American Association for the Advancement of Science.

The thirty-eighth meeting of this association will begin in Toronto, Canada, Aug. 27, at the Queen's Hotel, the sessions to continue for a week, and the meeting closing with excursions extending to Sept. 7. A special circular in relation to railroads, hotels, etc., will be issued by the local committee, of which Mr. Charles Carpruael is president and Prof. James Loudon secretary, and members about changing their address for the summer should notify the committee. The officers elected for the Toronto meeting are:

President—T. C. Mendenhall, of Terre Haute, Ind.

Vice-Presidents—A. Mathematics and Astronomy—R. S. Woodward, of Washington. B. Physics—H. S. Carhart, of Ann Arbor, Mich. C. Chemistry—William L. Dudley, of Nashville, Tenn. D. Mechanical Science and Engineering—Arthur Beardsley, of Swarthmore, Pa. E. Geology and Geography—Charles A. White, of Washington. F. Biology—George I. Goodale, of Cambridge, Mass. H. Anthropology—Garrick Mallery, of Washington. I. Economic Science and Statistics—Charles S. Hill, of Washington.

Permanent Secretary—F. W. Putnam, of Cambridge, Mass. (office Salem, Mass.)

General Secretary—C. Leo Mees, of Terre Haute, Ind.

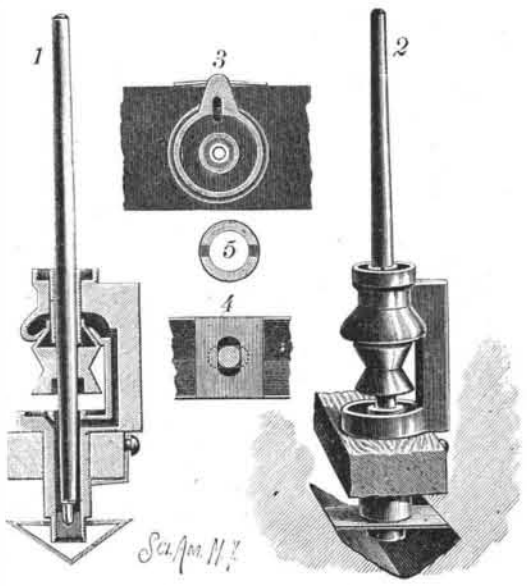
Secretary of the Council—Frank Baker, of Washington.

Secretaries of the Sections—A. Mathematics and Astronomy—G. C. Comstock, of Madison, Wis. B. Physics—E. L. Nichols, of Ithaca, N. Y. C. Chemistry—Edward Hart, of Easton, Pa. D. Mechanical Science and Engineering—James E. Denton, of Hoboken, N. J. E. Geology and Geography—John C. Branner, of Little Rock, Ark. F. Biology—Amos W. Butler, of Brookville, Ind. H. Anthropology—W. M. Beauchamp, of Baldwinville, N. J. I. Economic Science and Statistics—J. R. Dodge, of Washington, D. C.

Treasurer—William Lilly, of Mauch Chunk, Pa.

A SPINDLE SUPPORT FOR SPINNING MACHINES.

The accompanying illustration represents a spindle support from which the oil cannot be thrown out by centrifugal force, but will be properly distributed to the bearings, and the spindle kept clean. It has been patented by Mr. Joseph Duffy, of No. 48 Wayne Avenue, Paterson, N. J. Figs. 1 and 2 represent a vertical section and elevation of the device with the oil trough in section, Figs. 3 and 5 being horizontal sections through the tubular bearing of the spindle, and Fig. 4 a horizontal section near the base. The tubular socket portion which receives the lower end of the spindle has horizontal arms connected by a vertical portion, the upper horizontal arm having an aperture through which projects a tubular bearing for the spindle, the upper end of this bearing projecting into an annular chamber on the top of the arm and forming an oil chamber. The upper end of this bearing is formed with radial grooves, as shown in Fig. 5, to permit the passage of oil from the chamber down between the spindle and the tubular bearing. Surrounding the lower end of the aperture in the upper arm is an annular chamber, into which projects the neck of a whirl mounted on the spindle, the whirl having an annular chamber with inclined sides. From one side of the upper annular chamber an oil passage extends down through the vertical arm and the lower horizontal arm to the tubular socket at the base, and beneath the whirl, in the top of the lower horizontal arm, is an annular oil chamber also connecting with the socket at the base. As the spindle revolves, the oil works down into the upper annular chamber, the inclined sides of which prevent its escape, the oil returning to the spindle and up its tubular bearing when the spindle is at rest. Should this chamber become overcharged, the oil is carried by centrifugal force into an outer chamber and into passages finally leading to the tubular socket at the base.



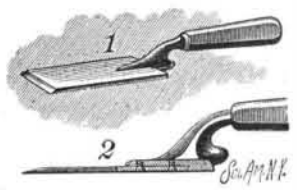
DUFFY'S SUPPORT FOR SPINNING SPINDLES.

The American Engineers' European Trip.

Some weeks ago we spoke of the visit of the different American engineering societies to Europe. With the Paris exposition as the central feature of interest, they proposed to visit engineering works of importance within an accessible distance. We have already printed a notice of their arrival in London and of the many receptions and entertainments to be tendered them. Already comments on the engineering works of England have begun to reach us from them, the contrast between American and English methods proving quite impressive. It is evident that both in the way of instruction and pleasure the trip will be a memorable one to all concerned, and that a crop of ideas will be gathered that may serve as a source of seed to reproduce in this country the valuable features of the more conservative engineering practice of the older lands.

PALMER'S IMPROVED CARPENTER'S CHISEL.

The illustration herewith represents a chisel or gouge for carpenters' use which has been patented by Mr. Theron H. Palmer, of San Bernardino, Cal. Figs. 1 and 2 represent top and side views of the device, which has its shank and handle portion bent out of line with its blade or cutting portion. The blade is provided with an anvil or hammer block at its rear to form a striking surface, when using a hammer or mallet with the tool to force it up to its work, instead of striking on the end of the handle direct, which is liable to split or bruise the handle.



A Curious Chemical—Oxalomolybdic Acid.

A new substance, singular alike in its chemical nature and in its properties, says *Nature*, has been discovered by M. Pechard. It is a mixed acid derived from oxalic and molybdic acids, and is, therefore, termed "oxalomolybdic acid." The crystals of oxalomolybdic acid, when dry, may be preserved unchanged either in sunshine or in the dark; but, if moist, they quickly become colored blue when exposed to the sun's rays. If characters be written on paper with the solution, they remain invisible in a weak light; but when exposed to sunshine, they rapidly become visible, turning to a deep indigo color. It is curious that this effect only happens when the solution is spread over paper or other surfaces; for the solution itself may be kept unaltered in the bottle for any length of time, except for a trace of blue at the edge of the meniscus, where, by surface action, a little is spread against the interior glass walls. If a sheet of paper be immersed in a saturated solution of the acid, dried in the dark, and then exposed behind an ordinary photographic negative, a very sharp print in blue may be obtained by exposure to sunlight for about ten minutes. The color instantly disappears in contact with water; so that if a piece of this sensitized paper be wholly exposed to sunlight, one may write in white upon the blue ground by using a pen dipped in water. If, however, the paper with its blue markings be exposed to a gentle heat for a few minutes, the blue changes to black, and the characters are then no longer destroyed by water

Keeping at It.

It is a great mistake to suppose that the best work of the world is done by people of great strength and great opportunities. It is unquestionably an advantage to have both these things, but neither of them is a necessity to the man who has the spirit and the pluck to achieve great results. Some of the greatest work of our time has been done by men of physical feebleness. No man has left a more distinct impression of himself on this generation than Charles Darwin, and there have been few men who have had to struggle against such prostrating ill health. Darwin was rarely able to work long at a time. He accomplished his great work by having a single aim, and putting every ounce of his force and every hour of his time into the task which he had set before him. He never scattered his energy, he never wasted an hour, and by steadily keeping at it, in spite of continual ill health and of long intervals of semi-invalidism, he did a great work, and has left the impression upon the world of a man of extraordinary energy and working capacity. Success is rarely a matter of accident, always a matter of character. The reason why so many men fail is that so few men are willing to pay the price of self-denial and hard work which success exacts.—*The Christian Union.*

The Population of the United States.

The present estimated population of the United States is 64,000,000. The rate of increase, exclusive of immigration, is estimated at 1·8 per cent per annum—about 100,000 a month. By immigration the increase of population averages over 43,000 a month, or over half a million yearly. The aggregate annual growth from both causes will not fall much short of a million and three-quarters. The estimated foreign population is not far below 14,000,000.

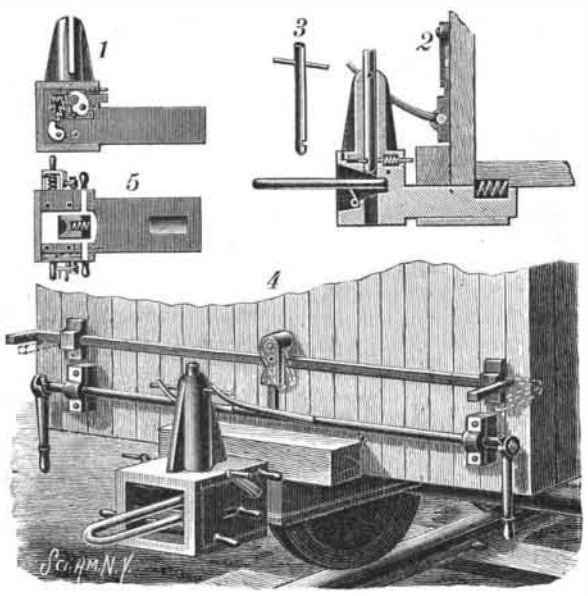
The Sources of Beautiful Colors.

The *American Druggist* has formulated a list of the choicest colors used in the arts, as follows:

The cochineal insects furnish a great many of the very fine colors. Among them are the gorgeous carmine, the crimson, scarlet carmine, and purple lakes. The cuttlefish gives the sepia. It is the inky fluid which the fish discharges in order to render the water opaque when attacked. Indian yellow comes from the camel. Ivory chips produce the ivory black and bone black. The exquisite Prussian blue is made by fusing horses' hoofs and other refuse animal matter with impure potassium carbonate. This color was discovered accidentally. Various lakes are derived from roots, barks, and gums. Blue black comes from the charcoal of the vine stalk. Lamp black is soot from certain resinous substances. Turkey red is mud from the madder plant, which grows in Hindostan. The yellow sap of a tree of Siam produces gamboge; the natives catch the sap in cocoanut shells. Raw sienna is the natural earth from the neighborhood of Sienna, Italy. Raw umber is also an earth found near Umbria and burnt. India ink is made from burnt camphor. The Chinese are the only manufacturers of this ink, and they will not reveal the secret of its manufacture. Mastic is made from the gum of the mastic tree, which grows in the Grecian Archipelago. Bister is the soot of wood ashes. Very little real ultramarine is found in the market. It is obtained from the precious lapis-lazuli, and commands a fabulous price. Chinese white is zinc, scarlet is iodide of mercury, and native vermilion is from the quicksilver ore called cinnabar.

AN IMPROVED CAR COUPLING.

A car coupling designed for use with a link and pin, and permitting an automatic coupling of two cars on a slight collision, while also adapted for the coupling of cars of different heights, is illustrated herewith, and has been patented by Mr. Vincent Nusly, of No. 718 Franklin Street, Sandusky, Ohio. Figs. 1 and 2 are sectional side elevations of the drawhead, Fig. 3 shows the coupling pin, Fig. 5 is a plan view of the drawhead with the top plate removed, and Fig. 4 is a perspective view of the improvement as applied. Supported by a suitable bearing in the bottom of the car is mounted to slide a bar on the front end of which is the drawhead, a spring holding the drawhead to permit a slight inward motion when two drawheads come together. In an offset on top of the drawhead the coupling pin is held to slide vertically, a notch in the lower end of the pin being engaged by a horizontal slide in the top of the drawhead, this slide having a rearward projection adapted to be engaged by a transverse beam on the front of the car, and having a projecting arm at each side of the drawhead for conveniently moving it by hand. A spring presses against the slide to hold it in engagement with the raised coupling pin until two drawheads come together, when the pin drops to engage the entering link. Near the upper end of the coupling pin are arms passing through vertical slots in the offset on the drawhead, the arms on the pin being adapted to be engaged by arms projecting from a shaft extending transversely on the front of the car, each outer end of this shaft having a lever by means of which the shaft may be turned to lift the coupling pin into its raised position. On this shaft is also fastened centrally an upwardly extending arm, adapted to be locked in place by a lock plate pivoted on the front of the car, and pivotally connected with a transverse rod, on each outer end of which is a handle for laterally moving the rod to disengage the lock plate, the locking of the arm holding the pin in its uppermost position when the cars come together, even if the slide is disengaged from the notch in the pin. In the drawhead is a link-raising mechanism, operated by handles at the side, whereby the link may be raised or lowered and held in the desired position to couple cars of different heights.



NUSLY'S CAR COUPLING.