PHOTOGRAPHIC NOTES.

Stripping Bromide Prints.—Hand polished rubber, on which bromide prints are squeegeed for the purpose of imparting a high gloss when dry, we have found to become dulled on the surface by continued use, which prevents the stripping or pulling of the prints as readily and quickly as formerly. The washing water was at a temperature of 64°, yet notwithstanding this advantage, there appeared to be something in the softness of the gelatine surface on the paper or in the rubber plate, or the moist condition of the atmosphere, which made the paper adhere too firmly.

The difficulty was quickly overcome by adding to the hypo bath, which we mixed fresh every day, about one-third its quantity of powdered alum, or in the following proportion:

Hypo	1 ounce.
Powdered alum	160 grains.
Water	6 ounces.

The hypo is dissolved first, then the alum. A milky solution results, which will not deteriorate by one day's use. It is better to use the solution fresh. The white portions of the prints in this bath keep remarkably clear, and we think it is not necessary to use the acidulated water after development as recommended.

After the prints are squeegeed face downward on the rubber plate, and the surface water on the back dried off with blotting paper, the print may be dried in a draught of warm air very quickly—from 10 to 20 minutes—and then be easily pulled or stripped from the rubber.

Before the use of the mixed bath, from 40 minutes to an hour and a half was required.

Col. Russell.—With sincere sorrow do we learn of the death of Colonel Russell, so well known to photographers of a former period as Major Russell. The sad event took place on the 16th of May last.

The *British Journal of Photography* says: Photographers are more deeply indebted to Colonel Russell than many of them are aware. Quite apart from the able and skillful investigations he made in connection with the tannin process, and in preservative processes in general, and of the action of bromide of silver, he has made photographers his debtors for ever by giving them the alkaline developer and making them acquainted with the influence of bromide in the developer. He was a prolific contributor to photographic literature in former times, but during the last fourteen or fifteen years had resumed the more congenial life of a country gentleman of independent means on his estate of Stubbers, Essex.

He was born in 1820, and was a scion of a family settled in Essex for over two hundred years. His family name of Branfill—a name, we are pleased to say, not unknown in the photographic literature of the present time—was changed to that of Russell in obedience to the provisions of a will of the last of a neighboring and nearly related branch of the Russell family.

He made many discoveries in photography, into which field he entered in 1856. It was in 1862 that he first published, in these pages, what has been termed "a matured and practical method of alkaline development," based on phenomena observed by Mr. Borda, of America, connected with the exposure of tannin plates to the vapor of ammonia.

Coloring Rubber Fabrics.

A recent action for infringement of a patent has drawn attention to the practicability of improving the manufacture of rubber or waterproof fabrics by printing upon them patterns or ornamental designs—an art that has been carried out successfully only during the last two or three years. Every one is familiar with the macintosh, and though it would perhaps be of little advantage if colored patterns could be readily printed on that, there are many articles made in rubber, both pure and vulcanized, which can be vastly improved in appearance by the addition of a little color or a pattern of some kind worked in the fabric. More than twenty years ago, attempts were made to print upon rubber fabrics, just as calico is ornamented with designs; but the colors were not fast, and the designs were not clear. A certain measure of success was attained when a fabric with a pattern already printed on it was coated with clear rubber, and a more satisfactory article was, perhaps, produced when some one hit upon the idea of placing the waterproofing between two pieces of fabric on one or both of which the pattern or design was printed. These latter productions were rather expensive, were, moreover, too heavy; but toward the end of 1883 a Mr. Moseley, of Manchester, obtained a patent for a method of producing ornamental designs on rubber waterproof goods which seems to have been so useful that it was soon infringed. In Moseley's process the fabric is rendered waterproof by one or more coatings of rubber, which may be colored or not as desired, and it is then covered with a film of farina, on which it is possible to print in colors by methods similar to those adopted by the calico printers. According to Sir H. Roscoe, the farina prevents the pattern from "running," while it readily takes the color, and is, in short, the secret of the success of the invention. When the farina is applied to the rubber-coated surfaces it adheres readily, and after a slight vulcanization is found to be firmly fixed; but if the vulcanization has been carried too far, or been performed too rapidly, the farina is easily rubbed off, and of course takes with it the colors of the pattern. Mr. A. Parkes, who invented cold vulcanization about 1846, thinks that water colors applied to an India rubber coated fabric covered with farina will always remain "fast," provided the vulcanization is completed; and it appears from experiments that water colors printed on rubber coated with farina are faster than those printed on a surface without farina, and that if the colors are dissolved in media which act on the rubber, they become still more "fast." The use of the farina is indeed the foundation of the process, for it combines readily with the rubber, and the colors fix well on the farina, the success of the patentee's process being due to the fact that the printing of the design is done on the farina, and not on the rubber. The infringers had to send the prepared fabric away from their works to be printed, and accordingly they partially vulcanized it before sending it away, in order that the farina might not be rubbed off. The designs are printed in water colors, and subsequently a thin film of clear rubber is spread over, farina is dusted on, and the fabric is passed through rollers, which give the complete vulcanization. Dr. Burghardt, who made a microscopical examination of the infringer's product, agreed with Sir H. Roscoe as to the absorbent action of the farina. It does not make the colors absolutely fast; but it has a very "fixing" effect on them, really inclosing the dye and acting much like a mordant. The case was settled in the plaintiff's favor, the validity of the patent being fully established. The attention drawn to the process by the action will probably lead to its more extended utilization, for vulcanized rubber in certain conditions has a very long life, and if it can be ornamented with designs of a durable character, the extra cost will not prevent its adoption for many purposes.—*Eng. Mechanic.*

The Brake Trials.

The series of brilliant trials just concluded at Burlington, Iowa, has especial interest as an exhibition of the development of the train brake, and it marks a long step in the application of continuous brakes. It is eight years since the remarkable experiments of Mr. Westinghouse and Captain Douglas Galton put the problem of continuous brakes on a scientific basis. It is only five years since Edison patented his electric train brake, which consisted of a disk attached to a car axle and revolving within the field of a big horseshoe magnet, and intended to arrest the train by the magnetic resistance encountered when the circuit was closed. It is not a great while since men stoutly contended that the automatic brake was an evil because it stopped trains. The undoubted result of the Burlington trials will be the speedy application of continuous brakes to freight trains, and the use of electricity to actuate them, for emergency stops at least. The delicacy and precision with which the brakes can be manipulated by electric attachments had hardly been suspected until these trials.

Another result of the trials is to call attention again to the question of common action among the railroad companies for experiments and tests. Interchange of cars is forcing this subject forward as regards car couplers, and it will probably soon come up in relation to heating apparatus. But there are other matters, not directly involved in the interchange of cars, which could well be investigated by the railroads in common.

Individuals and companies have long labored with a fine scientific spirit to perfect our knowledge of railroad appliances in all directions. The Altoona laboratory is a steady source of knowledge. The Master Car Builders' and Master Mechanics' Associations have done an invaluable work in determining standards and improving appliances, and their investigations have owed much to the liberality of various companies in providing place, appliances, labor, and power.

Of course it is in this same way that by far the greatest progress must be made in future. The most fruitful research must be carried on by individuals working privately. The conditions of anything like competitive tests or experiments are not often favorable to close and accurate investigation. Men cannot be set to thinking to order with the best results; nor would it be practicable or desirable to establish a general railroad bureau of tests and investigations. A bureau organization is open to the danger that its members become attached to theories and wedded to old ways. In its nature it is narrowing, and breeds prejudice. The French Academy has done its work in the conservation of the French language and literature, but progress has been made in spite of the Academy. On the other hand, there are always questions for experiment and study which are so large in their scope and so expensive to carry out that individuals cannot undertake them and railroad companies are very reluctant to; and it is to deal with such questions that concerted action among the railroad companies is almost necessary. The Chicago, Burlington & Quincy has made it possible to carry out a most valuable series of experiments, the cost of which might well have been shared by several of the railroad companies; and it would be well to consider an arrangement for undertaking other investigations in common, specially fitted men to be detailed for special studies, and the labor and expense to be divided somewhat in proportion to the benefit to be derived.

Probably the results of the experiments on tight and slack coupling are not yet convincing to all those who are most interested in the subject, and it is not likely that the coupler tests shortly to take place will settle the matter.

A series of experiments to accurately determine train resistance under different conditions of speed, grade, and curvature ought to be undertaken. This is perhaps one of the most important investigations that could be made. Starting with the valuable body of knowledge of the subject already accumulated, we might hope, by thorough experiments now, to arrive at laws that would be indisputable.

It is needless to multiply subjects for such experiments. There are only too many of them.—*Railroad Gazette.*

Large Fires in New York and Brooklyn.

A street car depot, the Belt line, with stables and some thirty other buildings—tenement houses, factories, stables, and shanties was burned in New York in the early morning of May 27. The fire, fed by a large quantity of grain and hay within the stables, and fanned by a brisk wind, raged for some hours absolutely uncontrolled, despite the most strenuous efforts of the department, which was hampered in its work by a lack of water. Eleven hundred and eighty-five horses perished in the flames, and about four acres of ground were burned over, the money losses aggregating close to $700,000.

Following this, the large cooperage shop of Lowell M. Palmer, in the eastern district of Brooklyn, containing from 75,000 to 80,000 empty sugar barrels, was fired by a discharged employe and entirely destroyed. The next day another big shop belonging to Mr. Palmer, on the opposite side of the street, took fire from some unknown cause, and also burned to the ground.

The next fire was in Richard's eight story storage warehouse on King Street, formerly Booth & Edgar's sugar house. The building contained about 8,000 bales of cotton, besides a large quantity of wool, rags, molasses, and wine. The fire was caused by a workman who held a lamp too close to a cotton bale while reading a mark. The elevator shaft quickly conducted the flames to all parts of the building, the workmen barely escaping with their lives. The losses in this instance are estimated at between $200,000 and $250,000.

The time has come when the owners of non-fireproof buildings should be compelled by law to put in the automatic water sprinklers. Probably all the above conflagrations would have been prevented had these devices been in use in the premises.

The Living Earth.

In a paper published in the *Indian Engineer*, an illustration is given of the life that dwells in nature, the phenomenon of earthquakes being cited. The peculiar terror of an earthquake lies mainly in the suddenness of its approach. Volcanic eruptions are usually preceded by vast rumblings, or jets of steam, or other unmistakable tokens. Hurricanes and cyclones, in like manner, have heralds that announce their coming. But with an earthquake there are no premonitory symptoms. The great earthquake which took place at Lisbon in the year 1755 found the people engaged in their ordinary occupations. All the shocks were over in about five minutes. The first shock lasted about six seconds. In that brief space of time most of the houses had been thrown down, and thousands of men, women, and children crushed beneath the ruins. At times the ocean lends fresh terrors to the scene. Thus at Lisbon a wave of water over 50 feet high rushed in among the houses, and covered what still remained. In the island of Jamaica on a similar occasion two thousand five hundred houses were buried in three minutes under 30 feet of water. Recent delicate scientific experiments have disclosed the fact that the surface of the land is never absolutely at rest for more than thirty hours at a time. Thus those great earthquakes which make epochs in history are merely extreme cases of forces that seldom sleep.

Freezing Mixture.

A liquid invented by Raoul Pictet, of Geneva, Switzerland, for use as a disinfectant, answers well as a freezing mixture for hardening microscope specimens. Sulphur dioxide and carbon dioxide, having been mixed and cooled, are compressed until they are liquid, and stored in siphons. When liberated, they rapidly evaporate, with great reduction of temperature. By this means mercury may be frozen, and animal or vegetable tissues rendered solid in a few seconds. It is as easily managed and more effective than ether, the odor being the principal objection.