

TESTING A GREAT LENS.

VISIT TO THE WORKSHOP OF THE LATE ALVAN CLARK.

Finishing the Object Glass of a Great Telescope—Polishing with the Palm of the Hand—A Peep at a Star—A Story.

In 1898 I called to see Alvan Clark, the distinguished constructor of telescopes, who has just died. I found him at his home in Cambridgeport, Mass. His sons were busy putting the finishing touches to the great telescope object glass then being made for the Russian Astronomical observatory at Pulkova. The Pulkova objective was to be placed in a temporary mounting that very evening to be tested for the first time on celestial objects.

It is in the after correction and perfecting of the objective which calls for the special skill which has made Alvan Clark's name so famous. The large objectives, such as the Pulkova and Lick glasses, are ground and polished by machinery. Two levers work in opposite directions, and are so arranged that any part of the glass surface may be reached, doing the work. The final polish, which is of the most delicate nature imaginable, is done with the surface of the hand. Mr. Clark went so far as to say that one revolution of the hand in excess would change the correction.

On a table was the finished Pulkova lens, which weighed 450 pounds, and consisted of two lenses each thirty inches in diameter. Generally these lenses are made to accurately fit, and are joined together with Canada balsam, but in such large glasses as the Pulkova and the Lick, they are fitted in a metal frame with an adjustment so that they can be made to approach each other, or otherwise.

When the evening was sufficiently advanced the great Pulkova glass was placed in its temporary fitting in the garden. There was no moon, and the darkness was intense. The glass was brought out on a four wheel hand truck and lifted into the tube by five men and fixed by revolving it in the screw fitting. The tube was forty-five feet long and weighed with the attending fittings about seven tons. Two piles of brickwork supported the whole. There was no clockwork movement and the roughest apparatus was employed, the telescope was raised and moved by a guide rope, the motion of an equatorial movement being imitated by using a common windlass. As the motion of the earth caused the object to pass across the field of the telescope, the observer gave the order "follow," when a slight turn of the windlass kept the object in view. Such were the rough appliances used to test this \$50,000 lens.

VIEW OF A FIXED STAR.

The planets had all set, and I had to be satisfied with a view of a fixed star, which is an excellent object for testing the optical properties of a lens, but very uninteresting otherwise, as the largest telescope can make little impression on a fixed star; no disk can be seen, merely a speck of light. The star selected was a small one, and barely visible as a pale, minute object. On looking at it with this magnificent instrument its wonderful light gathering powers were at once evident, for the star shone with the luster and brilliancy of an electric light. It was an object which brought out all the imperfections of the glass, and to the eyes of Mr. Clark and his sons many were evident, and it was said two months' work was necessary to correct them. During the trial the lens was lowered and five men revolved the glass in its fitting. On its being placed in position again one of the sons was about to make another test when the old man shouted: "Wait, boys, let her cool."

I was curious to know what this could mean, and Alva Clark explained that the correction was so delicate that the least from the hands of the five men, holding the metal case of the objective would change the correction, so it had to "cool."

In a conversation with Mr. Clark on the advantages of immense telescopes such as this one, he admitted that the telescopes of moderate aperture, say from ten to fifteen inches, were preferable for general use even for the highest purposes. He spoke with pride of such an instrument he had made, with which he had seen all that could be seen, even with colossal telescopes. Only one discovery has been made with the Washington telescope of twenty six inches diameter during its many years of use. The Russian Pulkova instrument, delivered by the Clarks in 1823, has never been heard from, and those who expect immediate and extraordinary results from the Lick thirty-six inch objective will probably be disappointed. These huge telescopes are great light gatherers and useful for photographic and spectroscopic work, but their definitions of the surface of the moon and the planets are disappointing.

A story is told of a French astronomer who traveled hundreds of miles to look through the great Ross telescope. When asked what he would like to see he called for the planet Saturn, which was then in good position. On looking through the telescope and finding the wretched definition of the object he said:

"You tell me I have looked at the planet Saturn, so I must believe I have done so; but I was not aware of the fact."—John Michell in New York Sun.

There are 100,000 colored Baptist church members in the southern states.

Dr. Richard S. Steers, of Brooklyn, has accepted the presidency of the American missionary board.

A visitor at a church in a big northern city, whose members are almost all rich and well, and therefore conservative, described it as the "Church of Retired Christians."

The ten cent fund for the Memorial church, collected by Dr. Edward Judson in memory of his father, Abner Judson, the pioneer missionary in India, now amounts to nearly \$25,000.

The Presbyterian synod of New York and Pennsylvania agreed last May to take charge of the weak churches within their bounds, and relieve the Board of Home Missions of their support. There is a deficiency now in both synods in the funds collected for this purpose.

Nearly 100 missionaries are leaving England during the next two months in connection with the Church Missionary society, the Church of England Zenana mission, and kindred evangelical organizations. Of these fifty go from the Church Missionary society alone, either as clerical or lay missionaries, missionaries' wives or Zenana workers.

DEATH OF A WILDCAT.

A Typical Case of a Bank Failure Before the War.

As a typical case of the abject failure the Nemaha Valley bank of Brownville may be taken. After the time when the cashier, seeing reason to anticipate a run, had thoughtfully locked the front door and slipped out the back one, the editor of The Brownville Advertiser obtained leave to examine the books, and announced in the next issue of his paper that everything was sound, only time was needed. According to his account there was \$33,000 of the Nemaha Valley currency in circulation. The assets of the concern consisted of "stock notes, \$75,000; discounted paper at thirty and sixty days, over \$5,000; cash, over \$1,000." It surely required a western journalist, characteristically impressed with the need of maintaining public confidence, to state that such a condition of things indicated soundness.

Suppose, for instance, that it should transpire that the "stock notes" were virtually worthless. Such a thing was not uncommon, as the stockholders of the old state banks used often to "pay up" their capital by giving their personal notes, and then when occasion offered they could take measures to make these notes entirely worthless. Suppose, further, that the discounted paper had been received from those who were not reliable, at least in a financial crisis. Suppose also that the alleged "cash" consisted of the bills of other banks as worthless as the one under investigation, and suppose, finally, that the books had been "fixed," and that in reality much more than \$33,000 of currency had been issued.

Such was very nearly the condition of the Nemaha Valley bank. The machinery of the courts was put in motion to enforce the redemption of the currency, and nearly \$1,000 of the old bills are stored among the records of the district court. Property was levied upon that usually turned out to belong to some one else, and finally the sheriff reported having levied upon and sold a safe, a table, a stove and a letter press, which altogether brought \$63. The last plea which the absent president ventured to make was, that the so-called "Nemaha Valley bank" could not be saved, since in reality it had not been legally incorporated at all.—Overland Monthly.

America and Australia.

I found myself constantly making comparisons and discovering similarities between America and Australia, though when I began to analyze the points of similarity they did not amount to much beyond wooden houses, trees, stacks of sawn timber, watermelons, bananas and sweet potatoes, close-plaited straw hats, and a general suggestion of bigness, freedom, andness and don't-care-ism.

It seemed to me as well that there was a likeness between the American type of character and the Australian. The same open air of bonhomie, and some of the same open air self assertiveness struck me; the same curious combination of individualism and spiritualism, and the power of adaptability, particularly to be noticed in the women of both races—much, too, I thought, of the same originality and individual way of putting things; much also of the slavish adoration and imitation of everything English. But some cultivated Americans, to whom I mentioned this fancy of mine did not take to the suggestion. I think that they looked upon Australia as still in a state of barbarism; whereas one of them assured me that American civilization was the concentrated result of deliberate selection from everything of good involved in the course of many centuries. Barge, he said, had created an experimental civilization, but America, meaning the United States, had taken her ready-made, and had improved upon it.—Temple Bar.

Book Stalls on Board Ship.

Nowhere is light literature so much in request as on board ship, and yet no plan has been hit upon to reach the enormous floating volume of eager purchasers out of reach of the existing sources of supply. I see no difficulties in the way, but any business you look at should not be opened on board passenger ships as well as at railway stations. Such need not in any disadvantageous way affect the economy of the ships or companies. From all I can hear from persons intimately acquainted with the working of passenger carrying steamers, it seems probable that shipowners would readily fall in with the plan of an organization offering to add very considerably to the convenience of the public who patronize them, going every facility in any commercial enterprise of the description. It might require some time for the business to take hold and secure an extensive patronage, such as would raise it to the position of a going concern. There would be features in the trade differing just as much from the railway department as to make a specialty of it, the management would have to devote themselves entirely to their particular branch, and the peculiarities of the business would soon become prominent to any bookseller not abnormally incapable. An experimental book stall or two set up on board Atlantic liners would perhaps be an advisable way of broadening the undertaking.—Pall Mall Gazette.

A Simple Test of Kerosene Oil.

Take an ordinary pint tin cup. Fill it within an inch of the top with water warmed to the temperature of 120 degs. Fair. Pour on the water three or four tablespoonfuls of the oil and water together, and wait a short time, say a minute or two, for the oil to collect on the top. Try the thermometer again, and if the temperature is more than one degree from 120 degs. Fair add a little cold or hot water as the case may be, so as to bring the temperature within one degree of 120 Fair. Then stir again and give time as before, for the oil to come to the top. Now apply a burning match or lighted taper on a level with the top of the cup, say within half an inch of the oil. If within one second no flash occurs the oil is reasonably safe, otherwise it is unsafe. Purchase four or five gallons of oil at a time and apply this test at each purchase.—Bulletin, North Carolina State Board of Health.

The Drovers have engagements for about \$300,000 of stakes next season.

James Quirk, the Canadian sprinter, has gone to England to try his luck in the handicaps.

It is not at all improbable that Dominick McCaffrey and Peter Nolan will meet in Minneapolis some time next month.

W. Byrd Page, the world's champion jumper, has decided to quit public life and go on with his post graduate course at the University of Pennsylvania.

SWINDLERS ABROAD.

HOW AMERICANS ARE FLEECED BY THE WOMEN IN LONDON.

A Good Place for Strangers to Keep Away From—Sketches of Dark Life in the British Metropolis—A Bit of Experience.

Although the male swindler is dangerous and much to be feared, it is the female of the species that reaps the harvest. Protected by her sex, the discrimination of a man to proceed against a woman, the ease with which she can blast the character of a man by the reason of the readiness we accept a story which attributes unholy lust to our fellow creature, are all known factors to her in the problem of making a livelihood. Beginning at the lowest class—the London street walker—you find them in London in larger numbers, bolder and more persistent than in any place in the world. The larger number cruise about the Criterion, where there is a favorite American bar. After 11 o'clock till 1 or 1:30 o'clock in the morning this congregation is one of the sights of the city, and the traveler generally sees it. His danger there is not greater than in any other similar company, unless he should be beguiled by some of these midnight strolls. They are there by thousands, the sidewalks and even the street itself filled with them and those who come to be preyed upon, gilded youth and hoary age, chaffing, laughing, swearing and singing in one vast saturnalia in the midst of the most boasted civilization. The "bobbies" move among them to keep everybody else moving and watching for lawless outbreaks, of which they have few to repress, but other official functions he does not assume.

Turning from these the visitor, with much new matter for reflection, walks to his hotel. It matters not in what direction it may be, strange figures of women will fit across his path way, curious inquiring faces will be unexpectedly thrust into his own, and vague forms standing in obscure corners will observe him as he strays through the otherwise deserted streets. Beware of the one who addresses you. Do not reply if you can avoid it, but under no circumstances stop and parley with her, for you invite one of the most common dangers that London offers the stranger within its gates.

Let me take an illustration furnished from the private experience of a gentleman from Pittsburgh who lodged in Russell square, and who strolled home from the Gayety theater by way of Drury lane and Bedford place. He had just turned into Bedford square when he encountered a woman standing hesitatingly on the corner, peering in each direction as one who had lost the way. "I beg your pardon, sir; can you tell me the way to the Midland station? I fear I am lost," she said. The polite American stopped. Yes, although a stranger, he could and would tell her the way—follow this street around Russell square into Wolturn place to St. Pancras church—the first church on the right—turn to the right there and the Midland station would be in sight. He was walking part of the way and would explain further. As they crossed Bedford square they chatted easily until they came to his lodgings, where he stopped and said: "You can't miss your way now."

"No," she replied. "Thank you, much obliged; but you can't go in unless you give me 25." And she got between him and the door.

"Five pounds, my good madam! What for?"

"Five pounds. You have beguiled me to walk with you, assaulted me and tried to induce me to come to your rooms. Five pounds, or I scream for help." An invalid wife with a fine iron in her hand, a heavy thought of the conditions, a hearty curse, a smile from the lady, who pushed the crisp note into her bosom, and our friend was standing alone, preparatory falling like rain from his forehead.

A FRIEND'S ADVICE.

The next day he told his friend, a London friend, about it.

"Bless your transatlantic heart," said he, "you do not suppose that such dangers menace us? Why, we live here. It is the stranger who is preyed upon. Should a woman address you again and threaten to scream you sense her by the wrist and tell her to scream and you'll walk till the officers come. She'll break away and run and you must let her do it."

Sure enough he was soon waylaid again. The question was for a chemist shop, spoken in tones so pregnant with grief and distress that the American stopped, despite his resolution never to exchange a word with the unprotected London female.

"I want a pound," said the woman. "Give it to me or I will call the police."

"You call them," said the American, retreating her arm. "I'll hold you till they come." And she did call, and the police came and escorted them both to the station house. The inspector on duty entertained a cross charge and locked them both up. The magistrate in the morning fined the woman two and six, and told the American his position was open to a very reprehensible construction and he had better look out. The American was so mad that he paid the woman's fine, determined that justice such as that should not have the gratification of locking the woman up. As a reward for all this the newspapers all published a report of the "eccentric American" his wife got well enough to voyage home on the Saturday Courier, and he followed alone in the White Star ship on the next Tuesday. It was months before they next up, and now when on his visit to London, where his business frequently calls him, he traverses its streets in a close cab, and sets well back in it, too.

As a matter of fact the American is not favorably regarded in any capacity, whether defendant or complainant, in the English police courts.—London Cor. Philadelphia Times.

Goodby, Goony.

"Little do you know how our bartenders are imposed upon. Who is our lot. Today a six-footer entered our saloon and called for brandy. He imbibed a large quaff."

"Has Goony been in?" he asked.

"How Goony?" said I.

"Goony walks like this."

The six-footer dropped on his haunches, spread his legs apart like a painfully bandy-legged being and waddled towards the door. Suddenly straightening himself out, he bowed at me "Goodby, Goony," and fled a mile up the street before I found time to run from behind the bar.—Philadelphia News.

A LOT OF FAMOUS CRIMINALS.

The Colony of New Caledonia Better than the Slums of Paris.

An interesting account of the present status of the notorious French criminals in New Caledonia has been furnished by an official who has just returned from that penal colony. The most respectable, as well as the senior, of all the convicts is Beresovski, the Pole who fired at the Emperor Alexander II during the Paris exhibition of 1887. Frequent applications have been made for the liberation of Beresovski, but they have all been refused. He is now in the island of Nou, where he occupies a little room apart from all the bad characters, and has even a small garden for himself. He roams about the island, which is one-fourth of the size of Paris, at his own sweet will, and his conduct has always been irreproachable. He receives a large quantity of newspapers, books and pamphlets from different countries by every mail. Beresovski is now old and feeble to an extreme degree.

Of a different class are Gillies and Abadie, the murderers of the Paris grocer Lecercle. These wretches are employed as street scavengers at Noumea, and their occupation is looked upon by their companions in penal servitude as a good one, for it is easy, and also enables them to pick up bits of tobacco and various odds and ends, including occasional alms. Guichard, who murdered a bank messenger at Marseilles, is doing well as a store clerk, and hopes one day, if not to get to Australia, at least to settle down in New Caledonia as a colonist. One of the most comfortable and thriving of the convicts is Fenayrou, the chemist of the Boulevard Malesherbes, who led the lover of his wife into an ambush at Chateaufort, and then murdered him in a most atrocious manner. This criminal has passed through the various categories until he arrived among the first class convicts. He has a spare in a farm, which he and his wife superintend, and he has under his orders some of the lower class of criminals. His life sentence has been commuted to one of twenty years. The doctor who was condemned last year for having sent poisoned game to a colleague is giving satisfaction, and hopes to be able to attain the privileges accorded to Fenayrou.

On the whole, the educated criminals, even those who are undergoing sentences for serious crimes, are highly spoken of by the governor of Noumea, and the most unmitigated rascals are the Paris gamins and the British peasants or laborers, most of whom are murderers. Every year a certain number of these has to be shot down. The official who uses his revolver against the convicts is tried as a formality by a court martial and acquitted.

The number of convicts is 10,000 or more, and there are in addition 240 female convicts, who, however, were sent out to Noumea of their own accord from the Maison Centrale of Paris for the purpose of marrying first class misdemeanants. These women are supervised by nuns. There are on the island 300 warders. The number of first class convicts amounts to 1,600, and some of them, like Fenayrou, have been allowed to send for their wives. The state furnishes them with agricultural implements, food, and even a few head of cattle, when they are permitted to begin farming, and they generally contrive to do well. Another class, apart from all the others, is composed of skilled tradesmen and mechanics, musicians, and even actors. These have a savings bank of their own, a kind of club, and are almost too prosperous for convicts. The bandmen are said to be as good as army regimental performers, and they play programmes of select music before the governor's mansion twice a week, beside giving occasional concerts. From this it will be seen that the life of many convicts is far better than that which is led by thousands in the slums of Paris, and is no wonder that, such being the case, numerous transgressors against the law of the land, including those who commit the most terrible crimes, should view with longing and delight their dispatch to New Caledonia by the chemist mandate of the president of the republic.—London Telegraph.

A COLD DAY IN SEPTEMBER.

Family man, in great haste, rushes into drug store—big pawn—chemist's. "Can you put this up for me right away? In an awful hurry!" Drug store man reads prescription and turns pale. "I'm afraid I can't do it today, sir; I think we are out of some of the ingredients." Man of family takes back paper and reads:

"Half a dozen safety pins;

Three outnags;

A pound of West Chester butter;

One quart elder vinegar;

Two yards white flannel;

A paper of needles;

A box of Rough on Rats."

This was the shopping list his wife had given him. Then the prescription for himself that he had got from the doctor must have been the paper he threw out of the window. Thus does Jane W. Nemesis, avenger at law, keep her glassy eyes nailed upon the man who needs the most watching.

A WAXING PLAGUE.

"Abigail" wants to know what is the best way to rid a room of flies. Go into the next room and try to read, Abigail; they'll follow you, every last buzzing, crawling, tickling beggar of 'em.

THE ONE YOU SHOULD WRITE FIRST.

"Let me tell you," said the contributor, "about my first poem." "I haven't time," said the editor, gently, but with a tinge of weariness; "but I'll sit here all night if you'll tell me about your last one."—Brooklyn Eagle.

Chaffed the Wrong Man.

A citizen who had just laid down \$300 for a span of carriage horses was driving out Woodward avenue the other day when he met a farmer coming in with a load of apples. Desiring to chaff the stranger a bit he drew up and inquired:

"Say, how'll you trade teams?"

The farmer halted, got down from his vehicle, looked the team over and slowly replied:

"Waal, by gosh!"

"What's the matter?"

"If you hadn't stopped me I wouldn't have known the team."

"Did you ever see these horses before?"

"Did I? Why I raised 'em! Sold 'em both to a horse trader in town three weeks ago. That nigh one has the heaves, and the other is a cribber and has two spavins. I'll trade with you for \$75, and that's allowing \$25 apiece more on your horses than I got."

The owner of the "spaukers" hasn't seen a peaceful hour since that meeting.—Detroit Free Press.

DRIVING A FINE ART.

AN EXPERT DISCOURSES ON THE NICETIES OF RIBBON HANDLING.

Good, Bad and Indifferent Drivers—Hansom Terror Coming Into Fashion—Different Styles of Driving—Matters a Four-in-Hand.

"Ah, driving isn't as easy as it looks, 'downright man' began. "There are two or three things to be trusted with reins, whips, and it's a wonder there are no accidents than there are. Some of them realize the danger and more of them are not. Half grown boys are always seen to be dreading sitting behind horses, and especially in crowded streets, for there they are to a power of mischief to other people, country roads they can rarely hurt any but themselves. I don't mean fast drivers because it isn't often such fools are to be seen with speedy cattle. Yes a man may be stung and hurt or killed by a slow animal as well as by a fast trotter. The driver's main is what I call 'sloppy' driving, and the reins hang loose over the dashboard and the animal is never under control after an accident has happened. Then, some of the fools I'm speaking about with such a tight rein that they stop circulation round the horse's mouth, and might as well try to pull up a cyclone as attempt to check even a slow beast in that when he's frightened and starts to run as Women don't, as a rule, drive well, although some of them do. They're too fidgety, they tug the reins and slash with the whip. They're worse than flies, some of them, nervous horse, and nearly all of them too much continuous work out of an animal."

SPEAKING OF BAD DRIVERS.

"It stands to reason, doesn't it, that a man's go at top speed all the time? I know you can't do it, and I don't see why anybody should be expected to do an impossible. But you can't persuade some ladies of my age on flicking the animal with whip and nagging at him with the reins all the world as if he were a contrary band."

"You speak of bad drivers. How can he be remedied?"

"It can only be done with the driver, public conveyances and licensed drivers. You don't trust a steam boiler, locomotive to a man until he knows his handle it, do you? Of course not. Then should you trust him with a horse that's just as dangerous as any high pressure boiler that ever was built? Why should a man want to earn his living by driving horses called upon to prove that he can do it?"

"Look at those cab drivers we're so fond of. Why, some of them don't know and are where or how they go. They sit behind their vehicles and pop out upon people, frightening them to death or driving them. Then there are those fellows who drive two and three horse wagons, below some of them turn corners. As a rule, however, men who drive heavy vehicles are careful, because of the weight behind them and the room they need to maneuver, but these light cart chaps are made as bad as they make them, and cab drivers when they're careless, are worse than Hansoms are coming into fashion now in city, and if they're not looked after they'll be a regular terror to pedestrians, although they've got an easy job because they sit behind the wheel of the thing they drive. The worst of them is, that they look on and drive another, unless they've got a horse inside, and then they go as if the devil be behind them, which he ought to be, with good chance of catching up with them."

'STYLE' IN DRIVING.

"What do you think about 'style' in driving?"

"That there's as much difference in that there is in walking or doing anything else. A regular coachman's driving is not at all like a swell's handling the ribbons. A gentleman has a pair or a single before he rarely moves his left hand away from the front of him at the height somewhere about the fourth button of his waistcoat, with a whip laid across his hand under his thigh, using the first two fingers of his right hand only upon the reins. And he mustn't do it stiffly, but as easy as if he were holding a cambric handkerchief or a lady's fan. Of course I'm speaking of a man who sits at his animal. There can be only one way of driving a buggy, and every man of sense knows how to do that, if he can do it at all."

"How about a four-in-hand?"

"I think that very few gentlemen learn to do that properly. It is a regular coachman's business at the best and made up in coachman's style. You see, such a bunch of ribbons in a four-in-hand that a man's mind is pretty well occupied and he must put it into the work, just being enough to spare to manage the vehicle. That's a study in itself. How very few can flick a fly off a leader's ear and by the same motion of the wrist make the last of itself round the stick in graceful rings, the main part of the lash is the only loop left hanging, as the part near the head comes up under his right thumb. I've known men to practice that trick for weeks of the coach and when they tried it on the thing got the whole affair into such a state that it looked like a Chinese puzzle."—Vest Star.

SHOE BUCKLES AND GARTER CLASPS.

Oxidized silver takes the lead in shoe buckles for every day wear.

A disc of oxidized silver is ornamented with a spider or other insect.

The Russian buckles for low cut slippers of Etruscan gold, or of gold and silver.

In garter clasps, two daisies in overlapping each other is a favorite design.

A buckle for evening wear is of silver, outside edge being ornamented with ivory motifs in enamel.

Rhine stones set in silver make effective buckles for evening wear. There are also fine wrought buckles in silver.

A very pretty pair of clasps is ornamented with a design of four leaf clovers, and other pair has a checker board pattern in enamel.

In gold, an ivy vine in green enamel is effective. These clasps have a patent fastening, so that there is no danger of their being useless.

PATENT