do better work with moderate gear and rapid stroke; while high gear and slower stroke will suit the more powerful but less active rider.

The Fire Loss in 1895.

To most persons the subject of fire losses is interesting, even if it does not appeal to them personally. For twenty-one years the Chronicle, the principal organ of the insurance interest in this city, has published tables setting forth the annual fire loss in the United States, and this year these tables, comparing similar losses in earlier years with those of last year in all parts of the country, are more interesting and illuminative than ever before.

In considering the loss by fire, insurance men look at the subject from two points. The property loss is one thing to them, the insurance loss is another. The first is the total loss; the second, the loss that falls upon the insurance companies. In brief, there were 38,003 fires in 1895, which destroyed 53,961 pieces of property; the total loss amounted to $142,110,233, and the insurance loss to $84,698,030. These amounts are enormous in themselves, but it is to be recorded that the average property loss and the average insurance loss were smaller than ever before, being $3,793 for the former and $2,228 for the latter, as against $3,938 and $2,530 respectively in 1894. That is, in 1895 the insurance covered 64 per cent of the loss, while in 1894 it covered less than 60 per cent.

In 1895 there were 22,711 fires in dwelling houses; next in number were the fires in stores and offices, which amounted to 12,543; livery stables, barns, and tobacco barns (a rather strange combination) came third, with 8,142 fires. Three hundred and two colleges, schoolhouses, and convents were burned, 503 theaters and public and private halls, and 340 churches. Manufacturing establishments to the number of 5,231, and hotels, clubs, and restaurants to that of 1,332, were injured more or less seriously by fire. Of the 53,961 pieces of property injured, 15,953 caught fire from exposure to fires originating elsewhere, and the loss caused by these 16,000 fires amounted to nearly $38,000,000—equal to more than 26 per cent of the total loss.

Naturally, the summer months show the lightest losses. May was the month of lightest property loss and June that of lightest insurance loss. The greatest insurance loss and the greatest number of fires occurred in October, seemingly because the furnace fires began to be lighted in that month. The greatest property loss, however, occurred in March; in that month occurred seven fires involving losses of more than $200,000 each, while three of them caused losses of more than $400,000 each.

The Western States provided a larger percentage of the fires than ever before, with 40·7 per cent to their account; the Middle States had 26·5 per cent. The fires in these two sections were more numerous than in 1894, but in the Eastern, the Southern, and the Pacific States the percentage decreased.

A table of especial interest is that showing the fires caused by electric wires or lights. Naturally, the question of electricity as a cause of fire did not come up very long ago; in fact, it is only for the ten years 1886–1895 that figures on the matter are to be had. In 1895 there were 249 fires caused by electricity, as against 217 in 1894; but the fires caused by exposure to those started by electricity numbered only 89, instead of 169 in the former year. So the total number of fires caused by electricity was 338 in 1895 and 386 in 1894, a very marked falling off. It is evident that greater care in insulating wires and in other matters connected with electrical plants is taken.

A table of the losses by their causes occupies a considerable part of the Chronicle's book and affords much of interest and instruction. Accidents caused 298 fires, 29 of them in the District of Columbia and 27 in New York State. Hot ashes and coals started 318 fires, and bonfires only 49, while burglars caused 65. Candles set 248 fires, and carelessness only 203, while children playing with fire were responsible for 71. Fires to the number of 536 were due to cigars, cigarettes, and tobacco pipes, while 3,607 were caused by defective flues. Of these, 358 were in Illinois and 331 in this State. Drunken men set 16 fires in 13 States. Explosions caused 3,051 fires; of these 6 were dust explosions, occurring in Illinois, Iowa, and Wisconsin. Fireworks and firecrackers caused 319 fires; incendiarism, 3,521; lightning, 839; and matches, 1,771. Mischievous children started 21 fires and natural gas 81, two of which were in New York State. The much maligned plumber caused only 61 fires with his furnace, while locomotive sparks set 427. Spontaneous combustion is held responsible for 521 fires, stoves for 1,546, and tramps for 268. Of unknown and unassignable origin were 5,981 fires, while 8,361 were not reported as insurance losses. A study of the cause tables enables the Chronicle to say that the inherent and common causes show each an increased percentage, while the indirect (of criminal and mischievous origin) and the unknown and unreported show each a decreased percentage.

In the twenty-one years covered by the tables 25 gymnasiums have been burned, 138 armories, 13 chambers of commerce and boards of trade, and 3,144 churches. In fourteen years 59,570 barns and stables were burned and 170,949 dwellings.

Fifty-seven grand stands have gone up in smoke; 73 artificial ice factories, 2,150 ice houses, and 51 refrigerator factories have succumbed in twenty-one years, and so have 941 theaters and opera houses. In four years 16 tin plate factories have been burned. On the other hand, the business failures and the fires do not maintain an even ratio, in spite of the humorists of the weekly papers; in 1895 there were 13,013 failures and 38,003 fires, while in 1894 the figures were 12,724 and 35,549; and in 1893, 15,508 and 35,188 respectively.

Not only did October, 1895, lead the months in the number of its fires, but it has led them in the matter for twenty years. During that time 33,995 fires started in October; December comes next with 33,806 fires.

During the past twenty years New York suffered a property loss of $320,003,720; Pennsylvania, one of $173,086,623; Illinois one of $125,735,034; and Massachusetts, one of $125,246,015. Ohio will be glad to be fifth in losses, with $121,180,936 damage.

The average loss at a fire was less in 1895 than ever before, but this was due to the absence of any very great fire; the actual number of fires was greater by 1,695 than that of 1894. The total loss during the twenty-one years considered in the tables amounts to $2,219,500,491. This is absolutely and entirely lost, an average of more than $100,000,000 a year. Such a loss demands serious practical consideration, but, says the Chronicle, "there does not seem to be very much hope of any material reduction, but rather of a gradual increase in the fire waste. The people would rather lose their property than to take effectual steps to preserve it."

Danger of Rinderpest in America.

There is considerable alarm felt in Canada over the much dreaded rinderpest, which it is thought may be introduced into that country through the medium of hides imported from South Africa. Protests have been made by the leading experts in Canada, but their warning has had no effect on the authorities as yet. Of course a similar danger exists of the plague being brought into the United States. Pleuro-pneumonia among Canadian cattle has been traced to infected hides imported from England. The danger from this disease is of course as nothing compared with the ravages wrought by the rinderpest, which is at present decimating so many of the herds in South Africa. When the disease last visited England, over 73,000 head of cattle were attacked by it and 41,000 died.

RECENTLY PATENTED INVENTIONS.

Mechanical.

SAW.—John Morrish, Mayville, North Dakota. For buck saws, hand saws, ice saws, etc., this inventor has devised a blade designed to smoothly enter the material without jerking or jumping, doing the most cutting on the forward stroke, and readily removing the dust in coarse pieces. The blade has groups of teeth separated by throats, each group having several cutting teeth and a rake tooth, the cutting teeth having no pitch at the outer end of the blade and gradually increasing in pitch toward its butt end, the throats also gradually increasing in depth from the point to the butt end.

LUBRICATOR.—William A. Seibel, Independence, Iowa. This in an improvement on a formerly patented invention of the same inventor, and provides for conveniently lubricating parts of elevated machines without waste of oil and while elevating and moving the can. According to this improvement, the bail of the oil can is engaged by a cord passing over a pulley at an elevated point above where the oil is to be applied, there being also a projection on the part to be lubricated adapted for engagement with a hook on the oil can spout, so that, as the can is raised, it will be tilted to permit the oil to flow through the nozzle to the part to be lubricated. The invention is especially applicable for oiling the running parts of a windmill.

ELEVATING AND DUMPING DEVICE.—Louis E. Hoy, Fremont, Neb., and Harman Hoy, Baltimore, Md. This is an improvement on formerly patented devices of the same inventors for elevating and dumping the boxes of wagons, cars, and other vehicles, and provides simple means for holding the running gear of the vehicle in place while the box is automatically locked by the elevating device, and raised, dumped, and lowered to its original position. A framework has a track by which the vehicle is guided to proper position, while movable in the framework is an open bottom cage provided with spring-actuated means to engage and lock the bed of the vehicle, and pivoted to the upper part of the frame is a chute adapted to receive the contents of the cage when it is dumped.

Mining, Etc.

CONCENTRATOR.—Reuben D. Woodward and Willard C. Brown, Leadville, Col. For separating the precious metals from sand, gravel, etc., these inventors have devised a simple and inexpensive machine, to be operated with a minimum of power and requiring but little water. In a suitable frame an inclined shaking trough is held, to the upper end of which water is admitted, the material being shoveled in. The trough has screens by which the coarser matters are separated and thrown out, while through a screened hopper beneath the finer particles are passed to a semi-cylindrical rocking amalgamator, in the bottom of which is a quantity of mercury, and in which revolve knives to stir up the material.

Agricultural.

SEED PLANTER AND CULTIVATOR.—Vinson V. Hill and March Holman, Norwood, Ga. This invention provides a machine to be operated by a spring motor, dispensing with the use of horses. When used as a cultivator the seed box and covering roller are detached and a gang of cultivator teeth and a seat, if desired, are attached to the machine. A little distance back of a front caster wheel is a main running wheel, to the axle of which power is applied by a set of gears from a spring motor, wound up by a key. Within the seed box is a stirrer revolved from one of the gear wheels, and the driving mechanism is readily thrown out of gear.

STUMP PULLER.—Alfred S. Oberson, Westby, Wis. This is a strong, easily operated machine, so built that the winch cannot fly backward, should the harness at the connection between the horse and the winding sweep be broken when there is a heavy strain on the pulling cable. On a suitable base are uprights supporting a head plate, and affording a bearing for a vertical shaft on which is a ratchet wheel adapted for engagement by a pawl, while a winch rotating on a shaft has a bearing through the head block, a sweep arm to which a lever is pivoted extending horizontally from the upper end of the shaft, and a ratchet wheel on the winch being adapted for engagement by the lever.

Miscellaneous.

BICYCLE.—John C. Raymond, New York City. This is a machine designed to utilize the strength of both arms and legs in its propulsion, affording a more natural position of the body in working the machine and insuring a more uniform development of the muscles. The treadles are connected with pitmen by which the drive wheel gears are operated, and levers connected with the handle bar can also be connected with pitmen for the propulsion of the wheel, the handle bar being worked back and forth for this purpose, and the steering being effected by rocking the handle bars up and down. The machine is adapted for use by both ladies and gentlemen.

VELOCIPEDE SPRING MOTOR.—Martin J. McDonald. Trenton, N. J. This is a mechanism for accumulating surplus power in descending a grade, and storing such power, to be subsequently applied to the propulsion of the machine, the mechanism being contained in a frame which may be attached to the frame of the machine by clips. The power is received and stored by helical springs connected to and wound on a shaft journaled in the frame, the direction of movement to and from the springs being governed by adjustable gearing and clutch mechanism, that the motor may accumulate or give out power.

DRY DOCK.—John W. Boggs and Archibald Cameron, Portland, Oregon. This dock has at one end a sliding gate for opening and closing the inlet to a front dock chamber, at the rear of which is the dry dock proper at a higher level. The gate is adapted to slide into a chamber at one side of the front dock chamber at its entrance, and is adapted to hold water in its interior by which the gate is forced downward, the gate having packing strips for forming water-tight joints between it and the posts and the bottom of the dock chamber, and the gate and posts also carrying devices for compressing the strips when the gate is closed.

LABELING MACHINE.—Herbert Rawlinson, San Francisco, Cal. This is a machine for automatically attaching a label or wrapper to circular bodies as they roll down an incline, a paste-supplying cylinder imparting paste to the rolling body, and the label, as it is rolled up on its periphery, being closely and firmly pressed in place. One body after another is fed at the upper end of the guideway on to a stop wheel, which automatically releases the bodies in succession during the continuous operation of the machine.

AQUATIC EXERCISING APPARATUS.—George C. Tilyou, Brooklyn, N. Y., and Jean M. A. Lacomme, New York City. This is an apparatus for use at a seaside or other watering place, or at a river bank, to facilitate taking baths by persons of all ages and sexes, without danger or inconvenience, promoting also the taking of hygienic exercises and learning to swim, etc. The invention consists primarily of a column or post placed at a suitable distance out in the water and having at its top a horizontal revolving wheel which supports sheaves and hanging ropes or cables at whose ends are eyes or rings, or a swimming belt, whereby bathers may be supported as desired in the water, or a boat may be attached and carried around by the revolutions of the wheel.

FISHING ROD SUPPORT.—Jacob A. Eicher, Trenton, Ill. In the top of a stake which may be easily driven into the ground on the banks of a stream or other place for fishing, is pivoted a curved cradle which has at its inner end a socket to receive the inner end of a fishing rod and at its outer end a groove in which the rod may lie. Pivoted to the inner end of the cradle is a toothed segmental latch bar, passed through a slot in the stake, and adapted to engage a pin therein, the latch bar sliding freely through the slot when, by depressing its rear end, the pole is to be raised, but engaging the pin to hold the pole at any desired angle over the water, and leaving the fisherman at liberty when the fish are not biting freely.

MUSICAL INSTRUMENT.—Prof. F. P. Cericola, No. 386 Thirteenth Street, Brooklyn, N. Y. This invention provides a new mechanism for organs, pianos, and organettes using music rolls for automatic playing, or perforated strips of paper fed over a barrel and having perforations coinciding with ducts in the barrel. At present the roll can only be played once without being re-suspended, but according to this improvement the roll can be folded and unfolded back automatically as it is played, permitting each piece of music to be repeated as desired, and keeping the same time, rendering the instrument of great utility for ball rooms, dancing schools, theaters, churches, etc. The instrument is preferably furnished with three music rolls, each having twenty or thirty pieces of music of different classes.

PEN HOLDER.—Hiram S. Rumfield, Salt Lake City, Utah. The body of this holder is much shorter than is usual, and is tubular, a spring-pressed sleeve sliding in the body, which is adjustably connected with the sleeve. The outer end of this sleeve, when the holder is in use, bears and is pressed against the fleshy inside part of the hand at the base of the thumb and forefinger. The pen holder sections reciprocate one on the other in the act of writing, and, after one has become used to this changed method of using a pen, the improvement is designed to afford greater ease in writing, lessening the fatigue of the thumb, fingers and hand.

DENTAL FLOSS HOLDER.—John D. Cutter, Brooklyn, N. Y. To hold floss conveniently for tooth cleaning purposes, this inventor has devised a frame consisting of a single strip of wire bent to form a handle portion and two outwardly extended flared portions, each provided with a transverse kerf, a bobbin being removably supported in the handle portion of the frame. By means of this simple and inexpensive device a small stretch of floss or similar material may be rigidly held in position to be easily inserted between the teeth.

LAMP BURNER.—Hartwell A. Crosby, Calais, Me. This is a simple form of burner in which the lamp wick may be conveniently trimmed and the flame extinguished by merely actuating the device to lower the wick. Within the wick tube is a wick-raising shaft carrying a spur wheel or disk, and this spur wheel or disk, when the wick is lowered, engages a pivotally mounted trimming plate which plays edgewise across the open end of the wick tube, to remove the crust or charred portion of the wick.

GATE.—John H. Johnson, Silverton, Oregon. This gate is centrally pivoted on lifting levers and adapted to travel between guide posts at one side of the road, pull ropes being attached to the central portion of a balance rope or link and carried over guides to opposite sides of the gate. In opening or closing the gate one of the two ropes is pulled downward, when the end of the gate farthest from the guide posts is first raised, the gate being carried through the guide posts as it is lifted, to either open or closed position.

GATE.—John F. Ferris and Warren M. Thomas, North English, Iowa. This is an improvement on a formerly patented invention of the same inventors, and provides a gate which is pivoted at its lower inside corner only, between two posts, by means of a strap on the bottom of the gate, the pivotal bolt being of such length that the gate has a small movement up and down on it. One of the main gate posts and another post the distance of the length of the gate to one side carry the mechanism of levers and connecting cords, with pull handles on each side, by means of which the gate may be readily opened and closed, the design being that the entire construction shall be simple and inexpensive and not liable to get out of order.

WIRE STAY WEAVING DEVICE.—Enos F. St. John, Highland Station, Mich. This is a simple tool where by a strand of wire of any size coil

wire may be woven or coiled about fence wires to form a stay for them, the wire being drawn directly from the coil as it is applied to the fence wires in position. The frame of the device forms practically a double crank, thus obviating the necessity of the operator passing his hand through parallel fence wires to grasp and turn it, and the stay wire freely leaves the post on which it is coiled without liability to become tangled up with the frame.

POST DRIVER.—Robbert G. Work, Marion Center, Pa. This is a portable post driver adapted to be mounted on a wagon bed, at the rear end of which the falling weight, or "monkey," is guided between vertical standards. The cable for raising the weight passes over a pulley depending from a cross beam and is attached to a winding drum on a splined shaft, the drum engaging the spline on the shaft to be wound up and lift the weight, and being withdrawn from the spline to permit the fall of the weight. Between the vertical standards are transverse guides or supports adapted to steady large or small posts in position for driving.

HORSE FLY NET AND COVER.—Henry C. Carter, Belmont, N. Y. This is a net which is made in sections, there being a head piece or bridle section located at each side of the neck, a breast piece or collar section, and a back piece having two side members, the frame of each section being made of spring wire bent to proper contour and having hooks or loops to facilitate attaching the netting in position. The netting consists of pendent strips or a fringe attached to a hem through which a portion of the wire of each frame section is passed. This net is designed to permit a free circulation of air around the body of the animal, and is readily attached to the harness.

REIN GUARD.—Thomas Thompson, New London, Wis. To prevent the reins from catching beneath the ends of the thills of a vehicle, this inventor provides a guard of flexible material, such as a leather strap, to pass across the breast and connect the ends of the thills, the guard being attached to sleeves which fit on the ends of the shafts. This arrangement also prevents the horse from catching a shaft around a post, and prevents the ends of either shaft from being run into another horse in case of collision.

THILL COUPLING.—Charles W. Goble, Canyon, Col. This is a coupling designed to facilitate changing from a thill to a pole, or vice versa, as desired, and one requiring no bure, the head of the coupling pin also being concealed, and no portion of the device being liable to produce rattling. The base plate is clipped to the axle and has forwardly extending jaws, one with a recess in which fits the head of the pin, held in position by a slide, while a spring is formed with opposing shoes which engage the lower portion of the slide ways and lock the pin in position.

SASH FASTENER.—Joseph L. Bossler, Alton, Ill. According to this improvement a latch is attached to the upper rail of the lower sash and a keeper is secured on the upper face of the lower rail of the upper sash, the latch having an angular post with pendent finger adapted to engage a slot in the keeper through which is passed a spring latch bar. The device is simple and inexpensive, automatically locking the window in closed position, while the unlocking is readily effected from within the room.

LOCK.—John Alfors, Hanna, Wyoming. This lock is adapted for use in doors, drawers, etc., where the knobs are fixed to the casing, a key being introduced into either of the knobs instead of into the body of the lock for returning or unlocking the bolt, the construction of the lock being such that when the key is withdrawn the bolt automatically assumes a locked position. The lock bolt is withdrawn by the pressing of a tubular key inward in a tube of the knob, the pressing of the key fully inward holding the bolt permanently back, so that the door may be closed without locking.

DOOR CATCH.—Peter Mickelson, Cedar Valley, Iowa. This is a cheap and simple device especially adapted for use in connection with barn doors, preventing the wind blowing the door closed or against a team. It has a base plate for attachment to the building at the proper distance behind the door, and supporting spring wire holding arms which rock on the plate, and are adapted to close upon the edge of a door when it is opened wide and hold it in open position until the locking arm of the catch is purposely moved outward.

FLOUR AND MEAL BIN AND SIFTER.—Charles P Alexander, Cleburne, Texas. This is a combination piece of kitchen furniture in which are two bins and a chamber below in which is a sieve adapted to be reciprocated, means being provided whereby any desired quantity of flour or meal may be delivered to the sifter, the latter being readily removed for cleaning. The sieve is given an intermittent reciprocating movement by a cam operated by a crank and a chute delivers the sifted material to a suitable receptacle.

LOCK FOR STOP COCKS.—Albert T. Patrick, New York City. To temporarily or permanently lock the turn key of an ordinary stop cock this inventor has devised a simple and easily applied and removed device, consisting of a slotted hasp adapted to be passed around the stop cock and engage with its slot the turn key, the free ends of the hasp being then locked by a padlock. The device is designed for use on supply pipes at meters and elsewhere, where it is desired to cut off the supply without removing the meters or disturbing the fixtures.

NON-REFILLABLE BOTTLE.—Enos C. Pollard, Holt, Montana. To prevent the refilling of bottles and their re use as original packages, this inventor has devised a bottle of which a portion must be broken off before the contents can be discharged. The neck is made with an integral sealing extension on which a trade mark may be placed, a groove being formed at the junction of the neck and extension to facilitate breaking off the latter. After the liquor has been placed in the bottle a cork is forced into position in the neck below the extension, and a suitable cement placed on the cork, there being embedded in the cement a glass stopper with flared lower end and flanged top, fitting in the top of the extension.

BADGE BUTTONS.—James H. Patterson, Martinsville, Ind. This is a button to be worn in the lapel of the coat to furnish amusement in answer to threadbare and tiresome comments about the weather. It has a front plate, with a cut-out quarter section, beneath which is a revoluble plate divided into quarter sections, the front plate bearing the words "Yes; it is," and the revoluble plate having on each of the quarter sections one of the following: "hot," "cold," "wet," "O. K.," so that by turning the under plate a definite answer is given by the button to ordinary remarks about the weather.

WAIST BELT.—John F. Schotz, New York City. This is a ladies' belt, designed to be worn with comfort while it is also adapted to contract the figure at the junction of the hips with the waist, to lengthen the waist. At each side of the belt is a pocket in which is a spring, reinforced on its inner face by an added strip of spring material of lozenge or diamond shape, the two springs being so connected that they will adapt themselves to the curvature of the body. The belt is adapted to be worn over the corset, and is designed to accomplish what cannot be obtained by the use of a corset, no matter how tightly the latter may be laced.

TRAY ATTACHMENT FOR BEDSTEADS.—Ella F. Fry, Richmond Dale, Ohio. To hold articles for the convenient use of invalids while confined to their beds, this inventor provides a novel device that is readily attachable to the inner face of the side rail of the bedstead, being foldable adjacent to the mattress. A post is pivotally attached to the rail, and adjustable thereon is a standard carrying a hinged bracket plate to which a tray may be secured and held in level position, partly over the bed, the occupant of which is thus enabled to eat with comfort and have the necessary articles within easy reach.

COAL RECEPTACLE AND ASH SIFTER.—Adolph J. Smith, New York City. In a suitable casing, according to this improvement, is a top compartment adapted to receive an ordinary coal pail or scuttle, containing the coal supply, and in the upper front portion of the casing is a downwardly swinging door, allowing coal to be sifted to be poured in upon a downwardly and rearwardly inclined screen through which the ashes pass to a pan beneath, while the cinders are directed to an inclined chute leading to a lower drawer in the bottom of the casing.

SPITTOON.—Richard J. Smith, Lovelaceville, Ky. This is a spittoon to be secured in the floor, and especially adapted for use on railroad and street cars, boats, etc. It has a cylindrical body, with top flange resting on the floor around the opening in which the spittoon is set, and has a hinged cover connected by a chain with a bottom swinging cover. When the top cover is raised and thrown back, which may be readily done by the foot, the bottom opening is closed, and when the top cover is closed the bottom cover swings downward and the contents are discharged.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 10 cents each. Please send name of the patentee, title of invention, and date of this paper

NEW BOOKS AND PUBLICATIONS.

UNCLE SAM'S LETTERS ON PHRENOLOGY. New York: Fowler & Wells Company. Pp. 154. Price 50 cents.

This is a little work originally published in 1842, and, being thought too good to be lost, is now presented in revised form. The letters were written by a Presbyterian minister, and treat with considerable discrimination of the advantages of phrenology.

PRACTICAL GUIDE FOR FIREMEN. By W. H. Wakeman. Bridgeport, Conn.: American Industrial Publishing Company. Pp. 74.

This is a little handbook of instructions and suggestions for the care and management of steam boilers, pumps, injectors, etc.

IOWA GEOLOGICAL SURVEY. Volume V. Annual Report, 1895, with accompanying papers. Samuel Calvin State Geologist, H. Foster Bain Assistant State Geologist. Des Moines: Published for the Iowa Geological Survey. 1896. Pp. 452.

This very excellently reproduced geological report is devoted to the geology of six counties of Iowa. It is published by the Geological Board of the State, which consists of the governor and auditor and three other members, Samuel Calvin being the State geologist. It is very finely printed, and will find naturally a place in colleges and geological libraries.

TWENTIETH YEAR BOOK OF THE NEW YORK STATE REFORMATORY FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1895. With illustrations and anthropometric tables. Elmira, N. Y. 1896.

This report is, it appears to us, too short for the ground it covers. Its topics are of the deepest interest and are most excellently treated, except for their briefness. The study of criminal statistics, the accumulation of data, the influence of heredity and of association upon character, the physical traits of the class of humanity who have an enforced seclusion in Elmira reformatory, are the topics which the report covers. The institution was, by some recent investigations, brought somewhat prominently before the public. It seems to have survived the criticisms then excited. Two papers, one on the School of Letters, by the late Prof. James R. Monks, the other, "Observations and Notes," by Dr. H. D. Wey, are particularly to be commended, as are also the excellently selected illustrations.

We have received from F. A. Bradley, of New Haven, Conn., a handsome binder or temporary cover adapted to conveniently hold the numbers of the SCIENTIFIC AMERICAN as they are successively published. It has a Russia leather back and is carefully made by hand, promising to do excellent service in everyday use.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(6954) D. C. T. McM. writes: I found a common toad endeavoring to make his escape from some pursuers. I saw also one of his hind legs dragging, and merely hanging by the tendons and ligaments of the second joint. I was astonished to see a black bug seize hold of the toad at the seat of the wound. He now got a secure hold on his victim. The frog was exhausted and demoralized. It (the bug) seemed to be a black beetle, such as live in decayed stumps and rotten timber. Does your entomologist know such propensities in any kind of beetle, Coleoptera or Scarabæus? I rescued his frogship from his savage assailant, when he made his escape with his foot dangling. Please let me know if such an attack from a bug on such a large victim is common. A. The United States Department of Agriculture says: In the accompanying letter Dr. C. T. McMannen, of White Springs, Florida, refers undoubtedly to one of the large predaceous ground beetles, and probably to the species known as Pasimachus strenuus. This beetle feeds on all sorts of animal matter, including living insects and the dead bodies of larger animals. I cannot say that I have heard of exactly such an occurrence as that described by your correspondent. From the habits of the insect, however, this is not at all unlikely to have occurred, and the observation is a very interesting one.

(6955) E. B. O. writes: I have a telephone plant built with a common return wire, but haven't it grounded. To ground it in the city I get too much noise on the lines, caused by the electric street car lines and electric light plant having lines grounded. Now, I have a subscriber living three miles east of the city and one living three miles west. I was thinking of grounding the return wires at these two points. How would it act? Would it make more or less cross talk on the lines? A. You will have to try it. Possibly no return wire will be needed. 2. What wires on a telephone switchboard should be German silver and what ones copper, and why? A. Make all connections with copper wire. 3. How do you measure the ohms in an induction coil the number? A. By the Wheatstone bridge. 4. Which is the best for a common return wire, bare or insulated, No. 12 copper or No. 6 copper for an exchange of 300? A. Use copper wire, the larger the better, not necessarily insulated.

(6956) J. G. K. says: Will you please give through the columns of the SCIENTIFIC AMERICAN a formula for making Japan ink, such as is used by many of the professional penmen? A. 1. Take of Aleppo galls, ½ pound; logwood chips and copperas, each ¼ pound; gum arabic, 3 ounces; sugar, 1 ounce; sulphate of copper, ½ ounce; sugar candy, ½ ounce. Put the galls and logwood in 6 quarts water. Boil slowly until the water is reduced in volume one-half. Strain through cotton flannel, and add the other ingredients. Keeping the solution warm, stir until all the ingredients added are dissolved. It should then be placed in a deep glass vessel and allowed to settle. The ink may be removed from the settlings by pouring off carefully, or using a siphon. The gloss of the ink may be increased or diminished by increasing or diminishing the amount of gum used in the recipe. If carbolic acid be added until its odor is just perceptible, it will prevent moulding. Oil of cloves added will also effect the same result, and it gives the ink a less offensive odor. 2. Dissolve in ½ pint soft water ¾ ounce of potassium bichromate, and add the solution to 6 ounces of logwood extract, dissolved in 1 gallon of water; then dissolve in 1 gallon water by continued boiling, borax, 6 ounces; shellac, 1½ ounces. Mix all together while warm and add 3 ounces of ammonia.

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September 1, 1896,

AND EACH BEARING THAT DATE.

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