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Contents.

(Illustrated articles are marked with an asterisk.)

INSECT-EATING PLANTS.

The SCIENTIFIC AMERICAN for July 3, 1875, contained a page of engravings representing the principal plants which capture insects, with a summary of what had been published in regard to their strange habits. An immense addition to this new and marvelous department of knowledge has just been made in Mr. Darwin's "Insectivorous Plants," in which he sums up the results of some fifteen years of observation and experiment: a contribution to Science as noteworthy as his work on "The Fertilization of the Orchids," or that on "The Structure and Distribution of Coral Reefs," works which the most determined adversaries of Darwinism have not presumed to denounce as unscientific. More than half the volume, which comprises nearly five hundred closely printed pages, is devoted to the study of the common sundew of England, *drosera rotundifolia*. Six other species of drosera from various parts of the world were also brought under observation; also the Venus fly trap (*dionæa muscipula*) of North Carolina; the aquatic *aldrovanda vesiculosa*; the fly catcher of the Portugese. *drosophyllum lusitanicum*: *roridula dentata*, from Cape of Good Hope: *byblis gigantea*, from Western Australia; several species of *pinguicula*, and a number of *urticularia*. The *nepenthes*, studied by Dr. Hooker, are merely noticed incidentally.

The characteristic feature of *drosera rotundifolia* is the abundance of gland-bearing filaments—tentacles, Mr. Darwin calls them, from their manner of acting—which cover the upper surface of its round leaves. There are on the average about two hundred of these tentacles to each leaf; and as their terminal glands are always surrounded by drops of extremely viscid secretion, which glitter in the sun like dew drops, the plant gets from them its poetical common name. It gets more—and that is its living; for its short and simple roots are capable only of absorbing water. It is by means of the secretion of the glands and the inward bending of the tentacles that its prey are caught, digested, and absorbed. The glands are wonderfully sensitive to pressure and repeated touching; and when excited, the tentacles bend inward to the center of the leaf and remain inflected over the captured object according to the amount of nutrition it affords. Extremely minute particles of glass, cinders, hair, thread, etc., when placed on the glands, cause the tentacles to bend; but the inflection is not so energetic nor so persistent as when the exciting substance is organic and soluble. So sensitive are the glands that a bit of human hair, exerting a pressure of not more than a millionth of a grain, suffices to induce a movement of the tentacles. The pressure of the delicate feet of gnats causes them to be quickly and securely embraced. The tentacles are indifferent, however, to single touches and even hard blows; also to the repeated blows of drops of rain; greatly to the plant's advantage, Mr. Darwin remarks, for it is thus saved from much useless movement. The absorption of animal matter and various fluids, heat, and galvanic action, also cause the tentacles to become inflated, the movement beginning in about ten seconds when a bit of raw meat is applied to a gland.

The bending of the tentacles is effected by a process of aggregation of the protoplasmic contents of the glands and tentacles. This aggregation is excited by all the stimulants which produce movement: the quickest and most energetic of the many stimulants tried being carbonate of ammonia, a dose of $\frac{1}{134400}$ of a grain sufficing. The process of aggregation goes on only as long as the protoplasm is in a living, vigorous, and oxygenated condition. Immersion in warm water causes the leaves to be inflected and increases their sensitiveness to the action of meat. Inflection is rapid at temperature between 115° and 125° Fah. Temporary paralysis ensues on exposure to 130°, but the leaves recover on being left for a time in cold water. Exposure to 150° causes death: so does prolonged exposure to 145°. Different leaves, however, and even separate cells in the same tentacle, differ considerably in their power of resisting heat.

By testing the leaves with various nitrogenous and non-nitrogenous fluids, Mr. Darwin found them able to detect with almost unerring certainty the presence of nitrogen. Results so obtained led to the enquiry whether the plant possessed the power of dissolving solid animal matter, that is, whether it really had the power of digestion like that that possessed by animals. Numerous experiments proved conclusively that the leaves of drosera are capable of true digestion, and that the glands absorb the digested matter: the most interesting, Mr. Darwin thinks, of all his observations on this remarkable plant, as no such power had previously been known to exist in the vegetable kingdom. The resemblance of drosera digestion to that of animals is singularly close. The digestive secretion is more copious in the presence of nutritive material, and is distinctly acid, like that of the animal stomach. It also contains a ferment closely analogous to or identical with the pepsin of animals, which is secreted only when the glands are excited by the absorption of already soluble animal matter. Albumen (hard-boiled egg), roast meat, fibrin, areolar tissue, cartilage, fibro-cartilage bone, milk, casein, legumin, and other substances were found to be acted on by the plant secretion precisely as by the gastric juice of animals. Fresh gluten was too strong for the plants but after the starch was removed by treatment with weak hydrochloric acid, it was digested rapidly. Starch is indigestible, and so are epidermic substances, such as human nails, hair, quills of feathers, fibro-elastic tissue, mucine, pepsin, urea, chitine chlorophyll, cellulose, gun cotton, fat, and oil: all of which are similarly unaffected by gastric juice, though some of them are acted on by other secretions of the animal alimentary canal. The plants are also, to a limited extent, vegetable feeders, having power to digest some parts of leaves, and to partially dissolve pollen and living seed. Like animals, too, these plants suffer grievously from dyspepsia, in case of surfeit, even of the most digestible substances.

The sensitiveness of the leaves to carbonate of ammonia has already been mentioned. Like effect, in varying degree, is produced by all the other salts of ammonia. The citrate is least, and the phosphate most, powerful. Of the latter, less than one twenty-millionth of a grain in solution, applied to a gland, is sufficient to cause the tentacles bearing the gland to bend to the center of the leaf. Many other salts were experimented with, the nature of the base proving, as in the case of animals, far more influential than that of the acid Nine salts of sodium all caused well marked inflection, and none were poisonous in small doses; whereas seven of the nine corresponding salts of potassium produced no effect, two causing slight inflection. Some of the potassium salts were poisonous. The so called earthy salts produced little effect; on the other hand, most of the metallic salts caused rapid and strong inflections, and were highly poisonous. To this rule there were some odd exceptions; for example, the chlorides of lead and zinc and two salts of barium did not cause inflection, and were not poisonous. Twenty-four acids were tried, much diluted: nineteen caused the tentacles to be more or less affected. Most of the acids were poisonous. Benzoic acid is very poisonous, though innocuous to animals. Many of the poisonous acids caused the secretion of an extraordinary amount of mucus, long ropes of it hanging from the leaves when they were lifted out of the solutions. Allied acids act very differently, formic acid, for instance, producing but slight effect, while acetic acid of the same strength i poisonous and acts powerfully.

A large number of vegetable alkaloids and other substances were experimented with, developing some very curious results. Substances like strychnin, nicotin, digitalin, and hydrocyanic acid, which act poisonously on the nervous system of animals, are also poisonous to drosera, but probably excite inflection by acting on elements in no way analogous to the nerve cells of animals. The poison of the cobra, so deadly to animals by paralysing their nerve centers, is harmless to these plants, though causing quick and strong inflection. The absence of nerve elements is made still more probable by the indifference of the plant to morphia, hyoscyamus, atropin, veratrin, dilute alcohol, and other substances which produce a marked effect upon the nervous systems of animals.

To summarise the physiology, so to speak, of the plant's sensitiveness, and the manner of its manifestation, would expand this article beyond limits. The structure and movements of six other species of drosera have been studied though less extensively than those of the common sundew. They are all insect-catchers, using very nearly the same means.

More wonderful in its adaptation to a carnivorous life is the Venus flytrap, found only in the eastern part of North Carolina. Its poorly developed roots, like those of drosera are capable only of absorbing water, so that, lacking its predaceous habit, it would soon cease to exist. Its manner of catching insects and general behavior have already been described in this paper in the observations of Mrs. Treat. Like the sundew, it is extremely sensitive to the touch of edible matter, yet indifferent to rain drops and gusts of wind. This is the more remarkable in the case of the Venus flytrap, since it captures its prey, not by means of a viscid secretion, but by a sudden shutting of its leaves, trap-fashion. The digestive power of this plant varies somewhat from that of drosera. The secretion from its glands dissolves albumen, gelatin, and meat, if too large pieces are not given. Fat and fibro-elastic tissue are not digested: nor is chemically prepared casein or ordinary cheese. The mechanism of the dionæa trap is such that minute insects escape, while the relatively large ones are retained: an arrangement which Mr. Darwin regards as very beneficial to the plant, inasmuch as it would manifestly be a great disadvantage to the plant to waste many days in remaining clasped over a minute insect, and several additional days or weeks in afterwards recovering its sensibility. The amount of nutriment would not compensate for the effort. There is evidently room, however, for further investigation in this direction, since, owing to the limited digestive power of the leaves, a single large insect is often too much for them. As in the drosera, the impulse which causes motion in the leaf travels in all directions through the cellular tissue, independently of the course of the vessels of the leaf. It was in this connection that Dr. Burden-Sanderson made his wonderful discovery that there exists a normal electric current in the blade and foot stalk of these leaves, and that, when the leaves are irritated, the current is disturbed in the same manner as during the contraction of the muscle of an animal.

The characteristics of the less known insectivorous plants will be summarized in another article.

COMPLETION OF THE HELL GATE EXCAVATIONS.

On July 4, 1876, the great explosion which is to shatter the submarine rocks at Hallett's Point and open a navigable channel for vessels of large draft, coming and going through Long Island Sound, to and from New York city will take place; such, at least, we understand to be the present intention of those in charge of the work. The excavations were completed about two months ago, and the operation now in progress consists in the boring of the holes in which the heavy charges of nitro-glycerin are to placed. These borings are about half finished, and will require the labor of two or three months longer, after which two months more will be occupied in inserting the charges.

The entire surface undermined measures $2\frac{1}{4}$ acres, and the cuttings aggregate 7,542 feet in length, varying in hight from 8 to 22 feet, and in width from 12 to 13 feet. There is a roof ten feet thick between the mine and the water; and the latter, at the outer edge of the excavation, is 26 feet deep at low tide. Between the headings and galleries heavy piers are left, which now sustain the immense weight of rock and water above. In each pier from ten to fifteen 2 and 3 inch holes are being drilled, and in the roof similar apertures are being made at intervals of 5 feet apart. All of these openings will be filled with nitro-glycerin, in charges of 8 and 10 pounds, and all will be connected together by gas pipe filled with the same explosive. This will be done during the cold weather, when the danger of hauling the nitro glycerin is greatly diminished.

Previous to the explosion, the coffer dam will be broken away and the water allowed to fill the entire excavation, so that it will serve as a tamping. Then, by means of an electric fuse, the nitro-glycerin in the gas pipe will be fired, which will determine the blowing up of the whole affair. No fear is apprehended as to the result, since it has been determined that the explosion of half the charges will be sufficient to cave in the roof, and cause it to fall to the sunken floor, deepening the water at once to a proper depth, or necessitating but little dredging to complete the work.

The new operations at Flood Rock will involve still greater cuttings than at Hallett's Point. The shaft is now down to a depth of 50 feet. The Hallett's Point work has been under way since 1869, but has been greatly delayed by the failure of Congress to provide sufficient appropriations; if the same course is to be followed with reference to the Flood Rock excavations, it will be manifestly impossible to form any estimate of their time of completion.

DRUGGING HORSES.

There is a subject in connection with our four-footed servants, which is worth more attention than ordinarily is accorded it; and since it is an abuse, a remedy or means of prevention is needed. We allude to the drugging of horses, either to give them temporarily the appearance of being in fine condition, or to have the opposite effect, by making them ill to defeat their chances of success in a race. Both of these practices are cruel and inhuman, as well as criminally fraudulent, and hence commend themselves to the notice of societies for the prevention of cruelty to animals, while at the same time indicating a possible necessity for severe penalties.

An act of Parliament has recently been passed in England, the object of which is summarily to put a stop to these nefarious practices. It provides that if any one, other than a member of the Royal College of Veterinary Surgeons, shall give any animal any of the drugs contained in a given schedule without the consent of the owner, he shall be liable to fine or imprisonment. The drugs and preparations enumerated are as follows: Arsenic and its preparations, prussic acid cyanides of potassium and all metallic cyanides, strychnin and all poisonous vegetable alkaloids and their salts, aconite and its preparations, tartar emetic, corrosive sublimate, cantharides, savin and its oil, ergot of rye and its preparations, oxalic acid, chloroform, belladonna and its preparations, almond oil, opium with its preparations, sulphuric acid, nitric acid, hydrochloric acid, butter of antimony, sulphates of iron, of copper, and of zinc. Of these perhaps arsenic is the most commonly administered, since its effect upon the horse, in point of appearance, is to give an artificial plumpness and sleekness which might easily pass for fine condition. This all disappears, however, in a few days, leaving the animal wretched.

While some such law as the above might tend to mitigate present evils here, we doubt if such would be the case other than in very small proportions. Veterinary surgery in this country has not arisen to the hight of a special profession generally recognized, although there are plenty who are adepts in the art. It requires no license to practise; and until the same restrictions are thrown about its practitioners as are now about regular physcians, it would be difficult to designate who may and who may not administer mendicaments in the absence of the owner, with anything like the certainty expressed in the term "members of the Royal College," etc.

The matter lies exclusively in the hands of the societies above named and in those of horse owners. The former are already empowered to prevent cruelty, and drugging comes under that head. The latter, if their horses are in the charge of servants, can prevent the injury only by careful guardianship. A horse owner disposed to defraud cannot be prevented from doing so by any legislation; but if he tortures his animal, he comes under laws; and if he sells him under false representations, he becomes doubly liable. About the only enactment available in addition would be one imposing heavy penalties for selling doctored horses, in addition to those already mentioned in the statute books for the peculiar degree of fraud, and empowering local societies for the prevention of cruelty to sue for and collect the same, devoting the money to the furtherance of the objects of the said societies.

CELLULOID.

A destructive fire, attended by an explosion, recently occured at the celluloid works, Newark, N. J. One life was lost, several persons injured, and property to the extent of $150,000 destroyed. It is alleged that, when the fire was discovered, the engineer immediately turned on steam into the apartment, when an explosion instantly ensued, the inference being that the steam assisted the explosion. But this we think, is a mistaken inference.

Celluloid is a manufacturer's name given to a species of collodion, or dissolved and dried gun cotton. Common cotton, the refuse of cotton mills, and other vegetable fiber is dipped in a liquid composed of nitric acid and sulphuric acid; then drained, washed in water, and dried, when it is found to possess highly inflammable and explosive qualities, and is termed gun cotton, as it may be used as substitute for gunpowder; it has twice the power of the latter. This prepared cotton may be dissolved in ether and alcohol, when it forms a thick transparent liquid, known as collodion. This is the material used by photographers, who, in taking a portrait, spread a thin film of collodion liquid on a glass plate. The ether and alcohol soon evaporate, leaving the dissolved cotton to dry upon the glass in the form of a thin membrane or skin, which receives the silver compounds used in taking photo pictures. Collodion, when dried in any considerable mass, forms a tenacious, transparent substance, somewhat resembling horn. If whiting, zinc oxide, and other coloring substances are added to it while in the liquid state, and then dried, substances resembling ivory, hard rubber, bone, etc., result. All such forms are, however, very inflammable.

The use of alcohol and ether is expensive as a solvent, and the celluloid makers substitute camphor, the use of which forms the basis of their patent. By peculiar manipulation, involving the combined employment of heat and pressure, they are enabled to produce plates and blocks of dried collodion, of beautiful texture and color, possessing a certain degree of elasticity, with great strength and toughness, and little weight. From these plates and blocks, a great variety of merchantable articles are made, such as harness trimmings, jewelry, dental plates for artificial teeth, billiard balls, knife handles, etc. They are a complete substitute for hard rubber and ivory for many purposes, and considerably cheaper.

But not only is the manufacture of the crude celluloid dangerous, but even the most finished articles made from it will readily inflame. As a practical experiment, any one may take a strong and highly polished martingale ring of celluloid, which the strength of a horse could hardly break; apply to its surface a lighted match, and it will quickly ignite like a torch.

Celluloid factories must be classed among the extra hazardous risks, so far as fire insurance is concerned, and their presence in large cities is not desirable. The manufactories should be isolated; the finished goods should only be stored or exposed in small quantities in the shops.

STEAM BOILER PHENOMENA.

We recently took occasion, while giving an account of the work of the United States Commission on Steam Boiler Explosions, to explain the principles involved in such phenomena, and to indicate when danger might arise, and when explosion might not follow the introduction of the feed water. We have just received accounts of two cases of low water, neither of which resulted in explosion, and one of which gave such a striking example of a rare phenomenon (apparently contradicting our previously expressed views) that we place the case before our readers as we receive it, and trust that we shall learn the particulars of similar occurrences, should any have become known to them. We presume that the explanation is a perfectly simple one, but prefer to leave the point open to discussion by the correspondents of the SCIENTIFIC AMERICAN for the present.

In the first case, a plain cylinder boiler, nearly new, had been left, with the furnace door standing wide open, and with a very low fire on the grate. The boiler became absolutely dry, and heated up to a temperature which is estimated at somewhere between 600° and 1,000° Fahrenheit. When it became known that there was no water in the boiler, it was also found that steam pressure had fallen nearly or quite to zero by the gage. An independent feed pump, taking steam from a neighboring small boiler, was started and the boiler filled up without producing any apparent injury. Immediately after starting the pump, however, steam jumped to 190 lbs. pressure per square inch. The safety valve was found to be loaded to nearly 200 lbs. The shell of the boiler was subsequently carefully examined and appeared to be entirely uninjured; no worse symptom was discovered than the scorching of the paint on top of the shell. Even the valves remained tight; but an india rubber joint under the safety valve was melted, and a leak was produced there.

In the other case, the boiler was also of the plain cylindrical type, and the circumstances of the case were very similar. The fire was dull; the furnace door was open; the steam pressure had fallen very low, and the water seems to have entirely left the boiler. The temperature could apparently not have been far different in the two cases. In each, the boiler had been standing, as we are told, a half or three quarters of an hour with little or no water. In the second case, also, an independent pump was at hand and was put on with a full supply of feed. Here, however, to the astonishment of the attendants, steam rose to about 20 lbs. by the gage, and then as suddenly fell, the steam gage immediately indicating a complete or partial vacuum, the hand swinging quite past the zero mark, at which point there was no stop pin. So far as we have been able to judge, the general arrangement and conditions of these two cases were similar, as we have de scribed them; the accounts are, we believe, accurate.

We shall hope to obtain particulars of other cases which may aid in explaining the facts. Meantime, we shall be glad to obtain light from our readers or from our friends of the steam boiler insurance companies, or from the United States Commission.

"STRAY IDEES."

"I got five hundred dollars for it, by Jove!"

We stopped writing, and, relinquishing our pen and with it an obscure argument the thread of which, doubly tangled by the lazy hot weather, we were laboriously endeavoring to follow, gazed resignedly at the speaker of the foregoing ejaculatory remark, as he threw himself into our solitary spare chair. He removed his hat, mopped his steaming brow with a capacious bandanna, dived into the pocket of the dustiest of dusters, and extracted a dirty bundle of papers Then he beamed on us benignantly over his spectacles, and banging his fist on our desk, emphatically observed: "Them's the documents. Want you to tell about it in the paper."

"Tell about what?"

"About the five hundred dollars. Why, man, I got it for just nothin', nothin'. There never was no such luck. Look here: you remember that ere patent you SCIENTIFIC AMERICAN people got out for me, nine year ago—one of a lot—'bout an ice masheen?"

As this agency had been instrumental in the obtaining of several thousand patents in the period mentioned, we naturally were unable to recal the special one alluded to by our visitor, and in reply hinted as much.

"Forgit it, hey? Wa'l, no matter, here it is," he said, hitching his chair close beside ours, and pointing with the stub of an amputated forefinger at a time-worn drawing. "You see, I was tinkerin' at ice masheens about that time, and patented a lot of them. One day, while I was fussin' at a model which wouldn't go, it kinder struck me that if I turned that ere pump over and changed round the valve, it would make a better pump out of it. I didn't know whether the thing would be worth anything or not. Any how I was busy at somethin' else then, and couldn't tend to it; but I thought to myself: Here I'm takin' out patents lively now; I might as well have one for this too. So I came to your people, and they got the papers for me, for the masheen as it then was, and a claim mixed in for the pump. Wa'l, after a time, I forgit all about it, didn't think it of no account, in fact, as I soon had a dozen bigger patents a goin'. I worked away, tryin' to get the masheens in the market, and was doin' pretty fair until the panic and the strikes came along, and them busted our company and left me poorer than Job's cat ever since.

"I went back to the iron works as foreman, and got along good enough to keep the pot a bilin' home; but—you see, I've got a boy. As lively and smart a young feller as ever handled a tool. Just oughter see him jump a lathe; yer oughter see him run—oh, wa'l, I'm his father; and fact is, now he's served his time, I made up my mind to send him to that 'ere Stevens Institoot, and have him learned to be a engineer. It was all well enough to decide he was to go; but the next question was stamps. I didn't have none laid by; and couldn't sell anythin' to raise enough money. I was thinkin' it over last night, blue enough I tell yer, when wife said a man at the door wanted to see me. I went down and after passin' the time of day, and all that, the feller asked if I ever patented a pump, which he kinder explained. First, I said no; but then I thought of the ice masheens, so I got the drawins, and told him to look and see if it was there. He went over them all, till he struck the one I've been tellin' yer about. 'That's it,' he says, quick, like; 'what'll yer take for it?' 'Why?' says I. 'Cause my boss wants it,' says he; 'he's got a big pumpin' masheen for mines and sich to be patented, and some of it has got to be like yours, and he wants ter buy yer out. What'll yer take? I'll give yer five hundred dollars cash.'

"It took about two seconds for me to settle that bargain. I came right down to York in the early train, had the papers all fixed in the office here, got my five hundred, which is thar" (slapping a plethoric wallet), "and now that boy makes a bee line for that Institoot this very day. Shake hands on it! Come and take somethin'? No? Wa'al; mebbe you'll write us a word to Professor What's-his-name at the Institoot, 'cause we're a goin' now."

We penned the desired note of introduction, accompanied our radiant visitor to the door; and as we watched him and his stalwart "boy" start blithely off toward Hoboken, we thought to ourselves that there was one man at least who had found out the value of "idees." He had caged a passing thought, deemed of no material importance, by the timely safeguard of a patent: and stored it away until its worthlessness had changed to worth. He had invested the evanescent product of his brain, just as he had invested the substantial products of his industry; but, the last, misfortune swept away from him, the first lay dormant for years, in the end to revive and aid him in his hour of necessity.

Certainly "idees" are worth keeping, and if so are worth guarding safely. Sickness may drive them from the brain, fraud may wrest them from carefully hidden memoranda, or ingenuity may fathom the secret even when concealed in cabalistic cypher; but to patent them is to lock them for years under the protection, not of oneself, nor of one's servants, who may betray their trust, but under the ward of a great government. Certainly it is best to cherish our ideas; but all are not equally valuable, and those that are so are often intermingled with many worthless and chimerical. Time and experience, however, will sift them away and reject them; but their worthlessness for the moment, so long as not based on opposition to the laws of Nature, should not determine us to throw them carelessly aside. It is better to remember that such stray ideas may some time, if inherently good, doubtless will prove valuable; it is well to remember also that, in order to originate, a man need not necessarily be a mechanic or practical worker in any branch of industry. The merest tyro in a casual stroll through a shop, or in his daily domestic experience, may light upon a "stray idee" which to men of almost unlimited skill has never occurred—a thought in which, in the future, if not now, he may find both fame and fortune.

THE NEW COMMISSIONER OF PATENTS.

The President has appointed to be Commissioner of Patents, vice Thacher, resigned, the Hon. R. Holland Duell, of Cortland Village, New York. Inventors will of course desire to know something of his history. He was born at Warren, 1824; received a common school and academic education; studied and practises law; was District Attorney of Cortland county from 1850 to 1855; was County Judge of the same county from 1855 to 1859; was Assessor of Internal Revenue for the twenty-third district of New York from 1869 to 1871; was elected to the Thirty-sixth, Thirty-seventh, and Forty-second Congresses, and was re-elected to the Forty-third Congress as a Republican. With all these important and extensive experiences he ought to make a good Commissioner, and under his administration we shall look for many improvements in the affairs of the Patent Office.

The Washington *Republican* says; "The appointment of the Hon. R. Holland Duell, of New York State, to the position of Commissioner of Patents gives, we are please to learn, universal satisfaction to all acquainted with his ability as a lawyer, whose large experience and valued practice in patent law so eminently fit him to fill the place so acceptably to all having business before that office. Judge Duell is one of those rare men whom position seeks, not they position—and probably no member of Congress ever gave more general satisfaction to his constituents than did Judge Duell during the four terms he served as such from his native State. Indeed, as some of our highest officials have justly remarked, there is no position under the government that Judge Duell is not qualified to fill; and when we consider that, to fine ability and large experience as a patent lawyer, Judge Duell brings the rare quality of an urbane sternness, so to speak, which enables a man to do stern, just things in a gentle manner, we can but congratulate the patent fraternity upon the prospects before them—the learned and experienced in that they will meet an equal, competent to grasp and dispose of their most intricate points, and the less educated and experienced in that in him they will find one who, whilst perhaps dispelling many a chimerical dream, will lift their minds encouragingly up to higher and grander accomplishments."

Disinfectants.

After an exhaustive series of practical tests of the various disinfectants sold in this city, embracing over fifty kinds, Professor Elwin Waller, of Columbia College, concludes that the best disinfectant is carbolic acid. About one per cent of the mixture should consist of carbolic acid. For prompt disinfection which is only temporary, strong oxydizing agents, as chlorine, potash permanganate, nitric acid, etc., should be used. Of these, the cheapest and most available is chloride of lime.