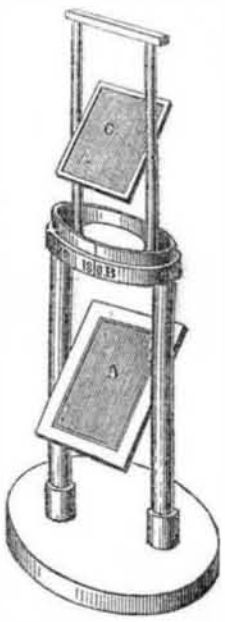
Imponderable Agents.---No. 9.
[Second Series.]

POLARIZATION OF LIGHT—Various mechanical arrangements have been invented for the illustration of this remarkable property of light; the polariscope of M. Biot, introduced in 1824, is perhaps the best of its kind. The annexed figure will explain this apparatus. A, is a frame containing a number of plates of glass placed parallel with each other, and termed the polarizing glass; it is swung on two side pillars, in the fashion of a mirror. The tops of the two side pillars carry a circular ring of wood, B into which is loosly fitted a moveable upper circular disc of wood, with a central opening. This upper disc again carries two light pillars, supporting a second frame, C, containing a sheet of glass, painted on the back with lamp black, termed the analyzing glass. The upper wooden ring has an index placed opposite to the middle of the analyzing glass, so as to point to graduations on the outer or lower ring, B. The substances to be submitted to the action of polarized light are placed over the hole in the upper ring, by a small disc of glass forming a supporting stage.



To show the difference between polarized and common light, the polarizing and analyzing glasses are set with their faces parallel to each other, as represented in our figure, and a ray of light, whose angle of incidence is 56°, is allowed to fall upon the polarizing plate, so that it may be reflected to the analyzing one above.—Supposing, now, that the analyzing plate is turned slowly round, the reflected light upon it will become gradually fainter, until it has been turned 90°, when the light will be barely visible. If the motion is still continued onwards, the light will again become brighter until it reaches the opposite 90°, at which point its intensity will be the same as at first. At 0°, and at 180°, the intensity is greatest; and 90° and 270°, it is least. If we suppose the polariscope to be placed with 0, pointing to the south, it follows that when the north or south side of the ray, reflected from the polarizing plate, is towards the analyzing plate, the plate reflects it as a common light; but when the east or west side is nearest the analyzing plate, it is incapable of reflecting the light, and at the intermediate points different degrees are reflected, showing the difference existing between polarized and common light. So far as we at present know, light, in polarization, undergoes no other change than such as is caused by reflection; therefore we come to the conclusion that light is polarized by reflection from glass at an angle of 56°, water 52° 45′, and so on according to the substance used. The fact of the refusal of polarized light to be reflected from the surface of a transparent substance, when it is incident of an angle of 56°, and that it is the same in two positions at right angles to each other, is a clear test of polarization.

The laws of the polarization of light form a distinct science of vast extent and beauty; for, though this property (first observed by Newton) was never experimented on till the present century, yet during this short time discoveries have thickened, and have led, step by step, to higher and higher generalizations, till at length the late French mathematician, Fresnel, was enabled, by a magnificent theory, to bring all these complex and wonderful phenomena under the simple laws of mechanics.

Perhaps the most important rule respecting polarization is, that light coming directly from a source, as the sun or a candle, never possesses this property, while that which has been reflected always possesses it more or less. It is very singular that a ray once polarized retains that property during all its subsequent course, whether that be for inches, miles, or billions of miles. Thus, with no other apparatus than a fragment of a crystal, we may examine the polarizing effect of the far distant surface of the planet Saturn as readily as that of the page before us.—We may ascertain whether a star at the outskirts of the visible universe shines by its own or by reflected light. In this way Arago has proved that, in some of the binary systems, the two stars are two suns, while in others the smaller is only a vast planet reflecting the light of the larger. In this extraordinary observation we cannot fail to be struck with the great disproportion between the means of observation and the fact observed,—and especially with the astounding universality of this agency, light, which at once pervades galaxies and penetrates between atoms.

We have presented no small amount of information on the polarization of light, because it is a subject not generally understood. Although these articles might be extended to a great length, we do not deem it prudent to occupy much more space with them at present, we will therefore conclude the series, in our next number.

Agassiz on the Races of Man.

We give the following from the Boston Traveller's report of Agassiz's lectures, delivered at Lowell, Mass.:

We next come to geographical distribution of the races of man; and here we must leave out of consideration all question as to the unity of the races. Professor Agassiz is conscious that his views, on some points, are not generally received, and he fully respects the motives which make the views of others almost sacred to them. He hopes that his views will be received in the same spirit as he represents them, viz: in the effort to arrive at truth.

We will first study the limits of the range of each race on the different continents, and must consequently eliminate every element depending upon migration, as the present American races. We are to consider the primitive location of the races, that is, the distribution of man as recognized by the earliest traditions.—The question is, where the race was originally placed, rather than what are the modern changes in their distribution.

The first race to be considered is one peculiar to the Arctic regions, a race different much from any inhabiting the temperate zone, and still more from those of the tropics. This race comprises the Esquimaux of this continent, the Laplanders of Europe, and the Samoydes of Asia. They are all characterized by a broad face, short in its vertical diameter, a low forehead, and great length of body, when compared with the shortness of the legs. For more minute descriptions the works of Pickering and Prichard must be consulted. The distribution of the races correspond nearly to the zoological regions of the north.

The races of temperate zones are three.—The Mongolians in Asia, the whites in Europe, and the aborigines in America; and it is remarkable, also, that these races occupy the same territories as the faunas previously described. In Asia has been described the terrestrial Japanese fauna, the insular Japanese fauna, Chinese fauna, and the fauna of the Caspian regions, intermediate to that of Europe and Asia. Inhabiting precisely the same countries, are the Japanese, Chinese and Turks.

The Indians of North America are a distinct race, (on this point Prof. Agassiz disagrees with Dr. Pickering,) differing from the races of the Old World, as the inferior animals of North America differ in species from those of the Old World. It is only within a few years that the animals of North America have been considered not to be identical with those of Europe.—The aboriginal Indian race is identical, from the Arctic regions to Terra del Fuego, the only difference being one of tribes, not of races. These tribes are divided into an infinite number of small tribes, a fact perfectly in accordance with the distribution of the inferior animals upon this continent.

We have seen that a great Mountain chain, extending from the Canadas to Patagonia, connects North and South America, and produces a certain uniformity in their faunas; that their faunas are sub-divided into those of the Pampas, the Antilles, the Andes, the Southern States, the Middle States, the Canadas, the table lands west of the States, and those of Oregon and California. In the same manner the aborgines are sub-divided into a large number of small tribes, which are circumscribed within narrow limits. They form no great nations, as do the Chinese, Tartars and Japanese of the east.

The Caucasian race is widely distributed and divided into many nations. Those inhabiting the eastern part of Africa, the northern part of Arabia, Mesopotamia, Asia Minor, &c., all constitute different nations, with different languages. The Teutonic branch, including the German, Dutch, English, Danish, &c.; the Sclavonian branch, including the Russian, Poles, &c., each have a nationality and language peculiar to themselves. But they all have a feature in common, viz: a noble expression of the face, above that of all other races, a mirror of the innermost movements of the soul, and it is this branch, also, which is capable of the highest moral culture, and the highest degree of civilization.

Africa has one characteristic race—the negro. But the interior of the great desert, Nubia and Abyssinia, have races different from the negro. The Hottentot lives at the south, and the western shores have their peculiar tribes. It was possible, even, during his recent visit to the Southern States, to recognise among the negroes those belonging to these several African tribes.

In the East Indies are three distinct species: the Malay, Telingan, and Negrillo, (like the negro, only dwarfish.) The Australian is a tribe peculiar to that country. The features are those of the negro, but the hair is straight and flowing. The inhabitants of Madagascar are a peculiar tribe, but our information concerning them is scanty. They are not negroes, but resemble more the inhabitants of the Sandwich Islands.

With these facts before us we can assert that there is a law of distribution of the human race, as well as of the inferior races, and that these laws are in accordance with each other.

The Island of Iceland.

The Island is divided into four districts, or Fiordnungs, which are administered by deputies. The ancient laws of the country are still chiefly used; but the law of primogeniture is not known, and land is held either in fee or under long leases from the Crown. The island appears to have been once covered with forests, which are, however, now nearly extinct; only a few dwarf birches and willows are seen, but no trees, and the people are dependant for fuel upon turf or peat. The poorer people suffer much from the severity of the climate and leprous disease, induced by the dirtiness of their habits, and the coarse unwholesome food on which they subsist. Their chief occupation is fishing and raising herds of cattle. In numbers they have greatly diminished; once there are said to have been 100,000 souls in the island; at present, however, the population is supposed not to exceed 48,000 persons. As a people, they are of mild, honest, and religious dispositions, and remarkably well educated, much superior knowledge being found among them which, considering the poverty of the country, is worthy of note. Parents, assisted by the parish priest, are the chief instruments of education, the latter acquiring their means of teaching at a sort of college, or high school, at Bessasted, in the peninsula of Altanese. The Icelandic dialect, is (as well known) a variety of the great Indo-European family of languages, and belongs to the Scandinavian sub-division. An excellent grammar of it has been published by the celebrated Danish philologist, Professor Rask, who lived in Iceland for three years.—This dialect is called by the natives, "Isengkarunga." The Icelanders were early famous for their cultivation of literature, and the skalds, or the poets of the island, have obtained a European celebrity. Many, however, of the oldest songs have been oral, and, having never been committed to writing, have now perished.

Steamboat Inspection.

In November last the Supervising Inspectors of Steamboats, appointed under the Act of August 30th, 1852, met in convention at Cincinnati, and the report of their doings has just been published. It contains the following statistics of the several districts.

LOCAL DISTRICTS.	No. of steam vessels that have been inspected and certificates granted.	No. of pilots licensed.	No. of engineers licensed.	Amount of tonnage inspected.
FIRST DISTRICT.				
Portland,	16	16	11	3,491
Boston,	20	24	19	8,568
New London,	16	18	7	4,926
SECOND DISTRICT.				
New York,	135	161	365	52,229
Philadelphia,	36	60	80	14,560
THIRD DISTRICT.				
Baltimore,	34	60	58	13,112
Norfolk,	8	14	14	2,164
Charleston,	18	32	52	6,865
Savannah,	8	10	20	2,496
FOURTH DISTRICT.				
New Orleans,	87	226	333	26,100
Mobile,	24	102	107	4,800
Galveston,	4	15	17	512
California and Oregon,	(not organized.)			
FIFTH DISTRICT.				
St. Louis,	83	302	254	27,712
Memphis, &c.	17	41	42	2,543
SIXTH DISTRICT.				
Louisville,	72	176	263	19,758
Nashville,	14	70	83	3,401
SEVENTH DISTRICT.				
Pittsburg,	83	148	184	18,392
Wheeling,	24	44	76	5,724
Cincinnati,	81	248	214	22,000
EIGHTH DISTRICT.				
Chicago,	8	30	39	5,321
Detroit,	32	53	53	19,518
NINTH DISTRICT.				
Buffalo,	40	99	86	35.600
Cleveland,	14	49	38	6,870
Oswego,	7	16	11	6,700
Burlington,	7	14	14	4,600
Total,	882	2028	2448	317,968

Lubricating Oils.

MESSRS EDITORS.—In my report upon the test of lubricating oils, published in No. 19 of the "Scientific American," instead of "Devlin & Co." I should have written "Delavergne & Yockney," manufacturers of oil under Cumberland's patent. The present firm is Yockney & Co., No. 67 Exchange Place, New York City. Please rectify my error, and oblige,

JOSEPH E. HOLMES,
Director of Machinery.

Crystal Palace, New York, Jan. 30, 1854.

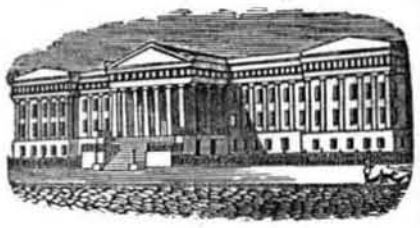
A Baffling Illustration.

At one of his lectures, Dr. Boynton related that, wishing to explain to a little girl the manner in which the lobster cast the shell when it has outgrown it, he said, "What do you do when you have outgrown your clothes? Throw them aside, don't you?" "Oh, no," replied the little one, "we let out the tucks?" The Doctor confessed that she had the advantage of him there.

Railway Traffic in England for 1853.

From the traffic returns for the past year the total amount appears to be 17,180,530*l.*, on 7200 miles of railway, being at the rate of 2386*l.* per mile.

A good cement for luting the joints of steam boilers, pipes &c., is made by mixing equal parts by weight of red lead and black oxyd of manganese in linseed oil, to render it of the proper consistency.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JANUARY 26, 1854.

PRESSES FOR MAKING MINIATURE CASES—H. T. Anthony, of New York City: I claim the construction of the platens of a press for applying the covering materials to miniature and other like cases, by forming the face which gives the pressure of elastic materials, whereby the embossed or other raised figures and ornaments will not be obscured or injured during the process, while at the same time a superior quality of work is produced, as set forth.

DAGUERREOTYPE PLATE HOLDER—P. H. Benedict, of Syracuse, N. Y.: I claim the arrangement of a vise or analogous device upon the side or edge of blocks used for holding daguerreotype plates while they are being polished or buffed, the vise constructed as described, and operating by holding the bent edge of the plate between its jaws.

CULTIVATORS—By Enos Boughton, of East Bloomfield, N.Y. I do not claim any part of the raising and depressing device; nor do I claim the knife or the wheels separately.

I claim the combination of the knife with the wheels, for the purpose of cutting up the ground and destroying thistles or any other weed. plants, or grasses therein.

FIXING LIKENESSES IN MONUMENTS—Wm. Boyd, of Garrettsville, Ohio: I claim combining with a monument or grave stone, a case having a concave mirror set in the back part, and having also within it a miniature likeness of the deceased, which may be kept secure from the action of the weather, or from liability to receive other injury, said miniature being attached to the cover of the case in such a way, that by opening the cover the likeness may be viewed by reflection in the mirror, as set forth.

FOUNTAIN PENS—By Wm. Cleveland, of Orange, N. J.: I do not claim the employment of capillary action to supply the ink to the pen except when used under an arrangement and combination, consisting in the employment of the leading stem so fixed in the delivery aperture that it shall lead the ink down on one side of the aperture and allow the air to enter the other, as set forth.

PRESSES FOR MOULDING GLASS—By Wm. O. Davis, of Pittsburgh, Pa.: I claim the combination of the rocking shaft, connecting rods, swinging beam, and toggle joint lever: or their equivalents, as described, for the purpose of procuring a vertical pressure in presses, together with the mode of attaching them, so as to relieve the bed-plate and frame-work of the press of any strain.

DIVIDED RAILROAD AXLES—By S. L. Denney, of Christiana, Pa.: I claim the gradual conical enlargement terminating in the more abrupt curved portion, toward the inner end of one part of the axle, in combination with the alloy surrounding it and the adjustable connecting box, arranged and operating as described.

[See engraving of this invention on page 53 of this volume, Sci. Am.]

COTTON PRESSES—C. J. Fay, of North Lincoln, Me.: I claim the use of the slats or guide strips, arranged as set forth.

SAW MILLS—E. W. Johnson, of Perth Amboy, N. J.: I claim the arrangement of mechanism for driving two saws, or gangs of saws, and placing the whole upon the bed plate, as set forth.

PROPELLERS—Harry Leach, of Boston, Mass.: I claim the specified improvement in constructing a propeller, viz., of a combination with each of its arms, of two parts or floats, projecting in opposite directions, and an opening or passage arranged between them for the escape of back water, as described.

APPARATUS FOR CLEANING AND BUFFING DAGUERREOTYPE PLATES—Thomas Longking, of Brooklyn, N. Y.: I do not claim the buffing wheel nor any of the parts separately.

But I claim, first, fitting the revolving cushion with the ring, by which the canton flannel or similar covering is secured to the cushion, or removed, and a new cover substituted when required, as specified.

Second, I claim the arrangement of the gearing and shafts, by means of which the cleaning cushion is combined with the buffing wheel, as set forth.

QUARTZ CRUSHERS—T. O. Cutler, of Jersey City, N. J.: I claim the employment of balls to act by centrifugal action due to their rotation about a common center, as specified, when the said balls are combined and act against the inner periphery of a shell or concave which rotates on a common axis with the balls, and which, by reason of its rotation, distributes and holds the material to be ground, &c., in the concavity of the said shell, as specified.

SHUTTER HINGES—Harvey Lull, of South Coventry, Ct., (assignor to Harvey Lull and Richard Porter, of Wheeling, Pa.) Ante-dated Jan. 2, 1854: I claim the so forming of a self locking shutter hinge, cast in two pieces, as that the blind or shutter hung thereon may swing open or shut on a horizontal plane and lock, when opened to its limit, and so that also when locked open, the strain shall be taken off from the spindle and thrown on to cam arms, and thus effectually relieve the spindle from the weight or strain of the shutter, as described.

ROLLERS FOR SCARFING THE EDGES OF SKELPS FOR LAP WELDED TUBES—James McCarty, of Reading, Pa.: I claim a pair of roller constructed, arranged, and adjusted as described, so as to bevel the opposite edges of skelp plates of different widths on opposite sides of the same.

STEAM HAMMERS—J. L. L. Morris, of Reading, Pa.: I do not claim attaching the hammer to a beam, which is operated by a piston in a steam cylinder, when the hammer is connected rigidly to the beam, as that would be equivalent to what is known as the "helve" steam hammer.

I claim, first, admitting steam to the cylinder above the piston, and exhausting the steam therefrom through ports, which are opened and closed by an annular valve working in the cylinder itself, or in a steamchest which is placed above, and forms a continuation of the cylinder, as described.

Second, I claim the combination of a bell crank latch lever with a trigger or catch, or other shape capable of operating as described, when the fulcrum of the said latch lever is attached and stationary in relation to the hammer block, and one end or arm is attached to the connecting rod of the hammer block and receives the necessary movement to actuate the trigger or catch, to set free the valve rod by means of a continuous descent of the connecting rod after the hammer is arrested by striking the blow, as set forth.

[This is a good improvement. See notice on page 20, this Volume.]

ELECTRO-MAGNETIC ENGINES—Chas. G. Page, of Washington, D. C. Patented in England May 3, 1851: I claim the employment of the axial action or force of the electric current as a mechanical agent or motive power for the various purposes named, the power being produced by the combination or united operation of a helix or helices, an axial bar or bars of iron, and a cut-off, or its equivalent, for regulating the motion of the axial bar or bars, under a general arrangement in principle, as set forth.

And I claim also the employment of co-operating electro-magnets or armatures, in combination with axial bars, helices, and cut-off, or its equivalent, substantially as set forth.

Lastly, I claim the employment of square wires in the construction of helices for electro-magnetic purposes, as set forth.

[This invention of Dr. Page is published on page 65, Vol. 7, Sci. Am., with a full description.]

WATER GAUGES FOR STEAM BOILERS—Wm. Palmer, of New York City: I claim the use of the double tubular case in combination with the lever, having a float at one end working in one of the tubes, and a compensating plate or equivalent device, at the other, working in the opposite tube, for the purpose set forth.

I also claim the use of the lever having a float at one end of it and a compensating plate at the other, whether working in a double tubular case or otherwise, in combination with an upper and lower rod valve for operating a bell by means of the steam escaping through these valves, whether using the pad dle wheel or any equivalent device for that purpose, to indicate the minimum or maximum of the water in the boiler as set forth.

MANUFACTURE OF SHEET-IRON—E. G. Pomeroy, of Pittsburg, Pa.: I do not claim the use of the described materials, in combination, as a paint or composition that may be forced into the surface of iron.

But I claim incorporating, as described, solid carbonaceous matter with the surface of iron so as to protect it from oxydation and beautify it at the same time.

CONSTRUCTION OF PRINTING BLOCKS—Benj. Underwood, of Brooklyn, N. Y.: I claim the peculiar construction of the type described, so that when combined in a case such as specified, any given design may be produced for printing oil cloths, carpets, or other fabrics, as fully set forth.

I also claim the formation of blocks for printing oil cloth carpets or other fabrics by the combination and arrangement of sections or type, such as described, by which an endless variety of patterns may be produced from the same sections variously disposed, at a comparatively small cost.

CARPET BAGS—F. J. Thring, of New York City: I claim constructing the carpet bag with its top and bottom of equal or nearly equal widths, and arranging round its front a strong metallic frame, and attaching to the front and near the center of said metallic frame, by hinges or loose joints, a metallic swinging cover, which extends from the center to the top of the frame, and has a ledge on its inner face, the said cover serving to close up the mouth of the bag, and in connection with the metallic frame to keep out all dust and rain. The whole being constructed, arranged, and operating in the manner specified.

MACHINE FOR PAGING BOOKS—By Edward Town, of Jersey City, N. J.: I claim the arrangement of type in spiral columns around a cylinder, for the purpose of printing successive numbers, the cylinder being moved laterally while it revolves by means of a screw on the end of its shaft, as described.

I also claim the right to use any number of cylinders on a single machine, as set forth.

STEAM HAMMERS—P. L. Weimer, of Reading, Pa.: I make no claim to being the originator of not admitting steam into the cylinder until after the hammer has struck its blow: the same being effected by others, although by different arrangement of device from that which I employ.

I do not claim admitting steam into the cylinder of steam hammers by means of the recoil of the anvil caused by the blow of the hammer.

But I claim the arrangement of the toggle, the catch, two arms, the weight and shaft, for the purpose of opening the valve admitting steam into the cylinder from the concussion or spring of the anvil in its bed, caused by the force of the blow of the hammer.

CHURNS—I. L. Dickinson, of Richmond, Ind.: I claim the combination of the movable or rotating dashers, with the breakers, as described, so that said breakers may remain stationary, while churning and revolve with the dashers to collect the butter, as described.

FURNITURE CASTERS—Le Roy S. White, of Chicopee, Mass.: I do not claim making the shank of the caster detachable from its socket: nor do I claim the employment of a spring to hold the shank in the socket; nor the arrangement of said spring in a groove made in and around the shank, and the making the spring to bear against the internal surface of the socket made without a groove.

But I claim the arrangement of the sustaining groove of the spring in the socket, instead of in the shank, so that when the shank is being drawn out of the socket, or when it is within or out of the same the spring will remain in the socket.

And in combination with the spring and groove made in the socket, I claim to make the groove of the shank with its upper side flaring and the upper end of the shank beveling, as described, the said flare of the side of the groove and the top rendering the shank capable of being detached from or attached to the socket.

RE-ISSUE.

OPENING AND CLOSING GATES—S. G. Dugdale, of Richmond, Ind. Patented originally Oct. 11, 1853: I claim, first, opening, closing, fastening, and unfastening the gate, by moving the bottom of the gate in an oblique direction from and to the post upon which it is hung, as specified.

Second, I also claim the use of the pendulous and vertical levers and arms in combination with the hinges of the gate, as set forth.

DESIGNS.

CANNON STOVE—William Resor (assignor to Wm. and R. P. Resor & Co.) of Cincinnati, Ohio.

COOKING STOVE.—By Conrad Harris and P. W. Zoiner, of Cincinnati, Ohio, assignor to Alex. Bradley, of Pittsburg, Pa.

COOKING STOVE—Peter Seibert (assignor to Alexander Bradley), of Pittsburg, Pa.

Care of the Eyes.

Dr. Dafter says: "So many women complain of weak eyes, that we have thought it wise to give some directions as to reading and writing, by which the sight may be preserved uninjuried. Observe then, that the light should never be allowed to fall on the paper, or on the eyes of the reader, or writer, but the left side; for then the eyes are not annoyed with the shadow of the pen, as will be the case, when the light comes from the right side. That writing tries the eyes more than reading is a popular error; and, in writing, blueish paper is better for the eyes than pure white. When the eyes feel fatigued, bathing them in cold water will both strengthen and relieve them. In reading great relief will be found if the eyes are turned from the book to some soft and harmonious colors. Brilliant colors, therefore, in paper or paint, should not be chosen for a library or sitting-room, where either reading, or writing, or sewing is going on. For sewing, that peculiarly feminine employment, is quite as trying to the eyes as study; and fine sewing at night is really very injurious, and should be avoided if possible. Generally the eyes should be used, in all these occupations, as much as can be in the morning. Ground glass shades, at night, are bad, as they deaden the light too much; the common paper shade, which concentrates the light downward is better."

The Precious Metals.

TOUGHENING GOLD.—Wolf proposes, in the Practical Hand-book for Jewellers, to fuse the brittle gold in a new crucible, and when melted to throw in one or two pieces of sulphur of the size of a pea, to shake the crucible a little with the tongs, and to cast it rapidly into a heated mould. He also proposes to render small pieces malleable by coating them with powdered borax, and heating them in the blow-pipe flame, until the surface commences fusion.

Both of these methods are resorted to at the United States Mint, but the choice of either depends upon the nature of the accompanying metals that give the gold its brittle character. When there is a quantity of iron present, the gold is fused with a mixture of sulphur, potash, and soda, which will remove it by making the very fusible mixture of sulphurets of iron and alkali. If tin, arsenic or antimony be present, a good flux is a mixture of borax, soda, and saltpeter, the last for oxidizing the foreign metals into their respective acids, the soda to give base to those acids, and the borax to collect the slag. In both these cases a sand or clay crucible is preferable to a black-lead pot, in which last the graphite acts reducingly. Where lead is present this process may partially effect its removal; but it is more completely effected during quartation and by washing the fine gold thoroughly with hot water, after extracting the silver by nitric acid. Another method of removing lead would be to fuse the gold with a little saltpeter, borax, and silica, whereby a fusible slag of oxyd of lead would result, and might be skimmed from the surface of the gold. Palladium and platinum, not unfrequently present in California gold, are also removed by the nitric acid in parting silver from gold. Grains of iridosmin have been observed in California gold, in distinct particles, even after three or more fusions, and seem to have no tendency whatever to enter into an alloy; but, whilst casting such gold, these paticles collect at the bottom of the pot, from their greater specific gravity, and, by remelting in a small crucible, and carefully casting, they may be obtained mixed with a small quantity of gold. The latter is dissolved by nitromuriatic acid, and the iridosmin obtained pure.

PLATINOID METALS.—Platinum is associated with several other metals in the platinum sand which is found in some gold-districts.—They have not been found as a distinct deposit in California, but have been observed in the United States Mint in the operations of assaying and parting. These associated metals are palladium, rhodium, iridium, and osmium, to which we must add the lately discovered metal, ruthenium. They have a sufficient resemblance to be classed together, and are obtained by a similar hydrometallurgic treatment. The grains of iridosmin, alluded to under gold, have been qualitatively examined and found to contain the new metal ruthenium, as was observed by Claus in relation to the iridosmin from other localities. Palladium has been observed, and at times in sufficient quantity to render the gold brittle. The quantities of platinoid metals found in the California gold are small, about 1½lb of iridosmin having been obtained from about 25 tons of the gold, 3-100000, but the greater part has, of course, passed into the coin, the coarser grains only being left.—[By Prof. Booth in the transactions of the Smithsonian Institute.

French Rivers Breaking up.

The breaking up of the rivers of the north of France, after the late heavy snows and severe frost, threatened to cause great damage, but seems to have passed over without either serious collision or inundation. The explosion of the Seine, near the Pont Neuf, as the rising water cracked the frozen crust, was heard a mile. A large police force was ready, all the boatmen had double lashed their boats, the bathing houses were made fast with huge iron cables, and the washerwomen's rafts were hooked into pilasters and parapets. In forty eight hours the river was clear. The Seine rose three feet in half an hour, and the current was laden with icebergs that would have done honor to Spitzbergen.

Arsenic Eaters.

The Styrian peasants, says Professor Johnston, eat arsenic as the Chinese eat opium.—They eat it for two specific purposes—to acquire plumpness and freshness of complexion, and to improve their "wind," so as to enable them to climb long steep mountains without difficulty of breathing. And, strange to hear, these specific purposes are attained. The young poison-eaters are remarkable for blooming complexions, and full, rounded, healthy appearances. The peasant, after dissolving a slight particle of arsenic in his mouth, ascends heights with facility which he could not otherwise do without the greatest difficulty of breathing.

Bed Clothes.

The perfection of dress—day or night—where warmth is the desideratum, is that which confines around the body sufficient of its own warmth, while it allows escape to the exhalations of the skin. Where the body is allowed to remain in its own vapors we must expect an unhealthy effect upon the skin. Where there is too little ventilating escape, insensible perspiration is checked, and something analagous to fever supervenes. Foul tongue, ill taste, and lack of morning appetite betray the result.

Amorphous Phosphorus.

Considerable attention has been drawn of late to a variety of phosphorus bearing the above name, which has been recommended for the manufacture of lucifer matches, &c., both as being less injurious to the health of the workmen, and less apt to ignite on being handled. From the researches of Puttfacken, however, it appears that the substance in question, although undoubtedly possessing the above valuable properties, is merely a low oxyd of ordinary phosphorus, and not, as was supposod, an allotropic modification.

A Remedy for the Vine Disease.

It is doubtless well known to most of our readers, that the vineyards of Southern Europe and the Madeiras have been blighted by a microscopic acarus, the "Oidium Tuckeri," and that the price of wines, raisins, &c., has been considerably raised. It has, however, been ascertained that the use of manures, rich in iodine, enable the vine to resist these destroyers. In certain districts of Spain, decomposed seaweeds are ordinarily used as manure. In those parts in which the amount of iodine in the soil may average 1-600000 the vines have entirely escaped.

California Postage.—Extortion.

We have received many complaints from California respecting the exhorbitant rates of postage charged upon our paper. A subscriber from San Franciso says that he has been charged 75 cents per quarter, postage, upon the Scientific American! We have taken pains to inquire of the proper authorities here, and find that 6¼ cents if paid in advance, is all that can be legally charged. We trust that our subscribers there will submit to no such extortion.

Strychnine for Panthers.

A farmer in California recently killed a large panther in the following manner:—"The animal attacked his pig-pen, killing a fine hog and eating about half of it. He then anointed the other half with strychine, and left it on the same spot. The ensuing night brought the depredator again to its feast; and the next morning a huge she-panther and three cubs were found extended lifeless on the ground. The animal was of an extraordinary size, measuring six feet from the nose to the root of the tail, and nine from tip to tip.

Glass bottles were first made in England, about 1558. The art of making glass bottles and drinking glasses was known to the Romans in the year 79, A. D.,—they have been found in the ruins of Pompeii.

The most stupendous canal in the world is one in China, which passes over two thousand miles, and to forty-one cities; it was commenced in the tenth century. A monster work of man.

The largest and oldest bridge in the world is said to be that at Kingtung, in China, where it forms a perfect road from the top of one lofty mountain to the top of another.