

of ball and wad, when the pressure is at its greatest behind them, must be very considerable, and in some cases is no doubt enough to add one or two thousand pounds to the pressure above enumerated. This pressure is greater than the thin and possibly defective muzzles of some shotguns or muskets will bear. Any opening in the obstruction that will give vent to the compressing air without having to overcome the momentum of a solid body will very much modify the liability of rupture at the muzzle.

#### Deep Water Fishes.

Remarkable additions have been made to our knowledge of the animals inhabiting the profound abysses of the sea within the last few years, and almost the last few months, by means of the system of dredging persistently and regularly carried on from government vessels.

One of the results has been to reveal the fact that a remarkable group of fishes—*Malacosteus*—have their home only in those hidden depths. We cannot call them a "group" in respect to ichthyological classification, for they are of very diverse types; it is only that certain very strange features are found common to them all, and these features are doubtless associated with the abysmal region which is their home.

The most striking of their peculiarities of form is the disproportionately enormous development of the jaws and jaw apparatus. The skull, the true head of the fish, is quite remarkably small, while the parts representing the maxillary structures of other fishes are elongated to such a degree that so far as they are concerned one could easily swallow an object much larger than his own body, several times as large, in fact. A glance at the figures shows this much better than many words of description. What object is served by this peculiar form is not evident, and yet it apparently pertains in some way to the depth at which they live.

The feeble development of bone cells, from which has come the use of the name *Malacosteus* (soft bones), was suspected by some to be accidental; but now it is found that it pervades the group to a certain extent, though more completely shown in *Malacosteus* than in any of the others, and associated also with a softness and looseness of the other tissues. The suggestion has been made that this lack of firmness and solidity may be due to the great pressure borne by the fishes at such enormous depths; that this tends to sustain the tissues and hold them in place, thus giving the animal power to act firmly and strongly; but such a supposition can scarcely be maintained.

In fact, this matter of pressure upon living tissues being caused by great depth, or any depth whatever, has been sadly misunderstood. The theory is totally untenable, and it is singular that it is so constantly brought forward and urged. That pressure must necessarily come upon any cavity, either filled with air or not, is certain, the pressure being proportionate to the depth. This has been shown most strikingly in connection with the attempts of the Fish Commission to lower electric lights to a great depth. The lights have been extinguished invariably, because it has been found impossible to prevent the entrance of water into the glass vessels, even when the points of insertion of the wires have been secured with every care available; it seemed as though the water had been forced through the pores of the glass itself by the pressure. Is it to be supposed that any living tissue could retain its vitality under such a strain? And still again, any motion whatever by the animal would be an absolute impossibility. If he was placed in a vise, no power of the screw could "set" him so hard and fast as the pressure of say 2,000 fathoms.

The simple fact is, that every portion of the body of the fish, every single microscopic cell, is permeated by fluid, in perfect correlation with the surrounding water; and as the internal and external reactions are equal, there are no differences of tension, and of course no pressure is manifested or felt.

We cannot believe, therefore, that the conjecture as to this cause having anything to do with the looseness of structure has any foundation in truth. A much more rational idea appears to be this: That the gloomy depths of the sea water are totally and constantly at rest; all is quiet, and motion is performed with so much freedom and ease, that firmness of tissue, either osseous or muscular, is not required.

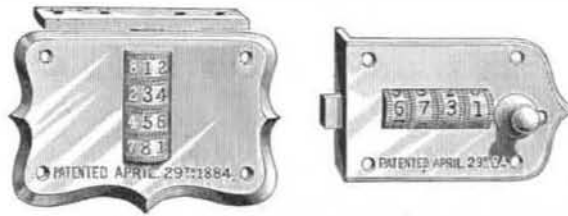
And with this quiescence of the water in their home is associated another characteristic which pervades the deep sea group to a certain extent, which is the great slenderness and delicacy in form of the fins and other appendages, and in some instances even of the posterior portion of the body itself, as strikingly shown in *Macrurus globiceps*. The fins themselves are often only indicated in position by exceedingly delicate fibers or rays without connecting membrane.

Another strange, and as yet scarcely intelligible, feature shown by many of these fishes, but not by all, is the presence on the head or along the sides of curious rounded masses, "showing mother-of-pearl colored bodies embedded in the skin." These have been conjectured to have some relation to the eyes, or to sight, but there is apparently small ground for such a belief. There is no reason to think that they have any connection with the nerves of vision, nor have they the structure which could render such a connection of avail. Dr. Gunther suggests that they may be "accessory eyes," or may be producers of light from phosphorescence. Even a suggestion from him is worthy of respect, but what these organs could achieve in the intense darkness of the sea bottom must be infinitesimal in effect. In none of the other

types is this strange feature more fully developed than in *Malacosteus*. Almost all of these fishes show evidence, from the nature of their jaws and teeth, of being strongly voracious in their habits and rapid in movement, and it is not impossible that phosphorescence, if pertaining to these "mother-of-pearl" bodies, might serve as a lure for their prey. Perhaps this is as probable a conjecture as any other.

#### IMPROVED PERMUTATION LOCK.

The accompanying engraving illustrates permutation locks intended for trunks, valises, satchels, wardrobes, bureaus, drawers, desks, etc., and for which letters patent were recently issued to Mr. W. M. Brooke, of Brooklyn, N. Y. The arrangement of the lettered disks is such that



#### IMPROVED PERMUTATION LOCK.



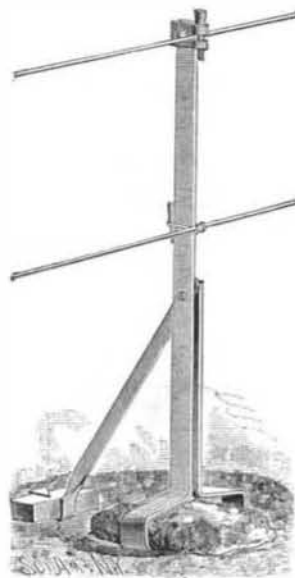
different combinations can be conveniently formed. The superior excellence of these locks lies in the fact of their being burglar-proof and keyless, and also because of their simplicity of construction, durability, strength, and ease of management.

Messrs. Sias, Swasey & Co., of 78 Broad St., Room 14, New York, are the sole managers, and propose to manufacture pad locks and to dispose of British and Canadian rights to manufacture, and also privileges for manufacturing in the United States, except for pad locks.

This is a substantially meritorious and ingenious invention, worthy the investigation of those interested in this branch of manufacturing industry.

#### AN IMPROVED FENCE POST.

The annexed illustration shows an invention recently patented by Messrs. G. Moll and F. Hottes, of Mascoutah, Ill. The post is made of bar or band iron bent to form a flattened loop at the lower end, and then extended upward to about the middle. The loop is formed to receive a block of stone or a brick. The upper end of a brace is pivoted to the post as shown; the lower end is bent to form a loop for receiving a brick or block. Loosely held to the upper end of the post by a rivet is a U-shaped clip which may be swung to opposite sides of the post, and which is cut away at the head so as to form two loops projecting from the edge of the post. The wire is held in place by a pin passed through the loops. The second wire is held by a U-shaped wire having hooks



#### MOLL & HOTES' IMPROVED FENCE POST.

at the ends of the shanks, and held to the post by a wedge-shaped pin driven between the cross piece and the post. The post is sunk in the ground as far as may be necessary, the earth bearing upon the blocks in the loops holding it firmly in place. By pivoting the brace and clip, they may be swung to opposite sides without digging up the post. Our engraving shows the post ready to be set in the ground.

#### Poisonous Sleep Producers.

The death of a medical man—Dr. John Middleton, late Surgeon-major in the 2d Life Guards, but at the time of his decease a practitioner at Stockton—will again draw attention to the mischievous and, as we believe, wholly indefensible practice of giving and taking such depressing narcotics as chloral and bromide of potassium as a remedy for sleeplessness. Sleeplessness is always wakefulness in one or more of its multitudinous forms, and the recourse to narcotic poisons for its relief is utterly unscientific and deplorable from a therapeutical point of view. It is as clumsy in theory—in so far as it can be said to have a theory—as

knocking a man down because he needs rest. What is it that prevents the natural and physiological rest of the body at rhythmical periods? The brain is as truly a part of the body as the stomach, and it is as much a fault of the organs of the mind to prevent sleep by mental worry or wakefulness as it is a fault of the stomach to render sleep impossible by bad digestion. No intelligent practitioner dreams of narcotizing the nerves of the gastric organ to promote sleep. Why, in the name of common sense, should any medical man for an instant think it legitimate to narcotize the brain because it exhibits some disturbing irregularity in its functions?

Sleep is not a special prerogative of the brain. Every organ sleeps, and general sleep is the aggregate of many sleeps. It is time to protest against this clumsy procedure. If we do so warmly, it is because we feel that the mistake is of common making. It is so much easier to write a prescription or make up a bottle of medicine or a box of pills with one of the rank poisons that mimic sleep, and as they do so deprave cerebral and nerve tissue, than it would be to search out the real and active cause of wakefulness. When will the progress of professional enlightenment reach that point at which all those cloaks of ignorance that depend for their significance on the negative *in* are ostracized from our nomenclature? Dr. Clifford Allbutt has just pleaded forcibly and eloquently for the discarding of that wondrously silly word "indigestion." Will no spirited scientist help to exorcise the haunting folly that clings to the term "insomnia"? All terms with *in*, negative, imply ignorance on the part of those who frame and use them, and which is worse, are content with the state of knowledge arrived at, or are too indolent to extend and improve it. Who shall sound the depths or measure the range of the stupendous unknown over which the audacity of a specialty and the apathy of a profession conspire to cast the veil of "insanity"? There are more than a score and a half of known causes or forms of sleeplessness, each one requiring direct and specific treatment, and yet, as by common consent, the profession sanctions the abuse of such drugs as chloral and bromide as "poisoned sleep" producers. No medical man is justified in undertaking the treatment of his own maladies. It is impossible that he should so far step out of himself as to be able to form a reasonable judgment of his case *objectively*; and no practitioner has the justification of science for the recourse to narcotics as remedies for sleeplessness except when an exceptional pain is the accidental disturber of a sleep function, or a habit of wakefulness may be broken by an occasional dose of the stupefier.—*Lancet*.

#### An Improved Photo Developer.

At a recent meeting of the Society of Amateur Photographers of New York, Mr. H. J. Newton communicated a formula for an improved developer for gelatine plates which he had found by experiment to be particularly valuable in the development of instantaneously exposed plates, and also to produce negatives of a superior color and quick printing quality. He makes two stock solutions in the following proportions:

##### Stock No. 1.

Water..... 1 ounce.  
Dried carbonate of soda in which the water has been driven out..... 48 grains.  
Pure carbonate of potash..... 48 grains.

##### Stock No. 2.

Water.... 1 ounce.  
Sulphite of soda..... 48 grains.

To develop a 5 x 8 plate with a drop shutter exposure he pours in the graduate  $\frac{1}{4}$  of an ounce of 6 drachms each of No. 1 and No. 2, and then adds  $1\frac{1}{2}$  ounces of water and 6 grains of dry pyrogallol acid. It may be mixed half an hour before use if desired. The sulphite of soda keeps the solution clear.

If the exposure has not been too long, the developer will rapidly bring out the image; the development should be carried on until the whites of the shadows have turned a steel gray color.

If the plate has been overexposed, the developer should be diluted with water and restrained with two or three grains of bromide of sodium to each ounce of developer, which may be in the form of a 10 per cent solution.

If the plate has been known to have been greatly overexposed, development should be commenced with 1 drachm each of No. 1 and 2 to  $2\frac{3}{4}$  ounces of water and 3 grains of dry pyro, adding a little of each at a time should the picture develop too slow.

#### Pilocarpine for Deafness.

For all recent cases of deafness due to labyrinthine disturbances, whatever the primary cause may have been, Politzer tries the subcutaneous injection of a two per cent solution of the muriate of pilocarpine. He injects four drops at first, and gradually increases the dose to ten drops daily. He gets fairly good results in about one-half of the cases. I have seen three cases of persons totally deaf, who, after being treated in this way, could hear and understand loud speech spoken at the distance of a few inches from the ear; and Politzer has had one case of perfect recovery of the hearing after it had been absent for three years, and several other very satisfactory results following the use of this drug. He is about to publish the results of his experiments with the history of some of the cases. It is not known how pilocarpine acts in these cases, but the benefit derived from its use is certainly great in some of them. *Berlin Med. and Surg. Journal*.

ENGINEERING INVENTIONS.

A balanced slide valve has been patented by Mr. Ashbel Welch, of Lambertville, N. J. This invention covers a simple, practical, and economical arrangement whereby all sticking of the valve is prevented, the cylinder may be relieved of water of condensation, and the uniform wear of the valve face and seat is assured.

A car coupling has been patented by Mr. Edward L. Raynsford, of Susquehanna, Pa. The coupling hook and drawbar are supported by a bearing plate kept in place by a collar and provided with cross head ends sliding in bearings attached to the car frame, the whole making an improved device to promote convenience and safety in coupling and uncoupling.

A coal chute has been patented by Mr. Joseph E. Clifton, of Geneseo, Ill. The invention covers an improved arrangement of the latch for fastening up the balanced apron of the coal chute, also of a brace attachment to the door in connection with the balanced apron, and an attachment to facilitate and insure the latching of the door, etc., the whole making an improved arrangement for coal chutes used for coaling locomotive tenders.

A car brake attachment has been patented by Messrs. Eli M. Holcomb, of Bay Springs, and Frederick E. Miller, of Eveline, Mich. The invention consists in the combination with a ratchet wheel and a beveled pawl pressed against the wheel of a vertically movable plate with a downwardly projecting wedge and a prong surrounded by a spring, which presses the wedge plate upward, the parts being protected from rain and snow, and the device enabling the brake to be quickly released.

A marine engine governor has been patented by Messrs. Alexander H. Bell and Aspinwall Fuller, of New York city. A two part spherical valve seat is placed in the shell, provided with flanges to keep it in place, and with perforations for the passage of steam and the valve stem, a spherical valve with perforations for the passage of steam and a weighted valve stem to control the valve, with a stuffing box and flexible connecting base to prevent steam from escaping around the valve stem.

MECHANICAL INVENTIONS.

A lifting jack has been patented by Mr. Erick J. Qvarnstrom, of Norway, Mich. The invention consists of improvements in the construction of screw jacks arranged to shift the hoisting screw after the load is raised, to move the load while supported on the screw, to simplify the parts, and make jacks that are substantial and reliable.

A vise attachment has been patented by Mr. Charles H. Eddy, of Auburn, N. Y. The under side of the vise has two jaws, one stationary and the other adjustable, both connected by a swiveled adjusting bolt, and with their inner surfaces suitably made to bite or hold on the opposite sides of the rim of the wheel it is desired to attach the vise to.

An oil cup feeder has been patented by Mr. James E. Worswick, of Montgomery, Ala. The motion of the machine where the lubricator is fixed causes a feeding pin to reciprocate in a tube, where it is loosely arranged, there being a removable collar at the upper end of the tube, and a removable perforated disk within the collar to form a bearing for the upper end of the pin.

A lumber trimming machine has been patented by Mr. Edward Heyde, of East Saginaw, Mich. It is an improved apparatus for raising and holding in position any one of a series of cutting off saws arranged in a bench, over which boards are carried to have the ends trimmed square and to specified lengths, the saws being arranged for trimming to several different standard lengths.

A motor has been patented by Mr. Jacob Heckenlively, of Eureka, Kan. A weight is so suspended from a drum that, in descending by gravity, motion is given to a train of gears, which drive a shaft carrying a cam wheel, with which a machine may be connected by a pitman, a governor device pressing a brake lever against the cam wheel to control the speed of the motor.

A lubricator has been patented by Mr. Henry R. A. Boys, of Barrie, Ontario, Canada. The invention consists of an arrangement of an oil feeding cylinder and piston and a gauge cylinder and piston, so the outward movement of the piston to feed the oil from the oil cylinder shall cause a corresponding outflow of the gauging liquid from the gauge cylinder to measure the rate of feed of the oil.

A pressure regulator has been patented by Mr. Francis J. Freese, of Manchester, N. H. The object of the invention is to make an improved device for automatically regulating the pressure of liquids, gases, steam, etc., a plunger moving in a specially constructed cylindrical casing, so as to enlarge or diminish the openings by which the flow of gas, steam, etc., will be automatically controlled.

An oil cup has been patented by Mr. Perry Small, of Guaymas, Mexico. It is an improved oil cup with glass drip chamber, the latter being made by a partition plate, which is integral with the glass cup, the frame surrounding the cup having openings above and below the partition plate, and having at its upper end a suitable cap, the whole being simple, cheap, and not liable to get out of order.

AGRICULTURAL INVENTIONS.

A potato digger has been patented by Mr. Hans Nelson, of Waupaca, Wis. A scoop is connected with the rear end of a downwardly and inwardly curved beam, with which is combined a clearer, and clearer vibrating cams or wings on the axle of supporting wheels, the scoop being readily adapted to work deeper or shallower in the ground, as may be desired.

A grain header and harvester has been patented by Mr. Peter E. Drouet, of New Orleans, La. The front board of the cart is made in adjustable parts, the side bars are pivoted at their rear ends on a

bar to which are secured the scraper roller, comb, reel, and driving mechanism, and as the machine is drawn forward the grain is removed from the heads of the stalks and received in the cart body.

A tongue rest, for supporting the tongue of a harvester and self-binder, has been patented by Mr. John Fisher, of Riley, Ind. In combination with the tongue is an upright frame in which is a slide with an inwardly projecting rod, around which a spiral spring is coiled, the whole making a device to relieve the horses from holding up the tongue and the weight thereon.

MISCELLANEOUS INVENTIONS.

A catamenial sack of improved form and construction has been patented by Mr. Charles H. Levy, of New York city. The frame can be made of metal, rubber, or bone, covered, and the pocket and pouch of rubber, leather, or waterproof fabric.

A telephone call and switch box has been patented by Mr. Edwin H. McFall, of Memphis, Tenn. This is a novel arrangement of switch and circuit in telephone boxes, having the object to maintain closed circuit at all times on lines connecting three or more instruments.

A hoisting device for vessels has been patented by Mr. Richard H. Purnell, of Roseale, Miss. This invention relates more particularly to a special form of brake for use in combination with hoisting devices used on steamboats for lifting and adjusting the gangway or stage planks.

A velocipede has been patented by Mr. Charles M. Schaffer, of Louisville, Ky. The wheel and frame are made with one open side, to facilitate ingress and egress and give better views of surroundings, to facilitate mounting and starting, and to improve the appearance of the machine.

A leather and cloth varnish has been patented by Mr. Walter C. Gifford, of Brooks, Mich. It is waterproof and gives a polish, the composition consisting of alcohol, gum shellac, white resin, oil of turpentine, kerosene oil, oil of cinnamon, and lamp black in certain specified proportions.

A mucilage cup or holder has been patented by Mr. Stephen S. Harman, of New York city. The invention consists principally of a handle or stick fitted in the cover, provided at its lower or inner end with a sponge fitted in a socket, or otherwise attached to the stick or handle.

A reflector holder for lamps has been patented by Mr. Daniel R. Williams, of Dallas, Texas. Different forms of clamp and clasp are so made that the reflector may be held in any desired position, and may be turned around the lamp as desired, while yet it will be firmly held.

A device for attaching and detaching horses has been patented by Mr. Cicero C. Ferrill, of Shubuta, Texas. It is intended to make it possible to dispense with the ordinary harness except a collar and a pair of hames, and for this purpose the thills have ferrules and spring actuated pins, and the hames have specially contrived loops and guards.

A watch protector attachment has been patented by Mr. Julius C. Grimmell, of Brooklyn, N. Y. The invention consists in a casing with two swinging stirrups, thrown from each other by springs, and from the free ends of which a hooked fork is suspended, the stirrups preventing the withdrawal of the watch from the casing.

An extensible clasp for books has been patented by Mr. Jacob Monch, of Offenbach-on-the-Main, Germany. The clasp is formed of two plates, one adapted to slide under the other, the lower one having a diagonal slot, into which a stud of a nut or block passes, so the clasp can be easily lengthened or shortened according to the thickness of the book.

A fountain pen has been patented by Messrs. Albert J. Kletzker, of New York city, and Charles H. Court, of Jersey City, N. J. The pen has a point section with an aperture below the pen, the aperture being closed by a loosely fitting plug with a tongue, and adapted to be vibrated by the pen during writing, and thus cause a flow of ink.

A saddle seat has been patented by Mr. Peter B. Hirsch, of Denver, Colo. This invention consists in dispensing with the bridge plate and the layers of leather, and employing in lieu thereof a single plate of metal shaped in dies to the desired form, and thus "building up" on the saddle tree a seat of such shape as wished.

A thill coupling has been patented by Messrs. Lorenzo D. Rundell and Perry Van Valkenburgh, of South Westerly, N. Y. The invention consists of an axle clip with two projecting jaws or lugs, each having inwardly projecting flanges on the ends, a fork being secured on the inner end of the thill, and having a recess in each side edge of the front prong.

A pocket knife has been patented by Mr. George Freund, of Durango, Colo. It is designed for miners' use, to facilitate the cutting and capping of a fuse; the knife has a notch in the handle case and one in the blade, the latter having a screw thread formed on its bottom to press a screw thread in the end of a fuse placed in the notch in the handle.

A clothes hanger has been patented by Mr. Louis Barkany, of Baltimore, Md. The hanger consists of a notched arm with a cross bar hinged at its free end, and a prop supporting the arm, the arm and prop being pivoted to a support, the contrivance being especially adapted to hold clothes open, while it can be folded compactly when not in use.

An umbrella and parasol rib has been patented by Mr. Asher T. Meyer, of New York city. The rib is made hollow, and reinforced at its outer end by a bar, with a head and flattened portion, and having an eye passing through both the rib and bar, the object being to simplify the construction of the lower or outer end of the parasol rib.

A pendulum scale has been patented by Mr. Henry C. Keeler, of Ogden, Utah Ter. This is an improved form of weighing scales in which pendulums with removable weights may be substituted for the bal-

ancing ball and weight, or the construction may be such that one of the beams and dials may be graduated for the scoop and the other beam and dial for the platform.

A flying target has been patented by Mr. Charles F. Stock, of Peoria, Ill. Combined with a fragile ring, having a flange on its lower inner edge, is an infrangible carrier ring, to be inserted within the fragiling, and held there by the flange, so the fragile portion will break more easily than solid targets, and there will be no failure to indicate a well directed shot.

An automatic winding signal for spring clocks has been patented by Mr. Edward Jungerman, of Gettysburg, Pa. The invention consists in combining with the main spring of a clock a shoe or yielding bar, which, when the spring expands from uncoiling, is struck by the spring and made to bring a signal into view, on the face of the clock or elsewhere, to give notice that the clock should be wound.

A hame clip has been patented by Mr. Charles W. Massenheimer, of Allentown, Pa. The invention consists principally in making the clip with a hook and hinged tongue or section, the hook being made integral with the side plates of the clip, the side plates being joined with a solid shoulder or bridge at their forward ends, so the traces may be easily attached and detached without ripping the tug.

A lumber rack has been patented by Mr. Joseph A. Aycock, of Whitesburg, Ga. The rack is formed of a series of vertical sticks held movably between top, bottom, and intermediate pieces of a frame, between which vertical sticks the planks or pieces of lumber are held a distance apart equal to the thickness of the stick, thus permitting the air such access as will season the lumber in a short time.

A churn has been patented by Mr. Anson M. Otis, of York, Neb. The churn body has a projecting screw at the center of its bottom, and a stationary shaft with a radially expanding and contracting dasher connected by hinged bars, a sliding tube, and a pitman with a crank shaft, gear wheels, and a hand crank, so the dasher is expanded and contracted radially by the revolution of a crank shaft.

A wiping and polishing apparatus for plate printing machines has been patented by Mr. Alexander Reid, of Brooklyn, N. Y. Combined with the reciprocating bed of the press is a roller having slots, webs, paying off spools, receiving spools, and means for rotating the spools and vertically reciprocating the roller, the whole being an improved device for wiping off surplus ink and polishing the plate before taking an impression.

A mercury vacuum pump has been patented by Mr. Charles G. E. Neveux, of New York city. A bulb is made near the top of one of two vertical pipes united at their upper end, this bulb having valves arranged to connect it with the vessel to be exhausted; then by a special construction the mercury can be made to drive all the air out of the bulb, when the valves will so open as to connect with the air vessel to be exhausted, and this operation can be repeated several times with little trouble, there being no loss of mercury, and the whole construction being simple and rapidly worked.

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Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer. Names and addresses of correspondents will not be given to inquirers. We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$3, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at the office. Price 10 cents each. Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) T. M.—It is almost impossible to identify a fiber botanically without specimens of its leaves and flower. We presume that the fiber comes from a variety of nettle called ramie (*Urtica neva*).

(2) W. A. C. asks for a correct analysis of suint. This is a fat, greasy, substance which is washed off of sheep's wool while getting it ready for manufacturing. A. Suint, according to Fuchs, consists of: Potassium sulphate..... 25 per cent. " carbonate..... 44.5 " " chloride..... 30 " Organic matter.... 500 "

The amount of potash salts depends upon the soil on which the food of the sheep grows. Other things being equal, it has been found that the merino wool contains the greatest amount of potassium salts, ranging as high as 30 per cent.

(3) F. S. S. asks: What is the difference between common bone black (animal charcoal) and Ivory black? A. Properly speaking, Ivory black should be derived from burning ivory chips or dust, in distinction from bone black, which is obtained from bones; but we believe the commercial article in most instances is simply a better quality of bone black.

(4) A. O. writes: I had the handles of a fine alabaster vase broken in several pieces. Will you please inform me of a cement or glue that will unite the pieces? A. Use the following: Add half a pint vinegar to half a pint skimmed milk. Mix the curd with the whites of five eggs well beaten, and sufficient powdered quicklime sifted in with constant stirring, so as to form a paste.

(5) Mrs. L. F. D.—Brass work can be polished by rubbing the metal with finely powdered tripoli mixed with linsed oil and applied with a rubber made from a piece of an old hat or felt. Or else a mixture of glycerine, stearine, naphthaline, or creosote mixed with dilute sulphuric acid can be used.

(6) L. M. W. writes: I have a very expensive linoleum carpet on my office, which is mopped every day, but soon becomes dingy. What can I varnish or coat it with which will stand a good deal of wear, and look bright all the time? A. Rub the oil cloth every two or three months with boiled linsed oil; rub it well in with a rag, and polish it with a piece of silk. Or else as it becomes hard rub it well with a small portion of a mixture of beeswax softened with a minute quantity of turpentine, using for this purpose a soft furniture polishing brush. In cleansing the oil cloth do not use soap or hot water.