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SCIENTIFIC AMERICAN SUPPLEMENT

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AMERICAN FIREARMS IN GERMANY.

The German government is celebrated for its care of its people. Its laws are enacted and applied to the conservation of the health and lives of the populace, whether threatened by impure foods or other causes. Sometimes the German laws affect the importation of American goods. The German inspection of the smaller class of firearms has operated to completely prevent the sale of American guns.

The German laws provide for the proving by actual firing test of all firearms exposed for sale in that country. The law passed in 1891 states that the barrels and locks must be tested in official testing establishments, and if approved must be stamped. The law describes the testing, which, according to circumstances, consists in a single or a double shooting trial. Any parts of the piece which fail to stand the trial are destroyed by being sawed into or by being broken up.

The law admits as valid the proof marks of the Belgian government "proof house," and also the proof marks of the Gun Makers' Company, of London, and of the Birmingham "proof house." The effect is that American guns are practically excluded from the German market. To secure admission the trade should arrange for the establishment of a proof house whose mark or stamp should be acceptable to the German government. As it now stands, all American guns have to be subjected to trial in Germany, and the expense has proved to be prohibitive. Since the acceptance of the English and Belgian proof marks, the business in American guns has come to a standstill. There is an excellent opportunity for the gun trade of this country to take some action which will open for us the German market. It might have an excellent effect upon the home product if action were taken in the direction of proving arms for our domestic trade.

THE STATUTES OF LIMITATIONS IN PATENT SUITS.

To the doctrine of diligence in prosecuting cases within the Patent Office is now superadded by a recent decision of the United States Supreme Court an affirmation of the need of diligence in suing for damages for infringement. It is held that the statutes of limitation of the different States apply in the defense of actions at law for damages for infringement of patents. The decision, dated January 7, 1895, was delivered by Mr. Justice Brown. The case is entitled Campbell v. City of Haverhill.

The action was brought to recover damages for infringement of the claims of a patent, which infringements were committed between October 10, 1877, and December 20, 1880, and was begun more than six years after the last date of infringement. It was an action at law, brought in the United States Circuit Court in the district of Massachussets. The Massachusetts laws declare that a limitation of six years applies to all actions of tort—that such actions must be begun within six years of the time when the acts were committed. The Circuit Court decided that the statute of limitations applied to this case. The Supreme Court upholds the Circuit Court.

The United States Revised Statutes, section 721, declare that "the laws of the several States, except, etc., . . . shall be regarded as rules of decision in trials at common law, in the courts of the United States, in cases where they apply." This section has been repeatedly held to apply to the statutes of limitation of different States. The question then came up as to whether this section would apply in cases purely within the jurisdiction of the Federal courts, such as a patent case, based entirely on the United States statutes. In the words of the decision it is expressed thus: "It may be well questioned whether there is any sound distinction in principle between cases where the jurisdiction is concurrent and those where it is exclusive in the Federal courts. The section itself neither contains nor suggests such a distinction."

The court holds that an action for infringement of a patent should involve no privileges denied to the plaintiff side in other actions. It holds that it would be an anomaly to establish a class of actions subject to no statute of limitations. If this were the law, users of patented inventions, perhaps innocent of any wrong intention, might be "fretted" by actions brought against them after all their witnesses are dead.

The court, therefore, finds that practical considerations are favored by their decision that the statute of limitations does apply, and a quantity of decisions are quoted to illustrate the subjection of rights created by Congress to various laws of individual States.

It may very pertinently be asked why this point was not settled long ago, for it has never been presented directly to the Supreme Court until now. There were two cases found bearing directly on it, but they were Circuit Court cases and were decided in exactly opposite ways. The reason why the Supreme Court has never decided the question until now lies in the fact that the majority of patent cases are brought for present infringement of a live patent and ask for an injunction and an accounting. Proverbially, there is little money in an accounting—the injunction is the object principally sought. But in the case just spoken of, the patent had expired and damages were sought for infringements committed during its life. Such actions are generally regarded as of little value to any one except the lawyers and masters or referees, and hence are seldom brought.

The Telautograph in Europe.

From private advices received in Chicago, the Western Electrician learns that the long-expected test of Gray's telautograph over the long-distance telephone line between Paris and London came off on the night of December 15, and resulted in a great success. The line is under the control of the French and English governments, and as no newspaper men were present, no publicity has heretofore been given to this interesting and important event.

Some delay at the outset was caused by a broken wire at the Paris end, but after this was remedied the telautograph representatives wrote back and forth for an hour and a half without any trouble. The French government was represented by three engineers, who were delighted with the result. The distance over which the writing was electrically reproduced was 312½ miles, and all agreed that it was a wonderful spectacle to watch in Paris the instantaneous reproduction of the movements of a pen in the hands of a man writing in London.

Of the 312½ miles of line, 23 miles is submarine cable and 5½ miles consists of buried conductors at Paris. All of the English land line is overhead. Current was supplied, at the London end, by a battery of bichromate cells, two rows in parallel, the voltage being 57, while at Paris there were storage batteries and Callaud cells, the latter being arranged four rows in parallel, the potential being 63 volts. The resistance of the circuit was 716 ohms and the capacity was 11 microfarads. The platen resistance at each end was 550 ohms. The difference in voltage at the ends of the line was merely an incident due to convenient arrangement of the batteries. No change from ordinary conditions was made in the machines or adjustments, except in the Morse relays.

The actual counted speed of transmission was 18 words in 36 seconds at one time and 22 words in 40 seconds at another, the average number of letters in each word being five. The writing was perfectly legible, but somewhat ragged at very high speed.

The French minister of posts and telegraphs, with the officers of his staff, visited the laboratory at Paris and inspected the machines, appearing to be much interested. One of the department engineers will make an official report of the test to the government of France.

The telautograph was exhibited and explained at a special meeting of the Societe Internationale des Electriciens in Paris on December 18. M. J. Voisenat, a telegraph engineer, delivered the lecture, which was illustrated by elaborate diagrams and by the actual operation of a set of the machines. About 300 persons were present and all were greatly interested and eager to obtain samples of the electrically transmitted writing. At the conclusion of the lecture A. Postel-Vinay, the president of the society, spoke in terms of warm praise of Dr. Elisha Gray and his wonderful invention.

Mr. Cushing, in a recent letter, makes amusing allusion to the difficulties experienced by the Frenchmen in pronouncing American names. Dr. Gray is known as Eleezi-g-r-r-r-ay and Mr. Cushing has become Monsieur Coosteen.

Military Science at Yale University.

The Sheffield Scientific School of Yale University offers this year two interesting courses of instruction in "Military Science and Tactics" and in "Military Engineering." The first course is obligatory upon the whole senior class in all departments. The study in both courses will be carried on for the most part by lectures, though practical instruction in drill will be given in the School of the Soldier and School of the Company, if a number of students desire it. The names of the three most distinguished students in this department are sent to the adjutant-general of the army and are published in the Army Register, and also are sent to the adjutant-general of the State to which the student belongs. The object of the instruction of both these courses of study, it is stated, is to disseminate military information and to awaken interest in the application of arts of peace to those of possible war.

The courses propose to take up and discuss such topics as military economy, the American military problem, modern war on field and map, statistics and logistics, strategy and campaigning, the use of artillery and infantry, the minor tactics of war and many other similar problems. And in the course on military engineering lectures will be delivered on such topics as systems of fortifications, sea coast defenses, hasty intrenchment, military bridges, ballasting machines, modern ordnance, military electric installation, etc. These courses will terminate with examinations, and a special military certificate will be awarded by the regular army officer in charge of the department.

An Attack on the Diphtheria Antitoxin.

A paper of the greatest interest and importance was read at a recent meeting of the Berlin Medical Society, by Dr. Hansemann. The paper carries especial weight because the author is announced as an assistant of Professor Virchow, and his work and conclusions are presumably indorsed by the dean of modern pathology.

Dr. Hansemann comes out in flat contradiction of the alleged properties and powers of the Behring immunizing serum. He asserts that in Bretonneau's diphtheria the Loeffler bacillus is not always present, and is not its sole cause. This view will appeal to some clinicians and bacteriologists at least, for it is admitted that the Loeffler bacillus is present in some very mild cases of diphtheria as well as in apparently healthy throats, while, on the other hand, it is also known that a streptococcus diphtheria (or sore throat) is sometimes extremely severe and dangerous.

Dr. Hansemann asserts that Loeffler's bacillus is found constantly in rhinitis fibrosa, without producing dipththeria, and that these alleged pathogenic microbes may multiply in the throat without modifying the course of the diphtheria. All this, we believe, will have to be admitted by pathologists who have without bias studied the disease. Dr. Hansemann asserted further that in the case of animals an injection of a Loeffler bacillus culture caused, not diphtheria, but a disease sui generis, the Loeffler bacillus disease; that epidemic diphtheria had never been observed in animals; that guinea pigs, in contact with diphtheria patients, had never taken diphtheria; but that a case is known where a cat, with which a child suffering from diphtheria had played, had developed all diphtheria symptoms without, however, any Loeffler bacilli being discoverable.

He then proceeded to describe the three qualities claimed for the antitoxin—namely, its therapeutic action, its harmlessness and its immunizing power. He said that the present statistics give an erroneous impression (as already shown by Gottstein in his recently published pamphlet), as many children suffering from lighter forms of throat complaints are now sent to the hospitals to be treated with serum, thus swelling the proportion of cured cases, which would, he said, otherwise not be higher than the usual average. He said that the serum injections could by no means be considered harmless, as affections of the kidneys had frequently followed, in one case more severe in type than had ever yet been observed after diphtheria. He said that it was clear, from Behring's new directions to increase the immunizing dose from sixty to one hundred and fifty unities, that no results have yet been achieved as far as immunizing goes.

The final criterium of the efficacy of the antitoxin treatment is clinical experience. Even if Hansemann's pathology is correct, therefore, it will make no difference, provided the diphtheria patients get well.

The difficulties in estimating exactly the value of a new therapeutic procedure, which comes loudly heralded and solidly indorsed, are very great. Unusual attention is paid to every patient, greater watchfulness, more thorough supervision and earlier diagnosis and treatment are always found. These factors must all be considered in estimating the results of the serum treatment.

It would be not only a disappointment to all well-wishers of humanity, but would be a serious blow to the rising prestige of medical science, if, after all, the serum treatment should fall short of its high expectations.—Medical Record.

The Late A. L. Dennison.

Mr. Aaron L. Dennison, who was known as the father of American watch making, died in Birmingham, England, Jan. 11, 1895, at the age of 82. While still a youth he was apprenticed to a watchmaker, and soon became acquainted with the many different Swiss and English watch mechanisms. He was struck, during a visit to the Springfield Armory, with the idea of applying the interchangeable plan to the manufacture of watches, muskets at that time being made on that system. It was a long time before he found capitalists to enter into watch making. At last in 1850 he formed with Messrs Howard, Davis and Curtis the American Horologue Co. Mr. Dennison made a trip to England and found that American watches could be made which would successfully compete with the English ones, where from fifteen to twenty people in different places were employed on each watch. A factory was built in 1851 at Roxbury, Mass., and a model watch was made by Mr. Dennison. It was designed to run eight days with one winding; this plan was, however, abandoned in subsequent watches. The first hundred American watches were put on the market in 1853. It soon became necessary to enlarge the factory, and the whole plant was moved to Waltham, Mass. The company was not prosperous, and in 1857 it was forced to make an assignment. The firm then became Appleton, Tracy & Co., and Mr. Dennison was continued as superintendent until 1861. In 1859 the firm name was changed to the American Watch Co. After leaving the American Watch Co., Mr. Dennison formed with A. O. Bigelow the Trement Watch Co. In 1866 Mr. Dennison retired and went to Zurich, Switzerland, where he made an unsuccessful attempt to introduce American methods into Swiss watch making. He then went to England and assisted in organizing the English Watch Co. In 1875 he began the manufacture of watch cases in Birmingham, the firm being known as Dennison, Wigley & Co.

A few years ago Mr. Dennison made a trip to America and received an ovation at every watch factory he visited. Mr. Dennison had many reverses in business, so that his wealth at his death was not great. Mr. Dennison remained a true American to the day of his death, and the world is greatly indebted to him as the pioneer of a great American industry.

Progress of the Bicycle.

The recent Bicycle Exhibition, Chicago, was a great success. The attendance was very large and the exhibits very interesting. The same may be said of the exhibition at Madison Square Garden, New York, January 19 to 26. The Wheel has the following:

In cycle construction the one fact which stands out above all others is that the metal rim is well nigh a thing of the past. Wood rims are almost universally used. Nearly every maker present will use them almost exclusively hereafter. The Eagle people will use their aluminum rim, and Gormully & Jefferya steel rim, but both are prepared to furnish wood rims when desired, the latter even estimating that nine-tenths of their output will be fitted with the wooden felly. This universal use of wood rims will undoubtedly amaze and possibly flabbergast John Bull and his followers.

The reduction in weight has also reached a startling point. Twenty-pound road wheelsare plentiful, and the manufacturer who is carrying anything over 28 pounds is the exception and not the rule. This information is also calculated to cause the English gentleman to wrinkle his brow and scratch his head. This marvelous reduction in weight would have been considered nothing short of phenomenal two years ago. Even some of the most intelligent and best posted of the mechanical minds present confess that the light weight bicycle of to-day has no parallel as a sustainer of weight. They are even at a loss to explain how and why they can hold up. The simple fact remains that they do. Simply to show what can be done, the Black Manufacturing Company and Munger Cycle Company are exhibiting wheels weighing less than nine pounds. They have been and can be ridden, but are not offered as practical mounts.

A general narrowing of tread, and general use of detachable sprockets, both front and rear, is another marked feature of this year's wheels, 5½ inches appears to be the average tread, although many that are narrower are very much in evidence.

With the feather-weight wheels has come a great increase in the new gears. A rough average would make 66 inches the standard gear for 1895. Seventy inches and over will be in quite general use next year. Two changeable speed gears are in evidence, and attract considerable attention, but none of the larger makers have yet seen fit to make them a feature of even their special wheels.

Large tubing is used in very many instances, but is not employed so generally as advance reports had led one to expect. In the Lozier wheels ¼ inch tubing is used. This is the largest in evidence. It gives the wheel a substantial but heavy appearance.

Adjustable handle bars have also made progress. The Pope Co., Lozier & Co., Peerless Manufacturing Co., Waltham Cycle Co., and Syracuse Cycle Co. being among the manufacturers who adopted the adjustable bar. The Warwick Cycle Manufacturing Co., Yost Manufacturing Co. and Stearns & Co. used it last year and still retain it. The Pope Co., however, is the only concern which is fitting the adjustable bar to their entire output. The Wheel can hardly believe that the demand and necessities will call for its general use, and scarcely expects that it will become a permanent feature, not even of the Columbias. Of the new adjustable bars shown at this place for the first time, that used by the Peerless Co. on their Triangle wheel appears to be about the simplest and most practical and ingenious.

A deal of attention has, as usual, been lavished on the crank bracket groups. The general desire to obtain a narrow tread in many instances has led to some ingenious but complicated creations. There also seems a tendency toward the use of a crank and crank axle in one piece. The object being apparently to lessen the number of nuts, washers and keys usually employed as a fastener.

A very general change in the construction of pedals is also observable. A projection on the outside is now rarely to be seen. Nearly all are either rounded or made flush or very nearly flush with the outer pedal plate.

No little attention has been given to the method of reinforcing the joints. On many wheels the reinforcing tube is on the outside. Something distinctly novel in this line is a triangular reinforcement employed in the Hoffman bicycle. This reinforcement is not confined entirely to the joints, but runs the entire length of certain tubes. The Union Cycle Co. and Hay & Willetts are using an X-shaped reinforcement at all joints.

Of course nearly all makers are now offering several heights of frames. In this respect it is worthy of note that all heights are built with the top bar of the frame perfectly horizontal, except in the Rambler, Columbia, and Victor wheels. These firms build their highest frame with a perfectly horizontal bar, but in the wheels of shorter reach it is placed at an angle.

A distinct advance in the construction of ladies' wheels is a noteworthy feature of the 1895 outputs. In previous years, wheelmen had but little more than a Hobson's choice, and a very weighty one at that. Now, however, the ladies' wheels have been reduced to the same weights, proportions and equipments as those built for men's use. Not only this, but very many of the firms are carrying three and four patterns of ladies' wheels—a straight frame, a loop frame, a demi-loop frame and a diamond frame safety, with 26 inch wheels, built specially for ladies' use.

The Chicago show has also developed what the Wheel stated some months since—that there was an unmistakable demand in the air for tandems.

At least half a dozen firms are this year manufacturing bicycles "built for two." All, or very nearly all, are built on most attractive lines, and are of the double steering type and marvelously light; few of them approach 40 pounds.

The "Missing Link" Found at Last.

No publication of late date is likely to excite more interest than a quarto of forty pages which has just been issued from the local press of Batavia, with the title, "Pithecanthropus Erectus. Eine Menschenanliche Uebergangsform aus Java. Von Eug. Dubois, Militararzt der Niederland. Armee."

This noteworthy essay contains the detailed description of three fragments of three skeletons which have been found in the early Pleistocene strata of Java, and which introduce to us a new species, which is also a new genus and a new family, of the order of primates, placed between the Simiidæ and Hominidæ—in other words, apparently supplying the "missing link" between man and the higher apes which has so long and so anxiously been awaited.

The material is sufficient for a close osteological comparison. The cubical capacity of the skull is about two-thirds that of the human average. It is distinctly dolichocephalic, about 70°, and its norma verticalis astonishingly like that of the famous Neanderthal skull. The dental apparatus is still of the simian type. but less markedly so than in other apes. The femora are singularly human. They prove beyond doubt that this creature walked constantly on two legs, and when erect was quite equal in height to the average human male. Of the various differences which separate it from the highest apes and the lowest men, it may be said that they bring it closer to the latter than to the former.

One of the bearings of this discovery is upon the original birthplace of the human race. The author believes that the steps in the immediate genealogy of our species were these: Prothylobates: Anthropopithecus Sivalensis: Pithecanthropus erectus: and Homo sapiens. This series takes us to the Indian faunal province and to the southern aspects of the great Himalayan chain, as the region somewhere in which our specific division of the great organic chain first came into being.—Science.

Treatment for Cleft Palate.

An interesting article, by Eugene F. Hoyt, M.D., on the successful treatment of cleft palate appears in the current number of the Brooklyn Medical Journal. Cleft palate is a malady, it may be seen, which not only causes great physical suffering, but acute mental distress. There are two methods of treatment generally employed, namely, surgery, which causes great pain and suffering, and secondly, by means of mechanical devices.

After an intelligent review of the subject, the article calls especial attention to the invention of a flexible palate, made some thirty years ago by Dr. Norman W. Kingsley, whose office is now at 115 Madison Avenue, New York City. It appears that in cleft palate there is an absence of tissue, and however closely the sides of the cleft may be brought together and united, perfectly normal speech can rarely be produced. The artificial palate replaces the missing tissue. It is perfectly flexible and may be so adjusted as to be brought under muscular control, and this enables the patient to articulate with ease and naturalness.

FOR the Madagascar expedition France is constructing as fast as possible a flotilla of light draught gunboats and barges. Eight of the gunboats draw only sixteen inches of water and are 85 feet long by 17 feet beam. Four others are somewhat larger, with a draught of 24 inches. Engines and boilers are on deck and can produce a speed of six and a half knots. Each gunboat is armed with two one and a half inch rapid-fire guns, protected by armor plating.