

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 height 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 physicians, it would be difficult to designate who may and who may not administer medicaments 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 occurred 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 described 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 an 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 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 oxidizing agents, as chlorine, potash permanganate, nitric acid, etc., should be used. Of these, the cheapest and most available is chloride of lime.