CONFERENCE OF SWISS JURISTS AT GENEVA.

On August 20th last the Society of Swiss Jurists met at the University, Geneva, Switzerland, to discuss the question of the adoption of a national patent law.

Dr. Meili, of Zurich, who read the opening paper, took the ground that any patent law was unconstitutional, but advocated a change in the constitution so as to permit the passage of such a law, and spoke of its many advantages. He also thought that an examination preliminary to the grant was advisable.

Dr. Schreyer, of Geneva, followed with an elaborate address, wherein he warmly opposed a system involving such preliminary examination, admitting, however, the great desirability of the law itself.

In the general discussion that took place on the questions presented by the papers Mr. Morel, vice president of the Federal Tribunal, and Mr. Francis Forbes, of the firm of Forbes & Sage, of New York, favored the adoption of the law, instancing the successful working of the United States Patent Laws, and the rapid growth of useful invention, owing to the security afforded by the same. At the close of the debate it was unanimously resolved that "the Society of Swiss Jurists declares that the passage of patent, trade mark, and design laws in Switzerland is desirable;" but the question constitutional was not voted on.

The society then adjourned to a banquet at the "Hotel National."

THE "TRUE THREAD."

"It's nearly done," said Old Apple John. "All I have now to do is to find the true thread of a quarter inch screw, and my work is completed, and the world will be turned upside down."

Then the old man retired to his cellar, and did not return to his apple stand. The neighbors went to look for him. The cellar was still, but a dim lamp burned at mid-day in the inner room. The doors were forced, and the old man was found dead upon a pallet of straw. The machine that was to go without power stood on the table; but it lacked the "true thread."

For years the old man had worked upon the machine, spending upon it all his spare time and slender income, bearing patiently poverty, contumely, discouragements, disappointments; returning to the counsel of friends and the jeers of acquaintances, the single reply that when one more obstacle was overcome his perpetual motion would be a fact; then he would be at the top of the heap, and have his laugh at those below. Of the principle he was sure; but the "true thread," or its many equivalents, forever eluded his grasp.

Strange what a hold that old idea has upon the human mind! The shadowy yet tantalizing belief that somehow something may be got from nothing—that by some trickery of mechanical device the universe may be cheated into yielding power without an equivalent return—seems to be an inheritance of the race, to be eliminated from the mental constitutions of individuals only by early instruction—or by death. So long as men are "sure of the principle"—and those who are sure are numberless—no disappointment, no accumulation of contrary experience, can convince them that the search for the "true thread" is hopeless. The impossible is to them a hope; it is always possible, and always lies just one remove beyond their reach.

These are the honest Apple Johns—the genuine seekers for the "true thread." Of a very different order is the man who has found the "true thread." He is invariably a rascal, and is after unearned money. So he deludes his victims with the promise of a grand prize sure to follow the investment of just enough money to make a larger and stronger model—just enough to start the Grand Turn the World Over Association on a solid basis. He shrewdly counts on the abundance of men of more cash than sterling sense; men who still harbor the delusive conviction that the "true thread," by which something will come from nothing, is discoverable, and that the first to find it will make no end of money by it: and he is not disappointed. There are men always ready to bet against the inevitable, provided some one confidently assures them that he has a trick to circumvent it: and until that race dies out the harvest of the swindler is sure. With the gambler's spirit they reap the gambler's ultimate reward.

It is amazing what protean shapes the "true thread" assumes, and how near it always hovers to the limit of the pursuer's reach. It is even more amazing that so many are in one way or another in hot pursuit of it, sure of the principle, but always baffled in its material realization.

A PROMISING FIELD FOR INVENTION.

Much cheaper machinery and other ironwork of many kinds might be manufactured, could the cost of turning and planing be considerably lessened, and extended, and even new markets might be developed, for it is this kind of work that adds largely to the cost of engines and all machinery driven by them.

In drilling, filing, and finishing, it is the tool that moves to produce the desired effect, not the mass of metal operated upon, and very marked would be the difference in power, to say nothing of the excessive time and labor that the reverse operation would involve.

By what epithet indeed would we nowadays designate the workman who would attempt, in all cases, to drill holes by using a stationary tool, and revolving the metal against it? And yet, practically, the present method of turning and planing in no wise differs from this.

Evidently incorrect in principle, this is one of those practices that remains in vogue, seemingly because the machines adopting it are such an improvement on what went before that little thought has been given to the possibility of still further advance, but whoever can supersede it by correct practice will hardly fail of ample reward.

The wood planer, by reason of its revolving at a high velocity, accomplishes its work with almost marvelous rapidity, and we can conceive of no reason why the same principle should not be applied to the turning and planing of metals.

It may, however, be urged against this that machine planed boards are not so smooth and true as metal work must be; but to this one may reply that the "spring" or "buckle" of the board is the cause of its unevenness, and that such objection will not apply to the working of metals in this way to any greater extent than it will to the present practice.

For the general work of turning and planing metals, especially for heavy work, there might be substituted for the present fixed tools rapidly revolving disks or cylinders of required diameters and thickness, and carrying cutters on faces or edges, as might be best adapted to the work, the disks or cylinders to be adjustable in horizontal or vertical planes, and at any required angles, and to be hung in swinging frames, so that their movement and pressure against the work may be easily regulated. The cutters or teeth should but slightly project, and should have broad bases to insure necessary strength and rigidity. With sufficient velocities, light tools of this character would easily accomplish work to which the present style is barely equal.

In the well known fact that a disk of thin sheet iron with smooth edge, revolving at high speed, will quickly cut through a bar of steel, we find assurance that the plan above suggested is entirely feasible. By adoption of it we think increased accuracy of work would be secured as well as great economies in steam power, time, and labor, and that simpler and lighter machines would be substituted for the present somewhat complicated lathes and planers.

With these few suggestions we leave the problem to our inventors to be worked out in all its details.

AMERICAN DEXTERITY.

Not long ago one of the largest and most successful shoe manufacturers in Europe stated that, though his factory was stacked with the best American machinery, and manned by as good a class of workmen as he could get, he was undersold at his own door by American makers. His observations in American factories supplied the explanation: the average workman in our factories, he said, could turn out much more work in a day than the most skillful in Europe, owing to their superior dexterity and quickness. The Swiss watch manufacturer, Dubied, said that the American workman could turn out day by day three or four times the average product of the European of the same class.

This seems like gross exaggeration; but it is not out of harmony with the testimony of many competent foreign observers. A correspondent of the British *Ironmonger* tells a story which furnishes an apt illustration of this feature of American workmanship.

He says that during the Centennial year an English manufacturer of stamped tinware saw some presses in use in this country which pleased him greatly. He was particularly struck with their rapidity of operation, and ordered three. They were made in due time, and the maker, hoping for other orders, took them abroad himself. They were set up, and men experienced with presses were given charge of them; but under the most favorable conditions they could not be made to turn out within forty per cent as much work as they averaged daily in American works. The operators were not quick enough. Here one man operated a machine unaided, and had a blank in position every time the die descended. In the English shop the operator had two boys to help him, one to handle the blanks, and the other to carry away the stamped article; but even with this assistance he could not supply the blanks fast enough, and forty out of every hundred times the die descended it had nothing to do.

The same writer observes that this is no uncommon experience with the makers of American machinery. Our most successful machines are often failures abroad simply because they are too fast for the workmen of other countries. Their operations are gauged by the average capacity of American artisans, and foreign operatives fail to keep up with them.

This is but another instance of the educative effect of machinery; and every year, with the increasing perfection of mechanical devices, the need of intelligence, precision, and rapid manipulation is increased. The intellectual development of skilled workers cannot but be advanced in consequence. Already the mechanic needs, and many of our mechanics possess, a higher grade of culture and vastly more knowledge than sufficed for the learned professions so called a few years ago.

CUBA AS A FIELD FOR ENTER RISE.

Two circumstances combine just at this time to make Cuba an uncommonly promising field for American effort in the way of industrial development and trade—the revival of Cuban industry by the return of peace and the necessity of making good the property damaged or destroyed during the war, and the adoption by Spain of a liberal patent system. The tedious formalities and heavy costs, which have hitherto practically excluded inventors from this island by making protection difficult or unattainable, are now done away with, and with little trouble, for the single moderate fee of $100, the inventor can secure a patent covering not only Cuba and adjacent Spanish islands, but also Spain, the Atlantic and Mediterranean islands belonging to that rising power, and the Philippine Islands, in all perhaps the most promising field for industrial exploitation that the world affords.

By taking the precaution to apply for a Spanish patent before taking out his final papers here—say after the patent has been allowed, but before it is issued—the inventor may secure protection for his invention for twenty years. If he delays the application until his American patent has been issued, but not longer than two years thereafter, the Spanish patent will be granted for ten years only.

These to inventors. In addition, patents for five years are offered for the introduction of novelties into the Spanish dominions, whether the introducer be the inventor or not.

Already a considerable number of American inventors have shown their appreciation of the increased advantages offered by the new law; and doubtless many more, including manufacturers as well as inventors, will hasten to avail themselves of the new fields of enterprise and profit thus laid open. For many years, if not forever, Cuba must be a large buyer and not a producer of machinery and manufactured articles. Of this trade the United States should have, and can have, the lion's share.

AN INVENTOR'S DIFFICULTIES IN ENGLAND.

In a letter to a friend in this country, Mr. Graham Bell, the inventor of the telephone, gives an amusing account of the difficulties he has experienced, while in England, in getting other than routine work done. He says:

"If you want to know the reason why inventors are more numerous in America than they are here, come and live for six months in England. If you wish to know how it feels to be brimful of ideas, and yet to be unable to have one of them executed, come to England. If you wish to know how it feels to have to wait for a month to have the simplest thing made, and then to be charged a man's wages for two months, come to England.

"You will here be unable to see the interior of a workshop or to come into direct contact with your workmen, and the people seem incapable of working excepting in the ruts worn out by their predecessors. They are absolutely incapable of calculating any new design without the most laborious oversight from the inventor, and their masters, instead of encouraging invention, do all they can to put a stop to it, by refusing admission to the workshops, and charging the most exorbitant prices for experimental work, avowedly because they 'don't want such kind of work,' 'it gives more trouble than it is worth,' and 'if you must have new things made you must expect to pay for them.' It is in vain that I say I have no objection to pay if I can only be allowed to oversee my own work. It is in vain that I say I am willing to pay anything to have my work done, and that what I object to is having to pay for not having it done. It is the same everywhere. Not only is your work not done, but you have to wait so long for the simplest things that your ideas cool, and you get quite exasperated at your inability to do anything."

It would be interesting to know whether inventors in other fields are similarly hindered. Just now it seems to be especially difficult, for any one not connected with or favored by the English Telegraph Department, to get anything done in the way of telephones or telegraphy. Possibly that is the source of Mr. Bell's troubles.

The Secret of Soap and Water.

Hitherto no satisfactory reason has been given why for cleansing purposes the comparatively neutral soap should be better than the alkaline carbonate. In a note on the pedetic action of soap, Professor W. Stanley Jevons offers a plausible solution of the mystery. He finds by experiment that pedesis, or the so-called Brownian movement of microscopic particles, is considerably increased by the addition of soap to water, and to this action he attributes the detergent effect of soap. Pure rain or distilled water has a high cleansing power, because it produces pedesis in a high degree, the minute particles of dirt being thereby loosened and washed away. The hardness of impure water arises from the vast decrease of pedesis due to the salts in solution: hence the inferior cleansing power of such water. If alkaline salts be added, dissolved in the water, it becomes capable of acting upon oleaginous matter, but the pedetic action is lessened, not increased. But if soap be added we have the advantage both of the alkali's dissolving power and the pedetic cleansing power. For the same reason si icate of soda is a powerful cleanser, it being one of the few substances which increase the pedetic and suspensive power of water.

THERE is said to be a terrestrial globe in the Jesuitic Library of the Lyons Lyceum, which is 170 years old, containing, in great detail, the curious system of African lakes and rivers, which the English and American travelers have lately rediscovered. It is two meters in diameter, and an inscription, near the north pole, states that it was made in the year 1701, by F. F. Bonaventure and Gregoire, Brothers of the Third Order of St. Francis. The globe has created a great sensation among geographical savants and amateurs.—*Les Mondes.*

More Beer and Less Whisky.

According to the internal revenue returns, the citizens of the Republic are drinking less whisky and more beer. Whisky—that part of it which paid revenue tax, at least—fell off from 57,000,000 gallons for the fiscal year of 1877 to 50,704,000 in 1878—a difference of nearly 6,300,000 gallons. For the same time, the revenue-paying beer increased from 9,480,000 barrels to 9,937,000 barrels—an increase of 457,000 barrels, or 1,371,000 gallons. During the last 10 or 12 years, if not longer, there has been a perceptible diminution here, considering the ever growing census, in the consumption of whisky and others liquors, and a corresponding increment of beer, as is shown by a decrease in drunkenness and its attendant ills.—*New York Times.*

Engineering Inventions.

An improvement in Gearing has been patented by Mr. W. J. McDougall, of Rendall Creek, Pa. This invention consists in the combination of two or more sets of three or more cranks, loose wheels, and flexible connecting wires or wire ropes for transmitting motion from the driving power to the machinery to be driven.

An Electric Railway Car Signal has been patented by Messrs. Carl L. Mees and Israel A. Sherman, of Louisville, Ky. This invention consists in combining a signal device upon the locomotive with two circuit wires extending through the cars of the train, and with peculiarly constructed circuit-breaking connections extending from one car to the other, whereby the parting of the cars, or any one of them, automatically transmits to the engineer a signal to that effect.

Messrs. L. S. Chandler and Samuel N. Silver, of Auburn, Me., have patented an improved Engine which may be used as a water engine, a stationary or locomotive steam engine, a water pump, a steam pump, or a steam fire engine. It is simple, effective, and will work without pounding or back pressure.

The Order of Mental Progress Science-ward.

In summing up the points of his review of what we may call the evolution of science, before the Science Association at St. Louis, August 22, Prof. Newcomb traced the gradual ascendency of scientific over teleological thought, as follows:

First, When men study the operations of the world around them, they find that certain of those operations are determined by knowable antecedent conditions, and go on with that blind disregard of consequences which they call law. They also find certain other operations which they are unable thus to trace to the operation of law.

Secondly, Men attribute this latter class to anthropomorphic beings, or gods having the power to bring about changes in nature, and having certain objects, worthy or ignoble, in view, which they thus endeavor to compass. Men also believe themselves able to discern these objects, and thus to explain the operations which bring them about. The objects aimed at by these supernatural beings are worthy or ignoble, according to the state of society; in ancient times they were often the gratification of the silliest pride or the lowest lusts.

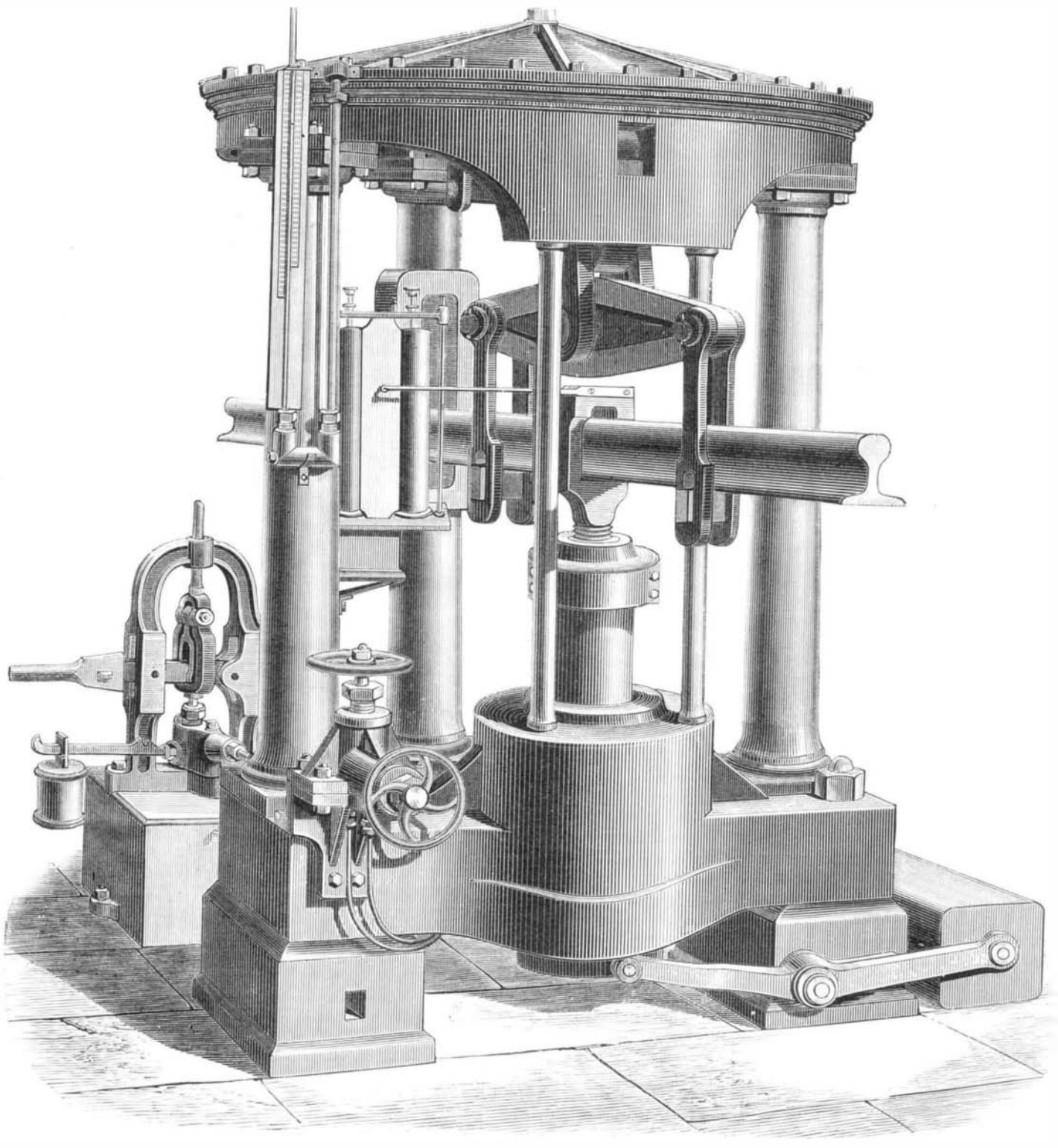
Thirdly, As knowledge advances, one after another of these operations are found to be really determined by law, the only difficulty being that the law was before unknown or not comprehended, or that the circumstances which determined its action were too obscure or too complex to be fully grasped by the mind.

Fourthly, Final causes having thus, one by one, disappeared from every thicket which has been fully explored, the question arises whether they now have or ever had any existence at all. On the one hand it may be claimed that it is unphilosophical to believe in them when they have been sought in vain in every corner into which light can penetrate. On the other hand we have the difficulty of accounting for these very laws by which we find the course of nature to be determined. Take, as a single example, the law of hereditary descent; how did such a law, or rather, how did such a process, for it is a process, first commence? If this is not as legitimate a subject for inquiry as the question, How came the hand, the eye, or the first germ into existence? it is only because it seems more difficult to investigate. If, as the most advanced scientific philosophy teaches, creation is itself but a growth, how did that growth originate? We here reach the limits of the scientific field, on ground where they are less well defined than in some other directions; but I shall take the liberty of making a single suggestion respecting a matter which lies outside of them. When the doctrine of the universality of natural law is carried so far as to include the genesis of living beings and the adaptations to external circumstances which we see in their organs and their structure, it is often pronounced to be atheistic. Whether this judgment is or is not correct, I cannot say, but it is very easy to propound the test question by which its correctness is to be determined: "Is the general doctrine of causes acting in apparently blind obedience to invariable law in itself atheistic?" If it is, then the whole progress of our knowledge of nature has been in this direction, for it has consisted in reducing the operations of nature to such blind obedience. Of course, when I say blind, you understand that I mean blind so far as a scrutable regard to consequence is concerned—blind like justice, in fact.

If the doctrine is not atheistic, then there is nothing atheistic in any phase of the theory of evolution, for this consists solely in accounting for certain processes by natural laws. I do not pretend to answer the question here involved, because it belongs entirely to the domain of theology. All we can ask is that each individual shall hold consistent views on the subject.

TESTING MACHINES AT THE PARIS EXHIBITION.

Messrs. Chauvin & Marin-Darbel, of Paris, have somewhat numerous exhibits of their manufacture at the Exhibition, among the rest some testing machines of a type which they brought out in 1876, and which we illustrate by the engravings on the present and opposite pages, for which we are indebted to *Engineering*.



TESTING MACHINE AT PARIS EXHIBITION.—Fig. 1.

Fig. 1 represents a 60-ton machine for tension, compression, and bending, shown in the engraving as arranged for bending stress. Fig. 2 shows the apparatus used for registering strains in the same machine when it is used for extension or compression. Fig. 3 is a machine for testing wire, and Fig. 4 a machine for testing paper, woven fabrics, or threads. All these machines act on the same principle, which may easily be described by the help of Fig. 1. Attached to the entablature of the machine, which is supported by three cast iron columns and two smaller ones of wrought iron, is a cast iron cover, slightly conical. Below this cover is a similarly shaped diaphragm, supported round the edge by a ring of India rubber so as to permit its motion up and down. The diaphragm fits up into the cover so that only a small space is left between the surfaces of the two. This space is filled up with water, all the air being carefully expelled from it. The lower portion of it is then put in communication with a bent tube filled with mercury, the outer end of which is open and stands above the level of the top of the machine, as shown attached to the left hand column in Fig. 1. It will be readily understood that under these conditions the separation of the diaphragm and the cover, that is to say, the pulling down of the former, is resisted by the atmospheric pressure from below. As the separation is effected the mercury passes from the tube into the space between the two surfaces, and the depression of the level of the mercury forms a measure of the amount of separation which has taken place, and hence of the force which must have been exerted to cause that separation.

Underneath the diaphragm, and connected with it at the center, is placed a lever, one end of which is fixed and the other attached to the object to be tested. In Fig. 1 this attachment is made to a second lever carrying hanging links and knife edges for the rail which is to be bent. The lower end of the test piece (or, as in Fig. 1, the center of the bar