

Correspondence.

A New Calcimine Deposit.

To the Editor of the SCIENTIFIC AMERICAN:

South Dakota has long been noted for the diversity of her mineral deposits, the Black Hills country being especially rich in gold, silver, and countless other minerals. The eastern part of the State is now about to become a mining country also, through the recent discovery of a large bed of carbonates. In boring a well near Antelope Lake, a few miles from Webster, Day County, a Mr. Hartsough brought to the surface a sort of jelly-like substance, of dark slate color, and soon found this underlain by a vein of pure white of similar nature. It is in the form of a stiff paste, absolutely without grain or grit, and on exposure to the air soon dries and hardens. Experiments show it to be an excellent material for polishing all sorts of metals, and it is pure enough to be used as a tooth-powder or any similar purpose. Samples were taken to chemists in St. Paul and the analysis is as follows:

Per cent.	Per cent.
Calcium oxide—lime, 47.70	Combined as—
Magnesium oxide..... 87	Carbonate of lime..... 85.18
Carbonic acid..... 38.43	Carbonate of magnesia..... 1.82
Aluminium oxide.....	1.18
Insoluble residue—mostly silica, 8.85	8.85
Moisture.....	2.97
	100.00

It shows 85.18 per cent. of pure carbonate of lime and 1.82 per cent. carbonate of magnesia. Mixed with water, it makes a perfect calcimine, which readily takes the most delicate tints, dries quickly, and will not crack, flake, or rub off. Mixed with oil it makes a fine quality of putty. It is proposed to at once put a force of men to getting out the material and preparing it for market as calcimine.

The bed is supposed to cover an area of about three acres, several test borings having been made. The formation is peculiar, as the ground had been used for years as a sand pit, from which large quantities of plastering sand have been removed. At about eight feet from the surface a layer of coarse black sand is found, unfit for use, and this had never been penetrated. Mr. Hartsough had noticed that trees seemed to flourish in this part of his farm, and concluded that there must be water near the surface, and made the borings, with the above results. Under the whitening is found coarse gravel and abundance of water. Mr. Hartsough thinks the entire bed is made up of decom-

posed shells, as on the top of the layer can be found the forms resembling snail shells, which soon crumble to powder, and form the same substance as the main body. The find is certainly curious, and contains the possibilities of a profitable industry. The owner says that almost the entire amount of material of this kind now used in the United States is imported from Italy, and that this is superior in every way to the imported article.

J. M. PATTON.

Aberdeen, S. D.

Simple Photographic Lens Adaptor for Orthochromatic and Telephoto Work.

The use of orthochromatic plates for producing better color values in negatives, especially in the more accurate rendering of the different colors in a painting, is now quite extensive.

But to the average amateur photographer provided with a folding camera of popular size, like a 4 × 5 or 5 × 7, the extra bother of carrying additional plates and holders for obtaining such results is annoying. Nearly as good pictures may be obtained by photographing through colored screens on ordinary plates. The same reason is applicable in the taking of distant or telephoto views, for which usually a special additional expensive lens is required.

To assist the amateur in greatly varying and utilizing the lens he already possesses to the uses above described, including several others, Mr. U. Nehring, of this city, has lately introduced what is termed multi-chromatic ampliscope lenses arranged to be inserted adjacent to the diaphragm of the lens used. These lens adapters have the property of changing the character of the focus of the regular lens, either by elongating or shortening it, thereby adapting the lens to take a view with a less or greater angle than it ordinarily would.

The front lens in the lens tube is unscrewed out and the adapter lens dropped in next to the diaphragm, after which the front lens is rescrewed in place, the change being made very quickly. When one is cramped for the proper distance to secure a picture, the adapter will shorten the focus sufficiently to enable the operator to obtain a picture the right size at a wider angle. Special colored lenses are inserted in the same way for photographing paintings and other colored objects adapted to secure the best effects. Other adapters render the lens suitable for copying at short distances, and for enlarging. In adapting a lens for telephoto work a special tube is provided which is slipped over

the regular lens tube and carries a negative lens for extending the cone of rays, thereby greatly lengthening the focus and magnifying the image of the distant object.

There is also an angular disk which will cut off half the picture when thrown upon the plate, so that duplicate or so-called double pictures can be easily made. A focusing lens is also included. In all something like a hundred different combinations, it is said, can be made with the several lenses and tubes, and all put in a box small enough to be readily carried in one's pocket.

This collection of auxiliary lenses and adapters promises to be very serviceable in the hands of amateurs, in consequence of the varied quality of work that can be done without the need of expensive different lenses.

Developer for Underexposed Plates.

A developer which has been used with success for underexposed plates is given in the following formula:

Water.....	1,000 cubic centimeters.
Metol.....	4 grammes.
Hydrochinon.....	2 "
Sulphite of soda.....	60 "
Carbonate of soda.....	60 "

This solution is to be recommended, as it will keep for a long time and does not stain the plate.

The Current Supplement.

The current SUPPLEMENT, No. 1281, has many articles of unusual interest. "California Hydraulic Mining Under the Caminetti Act" is an elaborately illustrated article dealing with the subject in an authoritative manner. "Electric Ignition of Gas and Gasoline Engines" is by P. P. Nungesser. "Foreign Power Section of the Paris Exposition" is accompanied by a large engraving. "The Means of Defense in Animals," by Prof. Philip P. Calvert, of the University of Pennsylvania, is concluded in this issue. The five articles have been of unique interest. "Archæology of Lytton, British Columbia" is by Harlan I. Smith.

Contents.

(Illustrated articles are marked with an asterisk.)

American engineering competi- tion.....	34	Developer for Underexposed plates.....	41
Anti-strategy of.....	40	Gun, Canet.....	56
Aquila, a new star in.....	40	Inventions, index of.....	45
Battleships, our.....	34	Inventions recently patented.....	44
"Bellesisle," experiments with the.....	41	Inventions, tips for.....	42
Books, new.....	45	Lens, simple photographic.....	44
Calcimine deposit.....	44	Marking gage.....	42
Cars, pressed steel.....	35	Paris Exposition notes.....	35
China and the Chinese.....	37	Railway, London's underground.....	40
Congo region, French.....	35	Serum, anti-alcohol.....	35
Congress, Electro-chemical.....	42	Shutter, fireproof.....	36
"Deutschland".....	34	Turbine, steam.....	36
		Viaduct, Riverside Drive.....	33, 38

RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

CORN HARVESTER AND SHOCKER.—JOHN FEDERMAN, 1249 Market Street, Harrisburg, Penn. The object of the invention is to provide a corn-harvester of simple construction and practical operation, which permits two rows of corn to be quickly cut, gathered into a shock, and then dropped in vertical position and bound before being released from the machine. The features of novelty are to be found in the means for supporting the stalks of corn while being gathered into a shock, and the mechanism for dropping the bundle and holding it within the machine in vertical position, but resting on the ground, while being bound into a shock.

CORN-HARVESTER.—WILLIAM J. LANG, Oyens, Iowa. The machine is so constructed that the ears of corn are husked and detached while the stalks are standing in the field. The ears are positively fed to the husking mechanism so that they are broken from the shuck and subsequently conveyed to an elevator. The husking mechanism can be adjusted so that the machine is adapted for various conditions of the corn. The bearing-wheels can be adjusted to arrange the body of the machine relatively to the corn. In a word, every provision has been made to simplify the work of the operator and to produce a machine which will perform its functions with an efficiency that leaves nothing to be desired.

FLOW-BEAM.—RICHARD H. PURNELL, Rosedale, Miss. The beam is formed of a section of pipe doubled closely upon itself. Couplings secure the doubled portions of the pipe rigidly together. On the forward, doubled end of the beam, is a clevis through which a bolt is passed, extending between the doubled portions of the beam. The doubling of the pipe forms a non-circular clevis end without further labor. The bolt passed between the pipe portions obviates the necessity of drilling a hole through the beam.

Mechanical Devices.

WINDMILL-GEAR.—GIDEON J. MOORE and FRANK E. COOK, Eureka, Cal. The inventor has simplified the driving mechanism of a windmill. He employs gearing in such a manner that the driving motion of wind-power is simultaneously and well-nigh directly applied to the pump-rod at opposite sides. The construction is also such that the cranks, crooked arms, or walking-beams to be found in almost all windmills to bring the pump-rod to the center, are dispensed with.

BOAT-LOWERING MECHANISM.—CARL SCHNEEMANN, Bremen, Germany. This invention comprises a motor and a movable davit. A drum is geared directly to the motor, and a push-rod is geared to the motor through the medium of a clutch. The push-rod serves to throw the davit outward, and a connection between the drum and davit throws the davit inboard. Tripping devices are driven in time with the push-rod and serve automatically to throw the clutch and motor-controlling device in time with the push-rod.

DRIVING MECHANISM.—ANTON E. H. J. THOELLEN, Ansonia, Conn. The driving mechanism is intended for use in connection with machinery, motor-

vehicles, bicycles, and the like. Ratchet-wheels are mounted on a driving-shaft, with which wheel-levers coast. A vertically-swinging pawl is carried by each lever and is engaged by a spring pressed thrust-pin in a boxing on the upper side of each lever. Owing to the short fulcrum of the levers, a small amount of power will be greatly increased when applied to the short members, and this increased power will be considerably augmented by the ratchet-wheels.

PEDAL-ACTION.—ROBERT K. THUMLER, Manhattan, New York city. The inventor has so secured the pedals in their piano-cases that they can be readily removed and replaced, and has provided them with spring-hinge supports, so that they will be noiseless in operation.

MACHINE FOR CLEARING SILK OR OTHER TEXTILE THREADS.—CHARLES G. DIEDERICHS and MARIE A. E. MARQUELET, Ste. Colombe les Vienne, France. This machine rapidly clears threads and frees them from defective knots, wisps, irregularities in thickness, doublings, and the like. On one side of a winding-spool, driving mechanism is arranged, and on the other, a brake. The thread is adapted to pass through a trimmer movable by irregularities of the thread. An operative connection is provided, whereby the movement of the trimmer will throw the winding-spool from an engagement with the brake. Only a minimum force is required for disengagement. The result is that the machine suits all kinds of thread, even the very finest. Stopping is immediate and does not involve a risk of breaking the thread.

RAISIN-SEEDER.—FRANK H. PETERMAN, Manhattan, New York city. The machine is arranged to insure a complete separation of the seeds from the pulp without unduly injuring the latter by tearing. The operative parts consist of a cylinder with an opening; a flexible belt passed over the cylinder and having its ends passed through the opening and secured to the inside face or periphery of the cylinder; and pins mounted on the flexible belt. A member is attached to the cylinder and fits in the opening to form a continuation of the periphery of the drum. Pins for impaling the raisins are attached to the member.

COTTON-PRESS.—ALBERT L. TREESE, Jennings, Oklahoma Territory. The purpose of the invention is to provide a cotton-press for forming cylindrical bales by rolling a continuous length of batting. By this arrangement not only is a more compact and easily-handled bale produced, but also one less liable to become fired.

Railway-Appliances.

CATTLE-GUARD.—ROBERT F. ADAMS, Oakman, Ala. This novel cattle-guard is designed to be placed along the line of a railroad-track at the abutting ends of a division-fence, where a break in its continuity must necessarily occur in order to give passage to the railway-tracks. The invention consists in a peculiar construction and arrangement of gates arranged to be automatically operated by the animal.

LOCOMOTIVE-EXHAUST.—EBENEZER N. SLOCUM, Fort Smith, Ark. In order to insure a free escape of the

exhaust-steam from the engine cylinders without danger of creating back-pressure, to provide a perfectly-balanced non-pulsating draft in the fire-box and smoke-flues, and to reduce the consumption of fuel, Mr. Slocum increases the distance from the base of the draft-pipe or stack to the tip of the exhaust-nozzle, so that it requires considerable time for the unrestrained steam to travel from the nozzle to the stack.

LOCOMOTIVE-PILOT RIGGING.—JAMES F. DUNN, Salt Lake City, Utah. The invention relates to means for mounting a coupler on a locomotive-pilot, so that the coupler may be raised to inoperative position or lowered into line with the face of the pilot. The pilot is thus permitted to operate effectively. The invention also embodies means for mounting the coupler draw-head, such means serving to brace the buffer-beam against the cylinder-saddle.

Puzzles, Games, and Toys.

PUZZLE.—ALBA C. BOOTH, Burlington, Vt. The puzzle is based upon the story of Jonah and the whale and is designed to afford considerable amusement and to require considerable skill in its solution.

GAME-BOARD.—WILLIAM H. HILLYER, Atlanta, Ga. The essential feature of the invention is to be found in the use of four permanent horseshoe magnets. It is the object of the game to strike a steel ball with a mallet, so that the steel ball will be made to adhere to one of the magnets.

MECHANICAL TOY.—GEORGE WALE, Jr., Everett, Mass. The toy is made in the form of a football player, the arms of which hold a ball. The arms, moreover, are releasably held and work with a swinging leg, also releasably held, so that when the arms are made to drop the ball, the leg is thrown to kick the ball.

Miscellaneous Inventions.

BOILER-TUBE CLEANER.—WORTHINGTON H. INGERSOLL, Hamburg, N. J. The cleaner is a member of that class of devices in which a steam-jet is employed. A twirling motion is given to the steam-jet, which produces suction, whereby air is drawn into the flue. This air, instead of being thrown directly into the flue, is deflected outwardly and finally discharged toward the center, near the periphery of the flue. Thus the inventor secures a plentiful supply and effective distribution of the heated air. The blast of steam and hot air is very effective where it is most needed—that is, at the periphery.

DEVELOPING-TRAY.—STUART B. MOORE, Manhattan, New York city. The invention comprises a tray which is adapted to receive the plate to be developed without exposing that plate to white light. The tray is provided with a reservoir so arranged that the solution can be admitted to the chamber containing the plate and then discharged when desired. The tray is also provided with oppositely-located windows, which are provided with a plate of any transparent, non-actinic material (ruby glass or celluloid), so that the progress of development can be observed in broad daylight.

SPLINT.—JAMES G. HUGHES, Sheboygan, Wis. This splint is especially adapted for use on the lower limbs, but may also be employed on the upper limbs. The construction is such that the splint can be simply and readily applied, and that the fractured member can be examined at any time and the wound properly dressed, without disturbing the union of the parts. The splint can be adjusted to secure perfect extension and fixation without pressure on any part of the limb, thus preventing shortening or deformity after a fracture. Pneumatic or hydraulic pads are employed to distribute the pressure evenly.

FENCE-WIRE LOCK.—EDWIN L. FROGGATT, Spearfish, S. D. The lock consists essentially of a tongue on the fence-post, opposed to which tongue is a recess whose wall is provided with a longitudinal slot and a transverse slot. The wire is placed between the tongue and the vertical wall of the recess, entering the transverse slot. The tongue is then driven to an engagement with the walls of the recesses, so that a rib on the tongue will enter the longitudinal slot and kink the wire.

PROCESS OF TREATING MINERAL WOOL.—ALEXANDER D. ELBERS, Hoboken, N. J. Though mineral wool has been widely used as an insulator of heat, cold and sound, few devices have thus far been either made known or put into operation, whereby this material can be applied in a practicable and marketable manner, except to pack it in its loose state into the spaces to be deafered. This method is both costly and defective, for which reason Mr. Elbers prefers to mold the wool into bricks or sheets, which he finds are far more efficient than the loose material, in addition to their being less expensive.

COG-WHEEL WITH DETACHABLE TEETH.—GEORGE DORNAUF, Frankfurt-on-the-Main, Germany. This cog-wheel consists of a wrought-iron or steel rim of great strength, cogs of wood or metal, and wedges securing the cogs in place. The invention is designed to permit the cogs of such wheels to be attached, detached, and exchanged with despatch, and to render the construction of such wrought cog-wheels simpler and cheaper than those now in use.

CATTLE-STANCHION.—WALTER D. CASE, Granby, Conn. The purpose of this invention is to provide a cattle-stanchion by which the stock can be securely yet comfortably held and which can be easily manipulated. This purpose is attained by providing the stanchion with upper and lower end sections adapted to be shackled to the sills of the stable and having each a semicircular shape. These end sections carry side sections, one of which is hinged to the lower end section and secured to the upper end section by certain novel devices forming an automatic latch.

WINDOW.—PASQUALE C. PASCALE, Manhattan, New York city. This invention relates to stationary, sliding, pivoted, or hinged sashes for windows. The sashes are provided with hinged frames which are opened in such manner as to uncover the entire space within the boundaries of the members of the sashes. When two sashes are employed, the upper member of the hinged frames of one sash and the lower members of the hinged frames of the other sash constitute the meeting-rails of the sashes.