major part of the matter; we wash it to carry off all the nitric acid, then we dry it. The yellow, bitter matter thus obtained is entirely soluble in water, alcohol, and ether; its yield is from 66 per cent of the aloes employed. Aloes dye wool without a mordant, in shades which go up to a deep brown. We obtain mode shades very varied with mixtures of orchil and aloes; we grind up, for example, 20 parts of orchil with 1 of aloes, and we dissolve them in soda. We obtain the same varied shades by the employment of aniline colors. A mixture of aloes and soda ash dissolves in water with a beautiful purple color, which gives in dyeing fast bluish grays, analogous to those which are obtained with fustic on an indigo blue ground. We dissolve 1½ parts of aloes in water, and we add 2 parts of soda ash; after 12 or 24 hours we dye. If before dyeing we neutralize the bath, and add to it afterwards chalk, we obtain green olive shades. —*M. Victor Preston, in Muster Zeitung.*

NEW YORK ACADEMY OF SCIENCES.

A regular monthly meeting of the section on "Geology and Mineralogy" was held at the School of Mines, on Monday evening, May 21, 1877, Dr. J. S. Newberry, President, in the chair. Dr. Martin offered a series of resolutions in regard to the scientific use of the public parks, praying that they may be guarded from encroachment and misuse, that they be made schools for taste and scientific instruction, and that they be stocked with plants and animals of scientific and economic value.

Dr. Newberry exhibited a photograph of the restoration of a mammoth from Siberia. It is 26 feet long, 16 feet high, and represents an animal eight times as large as an elephant. The president also showed a new fossil from the Catskills, which seems to connect our red sandstones with the old red sandstone made famous by Hugh Miller; also a plaster cast of the new crustacean found in the upper silurian and named *eosurcus*.

The first paper of the evening, by Mr. B. B. Chamberlin, was on

SOME CHOICE MINERALS AT THE CENTENNIAL,

and was illustrated by a large number of beautifully executed water-color drawings. Among the minerals referred to were the native copper and silver of Lake Superior. Drawings were shown of calcite crystals of a delicate wine color, also of stalactites and stalagmites from the lead mines of Iowa. Arizona sent a meteor weighing 1,400 lbs., and Mexico another. Among the beautiful things there were emeralds, rubies, and crystals of corundum from North Carolina. Mr. Chamberlin also spoke of the amazon stone from Pike's Peak, Cal., and exhibited beautiful drawings of this green mineral, some specimens of which have sold for $150. He described the diamond exhibit from South Africa as exceedingly interesting, embracing both white and colored stones. In the collection sent by the School of Mines, St. Petersburgh, was a topaz 5 inches in diameter, also emerald in rock, crocoite, and other beautiful and rare minerals. In other portions of the Russian exhibit, the magnificent display of polished stones and gems, lapis lazuli, malachite, labradorite, rhodonite, etc., made a splendid display.

THE EVOLUTION OF THE NORTH AMERICAN CONTINENT

was the subject of a paper by Dr. J. S. Newberry. The speaker said that the oldest rocks we know are themselves formed from sediment deposited by the disintegration of still older rocks of which we have no trace, and which may have likewise been the sediment from a still earlier continent. Of this older continent, we know not where it was or what it was; we only know that it was large enough to form a continent from its own ruins. Its history has been obliterated. Beginning with the old metamorphic rocks, known as the Laurentian and Huronian, which extend from Labrador to the Lakes of the Woods and as far north as the Arctic Ocean, we have the oldest known form of the American continent. Since that time it has been changing form by the formation of newer rocks. Owing to the cooling and contracting of the earth, there is a continual tendency to raise the high lands higher and depress the valleys lower; while at the same time other influences are at work, grinding off the elevations and filling up the depressions. In many places we dig or bore down to the old metamorphic shales and slates, surrounded by newer rocks. There are islands of these old slates in Texas, and the Black Hills were found by Messrs. Jenney and Newton to be an island of these old rocks very much disturbed, with the slates turned up on edge. They contain characteristic shells which connect them with the Potsdam of New York. The Pacific coast is a rock-bound shore that seems totally invulnerable; but the big rollers come in and pound away at the rocks perpetually, until the rocks are undermined and fall. Finally the rocks are pulverized and carried off to be deposited in the far distant sea. This sea has taken possession at different times of different parts of the continent. Wherever there was a depression, there has been a deposit of the remains of sea fish, spines, teeth, etc., on the bed of the sea. When the sea became shallow, another series of deposits, shells, etc., was made. Thus each period left a record of the physical conditions and the kind of life that existed in the sea at that time.

By the aid of the magic lantern, Mr. Russell threw upon the screen a series of pictures showing the shape of the continent in the Silurian, Devonian, carboniferous, tertiary, and and other ages; also pictures of the crustaceans, fish, reptiles, birds, and mammals that existed at each of these periods, together with ingeniously restored imaginary landscapes. This series ended with the introduction of man, the crowning glory of all. The lecture was well received and attentively listened to throughout.

What Liquor is Doing.

R. F. Mushet writes to the English press that Liquordom is killing trade, and, after mentioning the amounts spent annually, he remarks: "Now I say to manufacturers that it is all very well to reduce wages, and to economize their processes of manufacture, but unless they unite manfully, and put down the liquor fiend, he will crush them all. Besides the nine hundred and forty millions actually paid in the past seven years, the effect of swallowing the Satanic solution itself has lost and cost the nation at least an equal sum. If the days' works lost through drink in the last seven years were reckoned up, the amount of wages thus sacrificed would appear incredible. If manufacturers were to unite, as one body, and refuse to employ any man or woman who frequented drink shops, and would set the example by themselves abstaining, prosperity would soon return; for a sober England could compete successfully against all other nations."

We are most forcibly reminded of the truth of all this by an item in the *Labor Tribune* of Pittsburgh, which gives an account of the number of drinking shops in Allegheny City; the editor proceeds to use the stirring words: "When will men rise above this serfdom to a soul-enslaving appetite? Reform is impossible while saloons abound. Good wages cannot be long preserved where men encourage such vices. The working classes will be compelled sooner or later to acknowledge that abstinence must be practised before there can be any permanent amelioration in their condition."—*Coal Trade Journal.*

Paper Calender Rolls.

Paper calender rolls are almost as hard as iron, but are used in preference to iron because, while they will preserve their roundness, truth, and smoothness, they possess a certain amount of elasticity, and are therefore less liable to damage from the strain due to any foreign substance passing through them. The method of fixing the paper to the rolls is as follows: Disks of thin common brown paper, of a diameter large enough to turn up to the required diameter of roll and with a hole in the center of each large enough for them to pass freely over the roller shaft, are first cut out; then a number of similar disks, with the central hole made about four or six inches larger, are made. In putting these disks upon roll shaft, four having the smaller holes are put on, and then one with the large hole, the object being to insure that the paper shall press together at and towards the outer diameter of the roll, and not bind so tightly towards the center; thus the outer part of the roll is sure to be the most compact, and therefore the most durable.

To avoid bending the roll shaft by reason of any unevenness in the thickness of one side of the sheet of paper from which the disks are cut, every other disk is turned halfway around when placed upon the shaft. When the shaft is filled with tthese disks, it is placed under a very powerful hydraulic press, giving a pressure of about 200 tons, which compresses the disks solid together without the aid of glue or other adhesive substance. The disks are allowed to stand until they are compressed sufficiently to give room for additional disks, which are added in the same manner as before, the whole being again compressed. This process is continued until the intended length of the roller is filled with compound paper, when the latter is fastened as follows: Upon each end of the roll shaft a recess is turned, and a flange, made in two halves, is bored, smaller than the recess referred to by the amount allowed for shrinkage. The outer diameter of the flange is then turned, larger than the recess cut in the iron disks or flanges forming the end of the roll by the amount allowed for shrinkage; which flange is made slightly smaller in diameter than the intended size of the paper roll. The two half flanges are put in place upon the recess in the shaft, and the end flange or disk is shrunk on over the diameter of the two half flanges, thus firmly locking the whole to the shaft through the medium of the recesses on the shaft. This locking device is placed on one end of the roll before the paper disks are placed in position; then, after the disks are compressed and while the roll is in the hydraulic press, the flanges or disks at the other end are shrunk on. This plan is the one generally adopted in this country, that employed in England being considered deficient in that it gives the paper opportunity to expand ⅜ inch in the locking process. The rolls are then turned up in the lathe with a front tool for iron, the speed being but little greater than that employed to turn iron of equal diameter. The finishing is done by an emery wheel, the same as for an iron roll.

Dyeing Straw.

The season approaches when dyers have to take in hand articles of straw, and especially hats. As a rule, straw goods should be well steeped, and then treated with alum, orchil, and extract of indigo, and yellowed with turmeric. The shades most in demand are black, brown, and gray. Black (for 25 hats): Logwood, 4 lbs. 6 ozs.; bruised galls, 17¼ ozs.; turmeric or fustic, 4¼ ozs. Boil for two hours, and then steep in a beck of black liquor (crude acetate of iron) at 4° or 5° B., and rinse in several waters, dry, and rub with a brush of dog's grass, to bring up the polish.

Gray.—This shade can be obtained only on very white straws. Steep in a bath of soda crystals to which a little lime water has been added, to causticise the alkali. The purpose of this washing is to remove all traces of sulphur from the straw. For 25 hats, take: Alum, 4 lbs. 6 ozs.; tartaric acid, 3½ ozs. Add ammoniacal cochineal and extract of indigo, according to the shade desired. By making the one or the other of these wares predominate, we obtain a reflection more bluish or reddish. A little sulphuric acid is added to the beck, to neutralize the alkalinity of the ammoniacal cochineal. The hats are boiled in the dye for about an hour, and rinsed in water slightly acidified.

Maroon (25 hats): Ground sanders, 1 lb. 10 ozs.; turmeric, ground, 2 lbs. 3 ozs.; bruised galls, 7 ozs.; rasped logwood, 24¼ ozs. Boil in a kettle so roomy that the hats may not be bruised. Rinse. Steep over night in black liquor at 3° B., and rinse in several waters. To produce a deeper black, return to the first beck, which is strengthened by an addition of sanders and logwood. Polish as for black.

Havana.—This shade, being a degradation of maroon, may be obtained by the same process, reducing the proportions by one half or one third, and omitting steeping in black liquor. The hats may be soaked for a night before dyeing in 4 lbs. 6 ozs. or 6 lbs. 9 ozs. of alum.—*Moniteur de Teinture.*

NEW BOOKS AND PUBLICATIONS.

FIRES: their Causes, Prevention, and Extinction, combining also a guide to Insurance Agents. By F. C. Moore. Published for the Continental Insurance Company of New York city.

Although this work is primarily a manual of instruction for insurance agents, and is especially intended for the employees of the above-named corporation, it embodies much that is new and valuable on the subject of fire prevention. There is of course no one class in the community who have a more direct interest in lessening the number of fires than the fire underwriters, and consequently it is to them we may look for thoroughly practical suggestions, based on the best experience and not combined with doubtful speculations. As a means of information of what is dangerous, as likely to cause fires in workshops, factories, and buildings of all kinds, how much the rate of insurance risks are enhanced by the presence of such perilous material, how to prevent fires, how to deal with them, and lastly, as a full exponent of the rights and duties of both insurer and insured, we can cordially commend this book. It contains much that we do not think has ever been published elsewhere, and it is written clearly and well.

STEAM INJECTORS: their Theory and Use. From the French of M. Leon Pochet. Price 50 cents. New York city: D. Van Nostrand, 23 Murray and 27 Warren streets.

As the injector is now coming into use for other purposes than the feeding of boilers, there is a large demand for literature concerning its theory and action; and this M Pochet has done much to supply. The mathematics of the subject are exhausted in his little treatise.

ENGLISH SCIENCE LECTURES.—Messrs. Macmillan & Co., of Astor Place, New York city, are now issuing series of the lectures addressed to popular audiences which are delivered in London, Manchester, and other cities in England. We have now before us one on "the Earth's Chemistry," by J. Norman Lockyer, one on "Technical Chemistry," by Professor Roscoe, and one on "the Succession of Life on the Earth," by Professor W. C. Williamson. The names of the lecturers guarantee the accuracy and value of the information contained in the discourses; and we are glad to find that the language employed in them is singularly clear and precise, and in every way adapted to the purposes of popular instruction.

Inventions Patented in England by Americans.

From May 2 to May 7, 1877, inclusive.

CARRIAGE LIGHT.—A. H. Phillippi, Reading, Pa.
FRINGING MACHINE.—J. B. Lincoln, Providence, R. I.
LIQUORING SUGAR.—O. H. Krause, Jersey City, N. J.
PEN, ERASER, ETC.—S. C. Thompson, New York city.
PHOTO-RELIEF PLATE.—W. H. Mumler, Boston, Mass.
PLATE PRINTING PRESS.—R. Neale, Brooklyn, N. Y.
REED ORGAN.—L. K. Fuller, Brattleboro', Vt.
SHEET METAL CAN.—L. V. Sone, New York city.
VARNISH, ETC.—G. Wolff, Philadelphia, Pa.
VENTILATOR.—T. W. Bracher, New York city.

DECISIONS OF THE COURTS.

United States Circuit Court—District of Minnesota.

PATENT SEAT.—DAVID C. PRICE VS. JAMES E. KELLEY.

[In equity.—Before Nelson, J.—Decided February, 1877.]

The patents granted to David C. Price for improvements in portable show and circus seats are not infringed by the use of chair seats placed upon every alternate board of the ordinary circus seats.

OPINION OF THE COURT.

Nelson, J.:

The complainant obtained two patents, Nos. 125,329 and 134,486, dated respectively April 2 and December 31, 1872, as the original inventor of an "improvement in show and portable show seats." He also secured patent No. 163,537, to be issued to himself as the assignee of the original inventor, Wm. H. Shuey, and dated May 18, 1875, "for an improvement in circus seats." He brings suit against James E. Kelley, because of an infringement of his patents.

The complainant declares his invention, No. 125,329, has for its object "to provide an improved arrangement of seats for use in circus and other shows, the same being constructed with a view to the comfort of the spectator, while possessing the necessary qualities of security when erected, and compactness when packed for transportation." He claims as new an "improvement consisting of notched support, straps or bars, and boards and chairs, constructed and arranged as shown in a diagram;" also chairs provided with slots or recesses through which boards can pass, and "the seats be moved along to the required position;" also "the combination, with the supports and boards, of the binding bars or straps and stakes to secure the supports."

The diagram of this invention shows the ordinary stringers used in circus and outdoor portable seats, elevated and adjusted on an inclined plane, the stringers being notched for the support of boards and elevated at the back by means of trestles. Every alternate board has a chair seat upon it, and the board immediately in front is used as a foot rest. The boards upon which are the chairs or seats, as well as the foot rests, are secured in place at each end by a zigzag-shaped strap passing from the top of each stringer over the boards to the bottom and terminating in an eye, through which a stake is driven into the ground.

In No. 134,486, every alternate board is suspended at each end from the under side of the stringer by a band of metal running the length, or nearly so, of each one, and by forming the shape of a clevis, upon which the ends of the board rest, secures it in position like a hanging shelf, and is called a foot rest. The complainant claims as new "the series of foot boards or rests, in combination with the supports (stringers) and braces" (trestles).

In No. 163,537, the invention is claimed as a "show seat consisting of the frame, the back formed of a single piece of bent wood, pivoted to the side of the frame, and jointed braces, the back being constructed to fold around and closely embrace the seat frame in order that the upper surfaces may be flush."

The defendant alleges want of novelty, denies that the patents are for original inventions, and denies that he has infringed either of the inventions and patented improvements.

It is admitted that there is no novelty in using stringers and trestles to form portable show seats, nor in making every alternate board on the stringers a foot rest; but the combination of all these in connection with a chair seat and folding-back, and straps to secure the ends of the seat boards in position, is urged by the complainant's counsel as new and patentable, and the infringement of this combination is charged.

An examination of the manufacture of the defendant shows that it has nothing in common with that of the complainant, except the notched stringers and the trestles, and the metal straps used to secure the seat boards, the space between the strap and the stringer at the notches being sufficiently open to allow the ends of each board to pass easily through.

The chair seat proper has nothing in common except a cushion. The Price or Shuey patent has an open back in the shape of a yoke, pivoted to