was fused for the operation of drawing out. In other words, so vast a number of molecules are contained within the thickness of the one hundred thousandth of an inch that the physical properties of the substance remain the same in the delicate filament as they are in the large mass.

BENEFICENCE OF THE SUN.

Many illustrations might be given of the significance of molecules in connection with the visible operations of nature. Let us take for instance the supreme beneficence of the sun itself. We shall, I think, be able to demonstrate that we are indebted to the smallest material objects for conferring on the sun its ability to send us light and heat. We receive the solar radiation in the form of waves transmitted through that mysterious fluid—the ether—which seems to fill all space. The vibrations of the ether enter the eye, and falling on the retina, produce the sensation of light. These waves start from the sun, and they have there been endowed with the energy which is to carry them across the ninety-three millions of miles which separate the earth from the great luminary. If we inquire into the actual method by which the necessary waves seem to have been imparted to the ether, we shall soon learn the extent to which we are indebted to the movements which take place within the atoms. The sun is at a temperature so high that in its outer regions at all events it is actually in a gaseous state. The molecules of these gases are continually dashing about with speed corresponding to the exalted temperature which they possess. It must be understood that although an atom is so minute an object it is still in some cases at all events of a highly complex character. Portions of an atom are found to be free to move relatively to other portions, so that in consequence of the collisions with which one atom strikes against another, vibrations in the several parts are kept up. The atoms may be said to quiver under the influence of the repeated shocks which they receive just as electric bodies would do. Indeed it would seem that the most perfect type of an elastic body may be illustrated by the deportment of these little atoms. The rapidity of their vibrations differs somewhat for molecules of different substances. The molecules have, it would seem, the power of transferring part of the energy of their vibrations to the ether, and thus of originating waves which speed on their way to the earth to be interpreted by us either as light or as warmth, according to the senses to which they make their appeal. Though the internal energies of the atoms ever tend to be reduced in the process of giving rise to vibrations in the ether, yet those energies are ever and anon recuperated by the fact that as the atoms are dashing about, they come into collision with other atoms. In consequence of these collisions, part of the energy which is due to the translation of the molecules as a whole is transmitted into that internal energy due to the motion of the parts of the molecules, which has the capacity of producing ethereal vibrations.

IMPORTANCE OF HYDROGEN.

Such is an outline of the physical cause of those wondrous natural phenomena, the radiation of light and heat. When we come to examine into the details of the subject, multitudes of interesting points arise which are connected with some of the most remarkable developments of modern science. Let us take, for instance, one of the most important elements, namely hydrogen, that gas which we know so well on this earth, and one which is diffused far and wide throughout the universe. The sun, like many other celestial bodies, contains large quantities of hydrogen, and its atoms are, of course, vibrating in the way that I have suggested. But these vibrations are known to be of a manifold character. They do not all seem to be performed in the same time, and, consequently, the undulations through the ether which are originated by the molecular vibrations of hydrogen, are not all of one type. There are a large number of quite distinct ethereal waves produced by the hydrogen molecules. In the ordinary way in which these waves are received by our eyes we have no means of discriminating between them. Modern science has, however, at its disposal a beautiful instrument called the spectroscope, which enables us to take a complex bundle of ethereal waves and, so to speak, to sort them out into their different types. We can discover by the spectroscope the several waves which are blended in a beam of light. Thus, to take the case of hydrogen, already mentioned, we find that among the solar beams which reach our eyes, there are quite a number of distinct rays due to the presence of hydrogen in the sun. Besides those waves from this gas, which produce effects visible to the eye, there are also many other ethereal waves transmitted from the atoms of solar hydrogen, which are unable to appeal directly to any organs of sense which we possess, but which nevertheless possess the power of making themselves manifest on the photographic plate. The photographic spectrum of hydrogen, as it is called, contains a multitude of lines. Each one of those lines corresponds to a distinct form of ethereal undulation, and thus we obtain some idea of the extraordinary complexity of that atom of hydrogen gas, which, itself so excessively minute, is still able to give rise to so many different forms of ethereal agitation.

Every other element besides that one which I have named is also able to produce waves in the ether when suitable conditions as to temperature and pressure are present. It is a remarkable fact that the waves which arise from each element are, generally speaking, so entirely distinct from those produced by any other element, that we have, with the help of the spectroscope, a method of ascertaining what the actual substances may be which are present in the sun. In some cases the spectra of the elements are extremely complicated, thus indicating a corresponding complexity in the atom belonging to the element. The molecule of iron must, for example, be of a very elaborate character, for the spectrum which it produces contains far more lines than are to be seen in the spectrum which is due to hydrogen. Thousands of lines, indicating the existence of thousands of distinct waves, take their origin from this little atom belonging to the most common of metals. The more we learn of the ultimate texture of matter, the more amazing seem the properties of those atoms which are the smallest of natural objects.

ROBERT BALL.

Fads of Fashion.

Jeweled umbrella handles are the coming correct thing for the man or woman who strictly follows the dictates of fashion. If any one has any social ambitions or aspires to any pretentions of style the umbrella handle must be thickly encrusted with jewels.

These are made in either tasteful or grotesque designs, as the fancy of the owner may dictate. Some are made with antique designs of gold and silver, with the jewels set in an apparently haphazard sort of fashion, while others have the precious stone set in the natural wood.

A manufacturer of umbrellas has already filled several such orders. In speaking of the new fad he said:

"All the ideas are original with our customers, and we receive some very odd orders as well as some very beautiful ones. One of the finest we have done was a silver figure of Liberty. Two magnificent rubies formed the eyes and a truly gorgeous one flamed from her teeth. The setting alone cost $35. Most of the setting is done in Lancaster, Pa."

"One of the features of the fad," said another dealer, "is that cheap stones cannot be used. The gems must be genuine and of good quality or else the entire effect is lost. It is a costly sort of idea for those who adopt it, but as a rule persons who readily adopt such a fad are perfectly able to pay for it. It will, I think, become more than a passing fancy and last some time among those who regard the law of fashion. It will hardly be advisable for one to carry a jewel-handled umbrella to the church or play and leave it standing in the customary rack at the entrance."

BLIGHT OF THE WILSON BILL

A Positive Damage to the Cattle Business of the Country.

MILLIONS LOST BY AMERICAN FARMERS

Decreased Exports and Increased Imports Under the Law Which Candidate Bryan Championed and Helped to Frame.

CHICAGO, Sept. 11.—(Correspondence of The Bee.)—I have given some facts in a previous article from Chicago, showing the condition of its manufacturing industries, and it is proposed in this to take up an industry bearing more particularly on agriculture.

In common with all other business, the vast cattle interests of this city have suffered most severely by reason of the Wilson-Gorman law. While many of the troubles the people are suffering from may be attributed to "lack of confidence" and disturbance arising from the threatened free and unlimited coinage of silver, the trouble of the Chicago cattlemen is the old fashioned tariff complaint, for which the election of William McKinley is the best known specific remedy.

If the facts which I propose to present do not prove the above assertion beyond a doubt I shall be glad to hear from any doubting cattleman on the subject. These data have not been gathered up haphazard, but carefully collected especially for this article by William F. Carroll, a statistical expert, acquainted with the business, who has visited personally the principal establishments of this city and talked with those engaged in the business.

PREMIUM ON FRAUD.

The first thing that played havoc with the cattle industries was a return to the ad valorem system, which is always bad for the farmer. The proper way to levy a duty on cattle is so much per head. Then the American farmer knows what he is competing with, as the element of fraudulent invoices and undervaluation does not enter. The McKinley law provided for a duty of $2 per head upon cattle 1 year old or less and $10 per head on cattle over 1 year old. This was just and businesslike. It, moreover, encouraged honesty and, as we shall see, the American cattle industry.

The Wilson-Gorman law, on the other hand, changed this specific or per capita duty to 20 per cent on every dollar of value. It made no distinction between imported live animals. The value of the animal, moreover, was taken at the place of export. Mexico might send in cattle and value them at $2 per head and pay 40 cents duty; the Argentine Republic at a valuation of $3 per head and pay 60 cents, and Canada might call it $5 per head and pay $1 duty. It was a fraud and humbug alike upon the American farmer and cattle dealer. It opened the door wide to fraud, as ad valorem duties always do. Thus the farmer sees his cattle industry destroyed and the United States government is defrauded of revenue that it is entitled to and needs.

HERDS COMING IN.

First, then, this change from the McKinley law to the Wilson-Gorman law increased the importation at this rate:

Year.	No. cattle imported.	Value.
1890	26,760	$ 171,916
1891	9,652	53,652
1892	2,036	20,389
1893	3,119	24,658
1894	1,280	13,355
1895	227,635	1,391,594

In other words, at a time when the American farmer was hard up and needed all the money he could get, the Mexicans and Canadians shipped in to compete with our farmer 227,635 cattle. These cattle sold at an average price of $15 per head, and the foreign shippers pocketed about $3,500,000. Since this law came into force we have imported 350,000 head, which means a loss of $5,000,000 to American farmers.

In the second place, I propose to prove that these cattle have been fraudulently entered, that is, undervalued. If it were otherwise, how do you account for a decline in the value of cattle under an ad valorem duty? Official reports show that the average value of every dutiable animal imported under the Wilson law was $2.54 per head, as against $7 under the McKinley law. So the farmer, instead of a good $2 protection on young cattle and $10 on grown cattle, has had a paltry 50 cents per head.

Now what has happened? After the enaction of this law our farmers sold out both young and old cattle before prices dropped. In two years the stock of American cattle was reduced 5,000,000 head. From 37,651,239 under the McKinley law, down to 32,088,813 went our total number of cattle, while the value was reduced from $570,000,000 in 1892 to $509,000,000 this year. A loss of 2,000,000 head per year, and a depreciation of over $60,000,000 in value.

These are facts intelligent farmers should read and understand.

DECREASED EXPORTS.

While this criminally foolish law opened our ports to the scrawny cattle of Mexico, reduced our own herds 5,000,000 and cut values down $60,000,000, perhaps it increased our exportations? Perhaps this was a realization of that beautiful dream about the world's markets? Not so! In this case we literally dropped the meat in our mouth for the shadow. The reciprocity section of the McKinley law helped the American farmer to sell to other nations. There was never any reason for its repeal, except "pure cussedness." Under the McKinley law the export of cattle from the United States increased from $16,616,917 in 1889 as follows:

Year.	Number.	Value.
1890	394,836	$31,261,131
1891	374,679	30,445,249
1892	394,607	35,099,095

From the moment of the advent of the democratic party this trade began to languish, until the calendar year of 1895 shows 289,350 cattle and a value of $26,997,701. A loss here of over 100,000 cattle and nearly $10,000,000 in value.

With all the boasts about the world's markets the free trade policy has merely closed markets to us that, under reciprocity, were open. In 1892 our exports reached $1,000,000,000, and artisan and farmer were alike prosperous.

THE HIDE BUSINESS.

Farmers understand that the hide business is important and, as a rule, goes up and down with the fluctuations of the cattle industry. In 1892 we consumed the hides from the surplus stock of 37,000,000 cattle and had to import $26,000,000 worth of hides in addition. At the same time we exported $1,250,000 worth. Under reciprocity we increased our exports from $1,223,895, in 1892, to $3,972,494 in 1894, before the McKinley law was repealed. At the same time we reduced our imports from $26,000,000 in 1892 to $16,000,000 in 1894. The American farmer sold the difference.

Taking the calendar year 1895, immediately after the passage of the Wilson bill, the exportation of hides fell to $2,825,947 and the imports increased from $16,000,000 to $36,432,989.

So, you see, the McKinley law increased our exports and decreased our imports. This has always resulted under a republican administration and a protective tariff.

Under the Wilson-Gorman law they decreased our exports and increased our imports. This is always the result of a democratic tariff. Under both tariffs hides were free.

Of course, when there were so many imports of cattle and hides, it reduced the number of our cattle. Some of our cattle must have rotted on the prairies. It did not pay to skin them, much less to market the carcass. This is why the number of cattle was reduced from 37,000,000 in 1892 to 32,000,000 in 1896.

THE DEAD HAND.

Thus is the withering effect of the dead hand of democracy felt in both agricultural and industrial endeavor, and in no industry is the lesson so clear as in the cattle and hide trade. I have shown that this legislation introduced uncertainty where certainty existed; it brought about undervaluation and instigated fraud; it increased importation to a point where it no longer became profitable for American farmers to raise cattle; it reduced our herds at home 5,000,000 head; it decreased our exportation 100,000 head, making a loss of $9,000,000 to the cattle raiser; and, lastly, it brought about a depreciation of $60,000,000.

And for what?

That Wilson and Bryan and a few other visionaries might try an experiment. That an "object lesson" might be given the people. If there is any other reason, it is not apparent, for the changes were as absolutely senseless as they have proved disastrous.

Let every farmer study the history of the cattle industry under McKinley's law and under the present law. If, after having done so, he is still in doubt as to what hit him, send to my esteemed friend, Hon. Samuel W. Allerton, Chicago, and ask for a copy of "Horse Sense." That is a more heroic remedy than the one herewith submitted, but it is usually effective.

ROBERT P. PORTER.

THE FARMER GOT EVEN.

With a Carpet Bag of Hornets He Was Equal to the Bunco Men.

There are four men in Chicago who will never forget Silas Tatman's visit to the city. It will be many days before those same men will be able to show up at the depots again to prey on the confidence of rural strangers.

When Silas came to town Saturday, relates the Inter Ocean, he came with the avowed intention of revenging himself on a smooth-spoken young man who had met him on a former visit, and had relieved him of a carpet sack containing the visitor's money and return ticket. He did not expect to encounter the same fellow, but he made up his mind to administer to the first man who claimed to know him the warmest reception the scoundrel had ever met with.

Tatman came in from Bunkum. Bunkum is not on the map, and one could go to the place with a repeating rifle and shoot all the inhabitants without reloading. But, small as it is, it can boast of a citizen who outwitted four of the cleverest "con" men in Chicago.

Bunkum is also renowned for its large hornet's nests and the warlike and "grouchy" dispositions of their occupants. In Tatman's hog lot hung one of these nests from the limb of a locust tree. It was a gigantic specimen, and the terror of the neighborhood.

The morning Silas left for Chicago he went out in the hog lot very early, before the hornets were astir. He took with him an old green carpet bag, and this he opened and slipped carefully around the oblong nest, closing the clasp quickly, without losing a hornet. When he took the train later in the day he smiled with delight at the thought of the harrowing scene that would take place when the carpet bag was opened.

When Silas arrived at the depot, instead of going to the hotel he sat down in the smoking room and waited. His mission was similar to that of the confidence man. He was in quest of a stranger who would cultivate his acquaintance only to rob him of his hornets and regret it to his dying day. Occasionally Farmer Tatman would look down at his carpet bag. As he did so he shook with glee.

The Bunkum farmer had not been seated five minutes when he was approached by a fellow with a sharp, inquisitive nose and a checked suit. "Ah, ha!" thought Tatman, as the stranger extended his hand, "I've got you."

"I believe I know you," said the sharp-nosed individual. "Let me see, you are from—"

"Bunkum," replied Tatman.

"To be sure; Bunkum. And your name is—"

"Tatman."

"Why, of course. How are you, Mr. Tatman?"

"Tolerable," and Tatman looked down at his hornets and chuckled.

"My name's Cunningham," went on the stranger, grasping one of Silas' hands in both his own. "You remember I was visiting in Bunkum a few years ago with Banker—a— Oh, I never can remember names. You know who I mean, though. He's the principal banker in your town."

There never was a banker within twenty miles of Bunkum, but Farmer Tatman was playing a hand, so he said: "Know 'im? Woll, I should say I do. You mean old Squire Jones!"

"Jones, of course. Ha, ha, ha! Strange I couldn't remember the name."

"Ha, ha, ha! 'Twas kinder funny," and Silas fairly danced with joy. "I reckon thar hain't a nice quiet little place somewhere where a feller can talk with a friend what he hain't seen for nigh onto two year." This was just what Cunningham wanted.

"Oh, yes," said he in his softest tone. "I know just the place. It's not over a block from here."

"Then I reckon we might as well go if you're sure it's safe walking through the streets with as much money as I've got in this here satchel."

At the word money Silas detected an expression of eagerness and pleasure on the scoundrel's face, and the fellow's fingers seemed to itch as the two walked along.

"Ain't you afraid," said he, "of being robbed?"

"Woll, you just bet your sweet life the fellow who opens old Silas Tatman's valise will be sorry," and the Bunkum farmer smiled inwardly.

Here Cunningham turned on a little side street, leading his friend by the arm. About half way down the block they turned into a dark and dingy looking saloon. Cunningham spoke familiarly to the barkeeper, who directed them to a wine room in the back of the place. The two sat down at the table, and were joined presently by three other men. One of them was a fat man, who tried to get Tatman to play cards, "just for fun."

Another one of the men wore a white vest and a polka dot necktie. He did all the talking, and, after Cunningham had whispered a few word's in the fellow's ear, he could hardly keep his eyes off the carpet bag. He was introduced to Tatman as Thomas W. Bloomfield, the Board of Trade man.

"It seems, Mr. Tatman," said Bloomfield, "that you are very careless with your money. Mr. Cunningham tells me that you carry it in your satchel."

"You bet, I have got a lot of money in that 'ere old carpetbag. I was kinder thinkin' of speculatin' with it."

"Perhaps you would like to have me invest it in wheat. I think you could make a big stake."

"I'm kinder 'fraid of losin' it."

"Oh, not at all; not if it's well invested. People only lose their money through carelessness. But, of course, some one has to lose money to keep the stuff properly in circulation."

"Well, I hain't got much money to lose, and I'm feared if I was to open that 'ere bag that mine would go to circulatin', and you bet it would circulate mighty dern fast."

"Well, if you did lose it, it would stick to some one's fingers."

"You bet your blame life she would, and she'd stick purty gol darned fast."

"So you don't want me to invest it for you?"

"I'm a little bit scary 'bout puttin' it in wheat."

"No risk whatever," said Bloomfield. "Why, I tell you, Mr. Tatman, a good speculator can pick money off the trees here in Chicago."

Bloomfield's expression tickled Tatman. He laughed uproariously and then said:

"You can pick it off the trees in Bunkum too, but you can't keep it long, 'cause it circulates too dern fast."

By this time the men were growing impatient, and Tatman noticed that they looked more frequently and longer at the carpet bag. He thought it about time to take his revenge, so he said:

"Well gentlemen, I reckon I'd better be a-goin', and I'd like to leave that 'ere money with you, so as it'll be safe while I hunt up a stoppin' place."

"Much obliged, gentlemen," and Tatman arose. "'Tisn't very often that a feller meets such kind friends as you are in a strange city, and it's kinder soothin' ter know that a fellow's leavin' his money with honest people. I reckon I'll be back in about an hour." And Tatman once more thanked his friends as he pased out of the room, closing the door behind him.

Tatman did not leave the saloon, as the men expected. By a clever dodge he managed to slip the key of the door in his pocket before he left the room. He remained on the outside long enough to silently turn the bolt in the lock, after which he slipped into the adjoining room. He did not wait long before he heard one of the men say:

"Well, that was the easiest snap I ever saw." Silas recognized the voice as that of Cunningham. Then Bloomfield answered:

"Easy! Why, you could rob that fool before his eyes and he wouldn't know it. Hand up the granger's gripsack."

Tatman heard the sound of the gripsack striking the top of the table. Then he heard them prying at the lock. Presently he heard the clasps give, and in another instant a piercing yelp rent the air. Whack! Crash! Bang! The chairs were upturned and the table was tumbled over in the mad scramble for the door.

Then he heard some one say: "Great heavens! They're hornets and the door is locked."

The howls and yelps which followed brought the bartender and the proprietor to the scene. The Bunkum farmer seized the opportunity to slip out of the saloon, and as he was passing into the street he heard the door crash in as one of the men on the inside dealt it a blow with a chair. Over his shoulder he saw a stream of hornets sail after the bartender.

Twenty minutes later, from his retreat in the alley across the street, Tatman saw his five friends limping out of the saloon to the ambulance, which had been called, and which had backed up to the curbstone.

Roman Women.

In a lecture the other day at the summer meeting of the University of Pennsylvania Prof. Tracy F. Peck spoke of Roman women, showing how noble, dignified and influential was their part in the nation, and how they were honored in their private life and in their relationship to the state. No Roman girl was required to marry without her own consent, and no more compulsion was brought to bear upon her than is exerted in modern times, not so much as in modern Europe. It was not until the entire nation began to degenerate that the marriage bond came to be lightly regarded.

The Roman matron's duties were of a serious kind, calling for a resolute character. She was brave, proud, strong and wise. As a rule, she was little seen in public. But she resented any interference with her rights, and we have records of delegations of women who visited the authorities and entered their protest against some measure which displeased them. A famous case of this was under the Second Triumvirate, when a delegation of women, with Hortensia as spokeswoman, presented themselves before the Triumvirs and protested against being taxed to support a fratricidal war, stating that in a war against encroaching foreigners women could be depended upon to sacrifice everything.

The Late Mrs. Stowe.

A writer in the Boston Transcript tells the following quaint little anecdote about the late Mrs. Stowe: As she was a welcome guest in any of the houses near her own residence in Hartford, it was her custom to wander, at twilight, from her own into some neighboring garden, and thence through the hospitable open door into hall or living room. In the hall of one such house there was a fine bust of Henry Ward Beecher in white marble resting in a deep niche in the wainscoted wall, and softly shaded light. One summer evening when this light had been newly kindled, Mrs. Stowe came softly in through the open door and stood looking up at the bust. "Ah, Henry!" they heard her murmur, in her quiet, dreamy voice, "Ah, Henry, a light burns before you there like a saint in your shrine. But you were no saint, Henry! You were no saint!"