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(Illustrated articles are marked with an asterisk.)

THE VALUE OF PATENTS.

A recent number of the *Official Gazette* contains a full report of the address delivered by Mr. J. M. Thacher, our present Assistant Commissioner of Patents, before the so-called Patent Congress, at Vienna, last summer. In this effort, Mr. Thacher begins at the beginning, avers that invention is "the product of the highest faculties given by God Almighty" to man, and therefore ought to be secured to him by letters patent. He declares that man has a more valid right to the exclusive possession of his inventions than even to his landed estates, and perceives no obligation on the part of the inventor or discoverer to disclose new knowledge to others, unless permitted to control and use that knowledge as he would other property. Having strongly insisted upon the correctness of these propositions, which by the way are at variance with the teachings of the wisest philosophers, he next proceeds to show that this inventive property, these natural rights of the inventor, ought by law, to be taken away from the originator after he has for a limited period enjoyed their possession.

In relation to official examinations at the Patent Office, our author is of the opinion that the inventor, whose mental genius and discernment are eloquently lauded throughout the address, is incompetent to examine the novelty of his own invention, and determine for himself whether it is worth his while to pay in the official fees and take out a patent. Nor is the inventor's attorney qualified to solve this momentous question. It should be left, Mr. Thacher says, to a corps of scientific experts; but, as he thinks they may be liable to err, he suggests that there ought to be another set of experts to re-decide the decisions of the first experts. This, in fact, is the way the thing is done at Washington. One hundred of these scientific gentlemen, aided by four hundred clerks and helpers, all of whom are supported at the expense of the inventors, now officiate at the Patent Office, but Mr. Thacher wishes to increase the number. "Unfortunately," he says, "it is the pocket that controls men, more or less, in every station and in every country." It is indeed a misfortune for our inventors that their pockets are obliged to control and supply so large a number of examining officials. Save us, we say, from any increase. We are glad to turn from the mazes of the metaphysical portion of the Assistant Commissioner's address to that branch which relates to the practical results and values of inventions, for here we find information, useful and interesting to everybody. He says:

"The number of patents granted since 1836 is about 140,000. The number of applications for patents has steadily increased from year to year, until it now averages from 20,000 to 21,000 per annum, and the number of patents granted annually is from 13,000 to 15,000. To perform the work of examining this large number of applications, the corps of expert examiners has been increased from time to time, until it now numbers about 100—to wit, 24 principal examiners, and the same number of first, second, and third assistant examiners, together with a special examiner of trade-marks and also of interferences. The clerical force has been correspondingly increased, so that officials of all grades now employed in the Office may be stated in round numbers as about 500.

The bare statement of the number of patents granted since 1836 is sufficient to bear me out in the statement that our system has proved to be a most remarkable stimulant to inventive genius, not only in our own country, but throughout the world. But you will very naturally inquire. How many of these patents are valuable? Of course it is impossible to obtain statistical information that shall be entirely reliable on this point, but my official experience has given me such data that I am enabled to form an opinion approximately correct. I have discussed the matter with others, and have sought information from manufacturers, patentees and legal gentlemen who have made a specialty of the practice of patent law, and I think I do not exaggerate at all when I say that one half of the patents granted in our country may be considered remunerative. Now I do not wish to be understood by this that one half of these 140,000 patents have brought fortunes to the pockets of the patentees. They have become remunerative to a certain extent—that is, they have paid expenses and something more. A small proportion of them have become largely remunerative, and the patentees, or their representatives, have obtained large fortunes from them. I think, therefore, it may be said that the influence of our system upon inventions and inventors themselves has been beneficial beyond all expectation.

But you will also ask: What has been the influence of our patent system upon the manufacturing interests of our country? I have taken occasion to make some inquiries upon this point also. A short time before I left Washington the Secretary of State sent out, to inventors, manufacturers, and others interested in patents, a series of inquiries, among which were some as to the influence of our patent system upon the manufacturing interests of the country. With scarcely an exception, so many of our manufacturers as responded answered that the patent system was beneficial, beyond all manner of doubt, to the manufacturing interests of the country. It is estimated, both by myself and others who are qualified to judge of this matter, that at the present time from six to seven eighths of our enormous manufacturing capital is based upon patents, either directly or indirectly. In fact, it is almost impossible to organize a company for manufacturing purposes in America without first securing the control of patents for some valuable invention.

I think, then, that we may be said to have reached this conclusion, that our inventors, patentees, and manufacturers have all benefited greatly by our patent system. At the same time the public welfare has been greatly promoted by the general introduction of many valuable inventions, which otherwise would have remained undeveloped, and by the cheapening of many articles by the invention of new and improved modes of manufacture. At the same time we believe the whole world has been benefited by the liberality of our law. We make no distinction between foreign and native applicants, but invite inventors from the whole world to give us the benefit of their inventive genius upon the same liberal terms that we grant to our own citizens, putting upon them no restriction as to time or place of manufacture, or introduction of the invention into public use. * *

Let me express the hope that you will not adjourn without establishing a permanent committee as the representative of this congress, so that an organization may be created by means of which the discussion of this subject may be continued from time to time until, finally, civilized governments shall become convinced of the righteousness and expediency of the principles here advanced, and there shall be universal recognition of the rights belonging to, and the public benefits conferred by, the inventors of the world."

A NEW AND IMPORTANT DISCOVERY RELATING TO THE BEHAVIOR OF METALS UNDER STRESS.

In calling attention recently to the original investigations in progress at the Stevens Institute of Technology, it will be remembered that we referred in some detail to the interesting and valuable experiments which Professor R. H. Thurston is conducting with a view of determining the torsional resistance of various metals. The machine used for this purpose is an apparatus of the Professor's own invention; and although we have already alluded briefly to its construction in another connection, it may be of interest for the reader to review its salient points, in order to understand with clearness the highly important discovery which has just been effected through its aid. A triangular cast iron frame supports two suspended arms which swing about independent axes in the same line; one arm carries a weight, and the other has a handle at its extremity, by which it is moved. Each of the axes has a rectangular recess, in which each end of the test piece, previously squared, is fitted. The frame carries also a guide curve of metal, so constructed that its ordinates are proportional to the twisting moments exerted by the weighted arm while swinging through an arc to which the corresponding abscisses are also proportional. A pencil holder bears against the guide curve; and being carried by the weighted arm, is thrown forward as the latter swings out under the action of the force producing torsion, which force is transmitted through the test piece. The handle arm carries a table upon which a piece of paper is clamped, so that the pencil traces thereon a curve, the ordinates of which are proportional to the torsional movements, while its abscisses represent the relative motion of the two arms and, consequently, the amount of torsion to which the test piece has been subject. This line, therefore, gives a very legible and accurate record of the results of each experiment.

During the recent visit of the members of the Academy of Science to the Stevens Institute, Professor Thurston took occasion to explain his researches and to illustrate the power of his device in exhibiting the action of the molecular forces under stress. After the session had adjourned, a test piece was left in the machine under heavy strain, in order to determine if possible the existence of viscosity, which had been suspected in the metal. On examining the piece twenty-four hours later, the investigator discovered, to his surprise, that not only could no evidence of yielding be detected, but that, on his attempting to produce further distortion, an even greater resistance was offered than when the first stress was applied. The curve traced by the pencil, instead of being coincident with the line previously described, became parallel therewith, and some twenty per cent higher above the axis of abscisses.

Repeated experiment has confirmed this remarkable discovery, and Professor Thurston considers that he has substantiated the fact that metal, strained so far as to take a permanent set and then left under the force producing stress, actually gains in power of resistance up to a limit of time, which in these experiments was about seventy-two hours, and to a limit of increase which has a maximum, in the best irons, of about twenty per cent. We need hardly point out the importance of this conclusion, which, though it has been suspected for some time by many engineers and men of science, is now for the first time definitely proved. The result is of course negative, and necessarily completely upsets the common notion that metal continuously strained beyond its limit of elasticity loses its strength.

We understand that further experiments will be speedily made, so that we hope to be enabled before long to lay before our readers more detailed information, together with copies of curves and other interesting results obtained. We note with pleasure that numbers of specimens of cast, wrought, and malleable iron, steel and many other varieties of metal, are being sent to Professor Thurston by prominent manufacturers in all parts of the country; so that the coming investigations bid fair, not only to add greatly to the already well earned reputation of their author, but largely to the knowledge of the scientific professions.

PATENTS FOR SIMPLE THINGS.

In a recent application for a patent for an improvement in attaching metallic heels to boots, the invention consisted in extending the outsole the whole length of the boot and in fastening the heel upon such outsole. The application was rejected for the reason that it was not new to carry back the outsole as described, nor was the heel new; therefore the attachment of a heel to such sole was not an invention, though the ordinary method was to attach the heel to the insole, the outsole being only extended up to the heel. The applicant appealed to the Assistant Commissioner of Patents, who reversed the decision of the Board of Examiners, and held that, however small or insignificant an invention appeared, it ought to be patented if useful. In this case, the attachment of the heel to the outsole made a firmer fastening for the heel, was better than the common plan, and therefore patentable. This is good doctrine; and if the Patent Office would only stick to it and carry it out into practice with uniformity, the interests of inventors would be greatly promoted. But, unfortunately, the decisions of the Patent Office are irregular. It too often denies on one day what it grants the next day. We cannot always rely upon the Office to issue patents for simple improvements, like roasted persimmon seeds, a knot upon the thread of an envelope, or, as in this case, nailing a heel upon the bottom of a boot. Yet it is for the issuing of patents upon just such simple improvements that 100 principal examiners and their 400 helpers are thought by some people to be necessary, and for whose support inventors are taxed.

BOSTON REBUILT.

Just one year has elapsed since the occurrence of the disastrous conflagration which laid one of the fairest portions of the city of Boston in ashes. Sixty-five acres constituted the extent of the burned district; 776 buildings were consumed, and an aggregate total of $75,000,000 lost. The destroyed edifices were insured to the amount of $56,000,000; and of this sum $34,000,000 has, it is stated, been paid, although twenty-six Massachusetts insurance companies have failed in consequence thereof.

Shortly after the calamity, a building act was passed, which was designed to provide in a measure against similar casualties arising from like causes. This law forbids mansard or other roofs being more than one story high or more than twenty feet above the upper floor of a building, unless fireproof throughout. Bay windows are not to be constructed at a hight exceeding three feet above the second story. Exteriors of structures above forty-five feet high must be covered with incombustible material; if over sixty feet, they must be fireproof. The limit of hight of buildings is fixed at seventy feet, and party walls bounding lofty roofs must be carried at least two and a half feet above the same, and be corbelled and coped with stone or iron. With these regulations in force, and with the teaching of experience before them, the citizens have proceeded with the rebuilding of their ruined edifices; and as a result, structures have been completed and are still rising which, it is believed, will not succumb even before a repetition of the great fire.

The burnt section included 31 streets, 8 places, 5 squares, and 1 court; in reconstructing which 17 streets have been widened, 4 extended, and a large square laid out, at a total cost to the city of over $5,000,000. The general plan of the streets is little altered; 365 buildings have been erected or are in progress, of which 115 are finished and occupied, 10 unoccupied, and 240 uncompleted. Among these, there are but 72 mansard roofs against 264 flat roofs, the former being either wholly of brick or iron, or else covered entirely with fireproof material. The majority of the edifices are of four stories, there being but two, one of six and the other of seven stories, exceeding this hight. The external and party walls are all 20 inches thick to an elevation of two stories above the street, and 16 inches thence to the roof. The "fire walls" which surmount the party partitions are of the hight above noted and 12 inches through. Galvanized iron is largely used for cornices, and, with cast iron, for exterior finish. The total cost of the completed buildings is $3,762,500 and they cover 1,192,918 superficial feet of ground.

As regards architecture, we learn that many of the edifices

will be of exceptional beauty and magnitude. The majority are of the modern gothic order, and much ingenuity of design is manifested in constructing the flat-roofed buildings so as to avoid the unfinished appearance incident to the abrupt termination of the façade. Three great structures are to be erected by the New York Mutual Life, the New England Mutual Life, and the Equitable Insurance, companies, which are to be of magnificent design, and, with the new Post Office and Rialto building, are to be completely fireproof throughout. There are also a number of warehouses and other mercantile edifices, which in many instances are more spacious and elegant than those which they have replaced.

The same energy which has made Chicago rise from a heap of ruins into a grauder and even more magnificent city than before, has within the short space of a year blotted out the recollection of an almost overwhelming disaster, by labor which seems all but Herculean. Hardly had the story of the calamity ceased to be the current topic of thought before workmen were busily laying foundations, and this in the face of losses which dealt a blow to the entire business community of the nation. Not only the people of Boston, but of the whole United States, may well be proud of such indomitable enterprise. It adds but another proof, to that already shown by our unfortunate war, that in this country we know neither the extent of our energies nor of our resources, until the same are put to the trial which demands their strongest action.

PHYSICAL AND MENTAL OVER-CULTURE.

A noted British novelist, now on a visit to this country, in one of his most popular narratives, exemplifies the case of an athlete who, by a severe course of training, has brought himself to a high state of physical perfection, in order to compete in the lists of a foot race. When the time arrives for the test of his powers of endurance, the runner begins his task; but ere he can reach the goal, his overtaxed system gives way, and he falls stricken with paralysis, a hopeless bodily wreck. Instances of similar kind in reallife are but too common. The death of the celebrated oarsman Renforth while at the thwart is still within public recollection, and the decease of Heenan, the once famous pugilist, is a more recent exemplification of the retributive action of Nature when the laws by which the confines of the possibilities of human muscular effort are transgressed.

A man's body may be compared to a finely adjusted and accurately balanced steam engine, and his vital energy and mental power to a constant motive force acting upon a uniform area of piston. It needs no demonstration to prove that an engine has a certain fixed capability; it can develope so many horse power, and then reaches its limit. If we make more ponderous wheels or stronger rods and shafting, equal to the performance of much more arduous work, and then expect that the same power, merely by operating such heavier machinery, will produce increased results in overcoming greater burdens, common sense tells us that we look for an impossibility. And yet this is precisely what we seek to accomplish by causing exaggerated muscular development. We destroy the equilibrium of the machine; and as a result, the action of the power by which it is set in motion is either weakened or arrested. The physical seats of vital energy in the human frame are in the so termed vital organs: as in the overtaxed steam engine the molecules of vapor dash and expend their force against the piston unproductive of any motion, so in the body; one part (the heart) unable to drive the increased flow of blood required for the augmented needs of other members, becomes overwrought and eventually diseased; the lungs, equally unable to maintain the process of burning up the effete matter poured into them by the veins, degenerate and waste away; and the brain, failing to establish the connection between motor nerves and will, shatters by paralysis the delicate mechanism. All, in fine, are causes which as surely arrest the motion of the human machine as does the load beyond its powers that of the apparatus of iron and steel.

The case of Heenan illustrates these truths perhaps as forcibly as any that can be cited. The man was a model of physical perfection, not ponderous in build or gigantic in frame, but to all appearances one in whom the parts of the body, while cultivated to their full extent, remained in statuesque symmetry. And yet despite the capacious breast and broad shoulders—points in themselves supposed to indicate almost unlimited strength of lungs—these last mentioned members, in the constant strain upon the system, proved unequal to their task, and fell prey to the wasting and insidious disease which resulted in death.

While, with such evidence as this before us, the tenets of the ultra advocates of "muscular Christianity" may well be questioned with reference to the benefits derivable from the attainment of a so called high physical condition, on the other hand, it is true that no less dangerous results are to be apprehended from the converse practice, the development of the mind at the expense of the body.

Again referring to the steam engine for a simile, let us consider the consequence, supposing that working parts and load remained constant, of our crowding into the cylinders an enormous steam pressure. Manifestly there would be either a much more rapid wearing out of the machine, caused by the overwhelming power, or more probably the complete breakdown. Thus it is with the individual who, by excessive study and brain work, overweighs the balance in the contrary direction, and, by neglecting to maintain the equilibrium of mind and body, succumbs to the impoverishment of his physical system. Illustrations in point are to be found among the members of every profession, among the students of every institute of learning. Young men, ambitious to gain scholastic honors and spurred on by the applause of preceptors and friends, too often find failing health and despondent spirits the precursors of permanent bodily infirmity, induced by overstrict application, too many hours of study, absence of simple and nourishing food, and neglect of wholesome exercise. Undeterred by premonitions of Nature, toward the close of their course, in order to reach a coveted prize—as valueless to them in after life as it is intrinsically worthless—they tax their energies beyond their powers of endurance. Then, as the runner in the race or the oarsman at his oar physically breaks down at the moment of trial, so the overworked brain succumbs when it is subject to the final strain. The student, whose hollow eyes, pale face, and wasted form denote nights of unvaried toil, finds his powers inadequate to do him justice, and his memory fleeting at the hour when he desires their firmest aid; and he endures the bitter experience of seeing others, intellectually beneath him but physically his superiors, withstand a trial before which he fails.

Study is to the mind as exercise is to the body: both alike act as developing powers, but neither body nor mind can be carried to a relative excess of cultivation except at the expense of the other. "*Mens sana in corpore sano*" does not refer either to pundits or prizefighters. It means a mind well balanced, well organized, and varied in ability, coupled with a body healthy, vigorous, and strong—the one capable of grappling with the highest thoughts and ideas, the other with the deepest ills and obstacles incident to every walk in life.

BOILER EXPLOSION.

While a commission of scientific experts are busily engaged in expending $100,000 in discovering the occult causes of boiler explosions at one extremity, comparatively speaking, of this city, at the other end of the town a body of laborers, headed by an engineer, endeavor to lift and transport a steam boiler (with a blazing fire under it and subjected to a heavy pressure of steam) by means of crowbars placed underneath. As a result of which (in the opinion of the engineer directing the job), and attributable to the canting of the apparatus from one side to the other, causing sudden flows of water to the highly heated surface of the boiler, thus too rapidly generating steam, a terrific explosion ensues, seven persons are slaughtered, and a dozen or more seriously wounded.

The scene of the tragedy was in Fourth avenue, near 128th street, at which point the tunnel for the underground track of the Hudson River and other railroads is in process of construction.

The boiler was of the upright tube style, about 6 or 7 feet high and 44 inches in diameter. It had a square fire box, with horizontal tubes in the upper portion and vertical tubes from the top of the same to the boiler head. The fracture took place in the center of the shell; the largest fragment, some 1,000 pounds in weight, landing in the fourth floor of a building 550 feet distant It is stated that the boiler had been recently tested to 120 pounds pressure, and was considered in every way safe, while the engineer positively asserts that the gage, just previous to the accident, did not show any extraordinary amount of steam.

PHOSPHOR-BRONZE.

Combinations of phosphorus with bronze alloys are not new to the chemical laboratory. Phosphurets of copper were produced in the middle of the last century, and have since frequently been examined and their properties carefully studied.

Without considering many minor investigations which have been made regarding this important alloy, we may here note at once that the most complete researches are those of Messrs. Montefiore-Levi and Kunzel, of Val Benvit Nickel Works, near Liège, Belgium. As far back as 1860, this firm was engaged in an elaborate inquiry into the means of improving gun bronze, and in 1868-70 conducted a very extended series of experiments for the Russia government. The results of these as well as of subsequent trials are well summed up by M. Dumas in a note to the French Academy of Sciences. He says: "The characteristics of the alloys change. The color, when the proportion of phosphorus exceeds ½ per cent, becomes warmer, and like that of gold largely mixed with copper. The grain and fracture approximate to those of steel. The elasticity is considerably increased, the absolute resistance under a fixed strain becomes in some cases more than doubled: the density is equally increased, and to such a degree that some alloys are with difficulty touched by the file. The metal, when cast, has great fluidity, and fills the mold perfectly to the smallest details. By varying the dose of phosphorus, the particular characteristic of the alloy which is most desired can be varied at will."

We can now proceed to the consideration of the most recent data obtained from experiments lately concluded or actually in progress in Europe, and reported in a recent issue of the *Engineer*. In Germany trials are being carried on at the Royal Academy of Industry in Berlin, to ascertain the qualities and capacities of the metal under heavy strain, and especially the comparative resistance to often repeated strains, whether tensile or inflecting. A bar of phosphor-bronze tried under a constant strain of 10 tuns per square inch resisted 408,230 pulls of this amount: while a bar of ordinary bronze broke before the strain of even 10 tuns per square inch had been attained. A bar of phosphor-bronze under 10 tuns of strain resisted 862,980 bends, while the best gun metal broke after 102,650 bends. Another bar of phosphor-bronze, now being tested under 9 tuns strain, has thus far resisted 1,260,000 bends. In Austria, the following comparative results have been obtained:

	Absolute resistance.	Point of elasticity.	Stretch in percentage.
Phosphor bronze.	81,795 lbs. per sq. in.	54,915 lbs. per sq. in...	1·6
Krupp cast steel.	72,258 " "	14,450 " "	11·0
Ordnance bronze.	31,792 " "	5,562 " "	15·0

Best English copper sheets lost during six months immersion in sea water 3,058 per cent. Phosphor-bronze sheets lost only 1·158 per cent.

In Belgium, Messrs Montefore-Levi & Co. have carried on a large series of experiments, proving that the presence of oxide of tin and suboxide of copper lessens the tenacity, elasticity, and tensile strength of the bronze. Shavings of old bronze were melted, and a bar cast at 1595°C. The remaining liquid bronze was poled, and a second bar cast at 1668°C. The remaining metal was de oxidized with phosphorus, and a bar then cast at 1614° C. The three castings were made out of the same crucible and in the same manner, into three iron molds. The results found were that the old bronze had tripled its tenacity, 6·8 as against 2 per cent, and considerably augmented its absolute resistance (2384 to 1613).

In England, Messrs. Alexander Dick & Co. have recently established, in London, a special foundery for phosphor-bronze casting, and are also to produce sheets, wire, etc. Experiments, made for this firm by Mr. D. Kirkaldy and carefully tabulated, show the great superiority of phosphor-bronze for all articles hitherto manufactured of ordinary bronze or gun metal. What steel is to wrought iron it seems that phosphor-bronze is to ordinary bronze. Another table gives the tensile strength and resistance to torsion of various wires, showing also a large superiority in these particulars of the alloy over other metals. In fact, referring to the increment of tensile strength gained by phosphor-bronze when drawn into wire, it is considered that the same is astounding; and the *Engineer* adds that, even with a large margin reserved for probable error, enough remains to prove that phosphor-bronze, drawn into wire or laminated into sheets, must prove, if practicable to be produced with perfect uniformity, a most important addition in future to the list of our constructive materials. Having pliability, with a tensile strength approaching that of steel, the specific gravity of bronze, and nearly the electric conductivity of copper, it cannot fail to have important applications for the electric telegraph engineer. For small articles, now made of brass, such as curtain rings, picture frames, etc., the same, cut from spirals of phosphor-bronze, with the ends soldered so as to avoid annealing the wire by conducted heat, would be an immense improvement. Although experiments toward using the alloy for artillery are incomplete, it is probable that further investigation may demonstrate its fitness for that purpose. We have already published a long paper on its employment for tweers, for which it offers the advantages of greatly increased toughness and density, and consequent great resistance against change of temperature and the influence of molten masses. Finally, should copper become cheaper, say to double the cost of an equal weight of wrought iron, phosphor-bronze might be used in place of iron in shipbuilding. It is superior to Muntz yellow metal, a substance patented by John Scott Russell for the latter purpose, in that it does not become crystalline and brittle, while its passive strength is four or five times as great

With our vast deposits of copper, notably in the Lake Superior region, there appears to be every facility for the prosecution of investigations leading to the manufacture of this important and valuable alloy in the United States. We therefore consider that the subject merits the careful attention of American metallurgists, who, we trust, at no distant period, will contribute the results of their own experiments to those thus far adduced by their brethren of the old world.

SCIENTIFIC AND PRACTICAL INFORMATION.

A NEW ELECTRIC LIGHT.

M. Ladiguin has recently invented a new plan for electric illumination, which is quite simple, and which, it is believed, may be advantageously used for lighting mines, as there is no danger of its causing the explosions incident to such localities. It consists in a bit of charcoal or other poor conductor attached to a wire communicating with a magneto-electric machine. The charcoal is enclosed in a glass tube in which the air is replaced by a gas which will not combine with the carbon when the same is brought to a high temperature. The tube is sealed, and the machine set in motion by a small steam engine or other motor, when the charcoal gradually becomes incandescent, emitting a pleasant and quite brilliant light, the intensity of which, it is said, may be graduated at will.

THE ACTION OF ANTISEPTIC SUBSTANCES UPON VIRUS.

M. Davaine has recently examined the following substances, which he classes in regard to their power as antiseptics in the subjoined order: Ammonia, silicate of soda, ordinary vinegar, and carbolic acid; then caustic potash, chloride of oxide of sodium (?), hydrochloric acid, permanganate of potash, chromic acid, sulphuric acid, iodine. The power of ammonia, of vinegar, and of carbolic acid being represented by 1—200, that of iodine would be by 1—12,000. Iodine should therefore be considered as the best antiseptic to be employed in the treatment of maladies such as malignant pustule, boils, carbuncles, and the like, when, not having become localized under the form of a simple pustule, they have taken up a certain extension. Injections of 1-6000 of iodized water are recommended.