

estimate of the average rate of wages in the United States, area of the Western Territories and of the States, weights and measures of the United States and other countries, &c., &c.

THE ILLUSTRATED FAMILY REGISTER OF RURAL AFFAIRS AND CULTIVATOR ALMANAC, for 1861. Albany: Luther & Son.

This volume contains practical suggestions for the farmer and horticulturist, and is embellished with over 140 illustrations. It is edited by John J. Thomas, author of the "American Fruit Culturist," &c., and associate editor of "The Country Gentleman" and "The Cultivator." Price, 25 cents.

NORTH BRITISH REVIEW. New York: Leonard Scott & Co., No. 51 Gold-street.

The number for this quarter contains several able papers on various subjects. One—on "American Humor"—is decidedly able; another—on "The Martyrdom of Galileo"—is of thrilling interest to men of science and the lovers of truth.

HIDE AND SEEK—A novel; by Wilkie Collins. New York: Dick & Fitzgerald, No. 18 Ann-street.

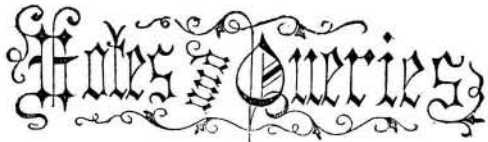
We are indebted to the above firm, the American re-publishers, for a copy of the much-talked-of novel, "Hide and Seek," by the great English romancer, Wilkie Collins, author of the "Dead Secret," the "Woman in White," &c. Price, 50 cents.

ETIQUETTE; edited by Henry P. Willis. New York: Dick & Fitzgerald, No. 18 Ann-street.

This volume contains the most approved rules for correct deportment in fashionable life. If any of our mechanics or inventors desire to make a mark in snobbish society, let them study these hints.

BOOKS FOR CHILDREN.—We find, on the approach of Christmas, our table well supplied with books adapted to the instruction and amusement of the young. Of late years, much attention has been devoted by authors to this branch of literature. We are glad to notice this fact, and would encourage mechanics to spend a little of their earnings for the benefit of their children in the way of interesting and entertaining publications. Messrs. Crosby, Nichols & Lee, of Boston, have published the "Little Frankie Stories;" also, the "Little Robin's Nest," by Mrs. Makeline Leslie. Six volumes in each set, making twelve books—beautifully printed, and well illustrated. These books are most excellent, and we can recommend them highly.

HALL'S JOURNAL OF HEALTH begins a new volume on January 1, 1861; \$1 a year. Address box No. 3,349, New York Post Office.



J. F. R., of Pa.—The machine for drilling the Hoosac tunnel is driven by a steam engine. A number of drills are operated at once; these receive a motion on their vertical axes as they are struck by the hammers. You will find a drilling machine illustrated on page 153, Vol. III. (old series) of the SCIENTIFIC AMERICAN.

D. R., of N. C.—"Carbon oil," so called here, is not made from rosin tar, we believe, but from coal. The way to burn rosin tar, to obtain lampblack, is to place it in a furnace and burn it with a small amount of air, conducting the smoke into cylindrical chambers hung with coarse bags, upon the surface of which the lampblack is deposited.

J. P. S., of Ky.—A magnetic, locomotive driving wheel would not be patentable in itself, but there may be some feature of a patentable character in the details of its construction. When you send the model we shall be able to give a more definite opinion. Superheated steam can be used expansively with as much advantage as saturated steam, so far as we can judge from the statements of those who have thus employed it.

D. C., of N. Y.—There is nothing patentable about the sulphur vapor bath, as far as we have been able to ascertain.

A. W., of Conn.—You will find a full illustrated description of the processes and compositions for enameling iron on page 183, Vol. IX. (old series), of the SCIENTIFIC AMERICAN. It would take up too much of our time to describe the processes by letter.

L. K. W., of Va.—The SCIENTIFIC AMERICAN is the only source where you can obtain information respecting the general progress of invention for the past 15 years. You will find an electric lamp illustrated on page 404, Vol. VIII. (old series).

T. H., of Mo.—As we understand your question, it will take the same amount of power to drive a pinion placed at any part of the inside rim of a large spur wheel rolling on the ground. To balance the resistance to the large wheel, however, it would be the most suitable position to set the pinion directly in line above the point of contact, where the wheel touches the ground.

J. B. S., of Wis.—In laundries, mangles are employed for pressing sheets and other kinds of domestic linen. The fine gloss is put upon collars and bosoms with the iron rubbed on rapidly while hot. The collars are placed on a hard surface of pasteboard, and they require a good body of starch containing a minute quantity of sperm.

S. C., of Va.—The needle will dip in proportion to its nearness to the magnetic poles. A due north line is not that of the maximum dip of the needle at present. The magnetic pole is at a point about 109 from the north pole. By changing the magnetic meridian east or west, the dip of the needle varies accordingly, and it is continually changing. The magnetic poles seem to have a slow revolution round the true poles of the earth.

W. R. A., of Penn.—A horse-power is power sufficient to raise 33,000 lbs. one foot high in one minute. A column of water, 20 inches in diameter and 58 feet long, contains 122.17 cubic feet, and weighs, at 62 1/2 lbs. to the cubic foot, 7,665 lbs. To raise this weight 240 feet requires 1,839,600 foot pounds, and to accomplish this work during each minute would require 55 4/5 horse-power. A single acting engine, with a cylinder 38 inches in diameter and 20 stroke, making 20 strokes per minute, with steam at 100 lbs. pressure, would give a gross yield of 550 horse-power; deducting 1/4 for friction, &c., and we have a net power of 418 horse-power.

W. P. H., of Ill.—Your method of supplying a continuous stream of mercury to Way's electric light is ingenious, and we believe it is also patentable.

P. M., of C. W.—You can purchase the colors for graining oak at any good paint store. These colors are made of sienna, umber and Vandyke brown. They are put on a lighter ground, and the streaks and wave lines are made by removing portions of the coating with a piece of soft leather or rags placed upon the artist's finger. A wooden comb is employed to make the fine streaks or grains. It requires much skill and good taste to be a first rate grainer of wood.

J. P., of Ala.—An excellent cement for slabs of marble is made by steeping plaster of Paris in a strong solution of alum, then drying and calcining it, after which it is reduced to powder and is fit for use by mixing with water. This cement becomes very hard, but is not adapted for exposure to the weather. It is useful for setting the tiles and slabs of tessellated pavements, and may be employed as a substitute for stucco in making plaster ornaments. We cannot give you the information requested about the nitrate of the oxyd of glycerine.

J. G., of C. W.—The cost for an English patent is the same to a British subject as to any American citizen. A good metal for making models is 20 ounces copper to 10 of tin. It is sufficiently tough and is easily worked. It is necessary to put rollers in your model and render every part complete on which any claim is to be based.

J. M. G., of N. Y.—Though there is great difference of opinion about the time of the first olympiad, chronologists agree to reckon from the one the first year of which was the 776th before Christ. Consequently, this is the 6539th, as you say. As Professor Pierce, of Cambridge, is interested in the "American Nautical Almanac," if you will write to him, he will inform you where you can procure it.

C. A. B., of N. Y.—Benzole is to be had in this city at \$1.25 per gallon.

G. D. G., of N. Y.—The alloy of all the United States silver coins consists of nine parts of silver to one of base metal. The weight of the three cent piece is 11 52/100 grains.

C. W. B., of N. Y.—The statement that a caloric engine could be run with an expenditure of a half pound of coal per horse-power per hour was probably intended to be understood as theoretical. We do not believe that this has ever been realised.

W. W., of Ind.—As the axle of the gyroscope is supported at one end, the revolving disk at the opposite end cannot fall without changing the plane of its rotation; but as gravity overcomes the resistance offered by the inertia of the rotating disk this change of plane, the effort to preserve the same plane of rotation causes the revolution around the center.

S. D. S., of Tenn.—You will find articles on the reforming of our weights and measures on pages 54 and 70 of the present volume of the SCIENTIFIC AMERICAN.

D. W., of Ill.—We do not know anything better to prevent polished iron work from rusting and turning black than common clear varnish, containing a little bleached beeswax. Clear copal varnish is very good of itself for the purpose, because it contains linseed oil.

J. M. L., of Mich.—The paper for Bains' chemical telegraph was prepared with the prussiate of potash and a small quantity of the chloride of calcium. The latter kept the paper in moist condition. We are not acquainted with any good reason why the chemical telegraph was abandoned. You will find the best modes of constructing batteries described in Prescott's able work on the telegraph.

S. R. K., of Mich.—The following is a simple rule to ascertain the nominal horse-power of a common condensing engine:—"Multiply the square of the diameter of the cylinder in inches by the cube root of the stroke in feet, and divide the product by 47; the quotient is the number of nominal horse-power of the engine." This rule assumes the existence of a uniform effective pressure upon the piston of 7 lbs. per square inch. The actual power of an engine can only be ascertained by the use of an indicator attached to the cylinder, to indicate the amount of pressure or vacuum existing within the cylinder. About one pound and a half of the pressure per square inch is allowed for friction, working the air pump, &c., expended on the engine itself.

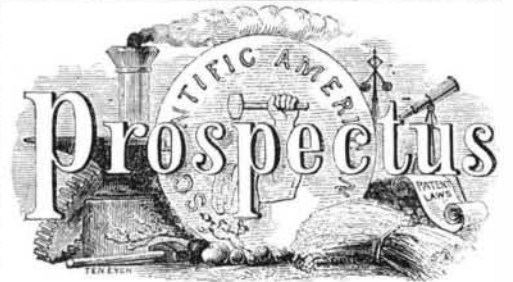
MONEY RECEIVED

At the Scientific American Office on account of Patent Office business, for the week ending Saturday, Dec. 15, 1860:—

- P. R., of Ill., \$15; J. H., of Conn., \$30; H. T. S., of Mich., \$5; S. M. D., of Tenn., \$3; W. H. G., of N. Y., \$25; W. M., of N. Y., \$50; D. M., of Ohio, \$25; E. G. P., of N. Y., \$150; J. C. A., of Md., \$30; J. S. & J. W. H., of Ill., \$25; J. P., of Texas, \$55; A. H. & C. R. B., of Ind., \$30; J. H., Jr., of Vt., \$30; P. D. Van H., of N. Y., \$55; A. A., of N. Y., \$12; W. L. F., of N. J., \$35; J. B. C., of N. Y., \$12; O. S., of Conn., \$30; W. M. & C. W. H., of Maine, \$30; W. J. G., of Conn., \$35; D. H., of Ala., \$25; F. P., of Tenn., \$25; J. B., of Texas, \$25; C. & L., of N. Y., \$30; P. S., of N. Y., \$25; O. C. T., of Pa., \$30; G. P. R., of Mass., \$10; M. P. H., of Ohio, \$30; R. R. L., of N. Y., \$55; C. W. J., of Conn., \$55; W. H. D., of Ill., \$35; G. F. J. C., of N. J., \$25; J. L. Y., of N. Y., \$12; W. D. L., of N. Y., \$25; E. G., of N. Y., \$30; E. C., of Ohio, \$30; W. H. S., of Ill., \$25; W. Y., of Ind., \$10; W. D. L., of N. Y., \$50; H. S. W., of Mass., \$50; A. J. G., of Mass., \$25; P. J. W., of Pa., \$30; R. L. U., of N. Y., \$12; C. C. F., of Mass., \$25; B. & S. I. L., of Maine, \$30; O. B., of N. Y., \$25; W. J. G., of Conn., \$25; W. R. A., of Ill., \$25; J. S. C., of N. Y., \$25.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 15, 1860:—

- J. H., Jr., of Vt.; P. R., of Ill.; H. G. N., of N. Y.; J. B., of Texas; J. W. F., of Pa.; G. F. J. C., of N. J.; J. E. Y., of N. Y.; D. M., of Ohio; S. W. M., of N. Y.; P. S., of N. Y.; J. W. & J. S. H., of Ill.; E. P. T., of N. Y.; C. W. J., of Conn.; A. G. M., of N. Y.; T. F. B., of Vt.; O. E., of N. Y.; A. A., of N. Y.; D. H., of Ala.; W. H. S., of Ill.; W. M. B., of Ind.; J. E. C., of N. Y.; W. L. F., of N. J.; J. B. C., of N. Y.; C. C. F., of Mass.; P. D. Van H., of N. Y.; H. T. S., of Mich.; J. P. S., of N. Y.; W. H. G., of N. Y.; F. P., of Tenn.; W. J. G., of Conn.; W. R. A., of Ill.; D. H. T., of N. Y.; A. J. G., of Mass.; W. D. L., of N. Y.; R. L. U., of N. Y.; J. G., of Ky.



SEVENTEENTH YEAR!!!

On the 5th of January next, the FOURTH VOLUME of the "NEW SERIES" of the SCIENTIFIC AMERICAN will be commenced.

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TO THE INVENTOR!

The SCIENTIFIC AMERICAN is indispensable to every inventor, as it not only contains illustrated descriptions of nearly all the best inventions as they come out, but each number contains an official list of the claims of all the patents issued from the United States Patent Office during the week previous; thus giving a correct history of the progress of inventions in this country. We are also receiving, every week, the best scientific journals of Great Britain, France and Germany; thus placing in our possession all that is transpiring in mechanical science and art in those old countries. We shall continue to transfer to our columns copious extracts from these journals of whatever we may deem of interest to our readers.

TO THE MECHANIC AND MACHINIST!

No person engaged in any of the mechanical pursuits should think of "doing without" the SCIENTIFIC AMERICAN. It costs but four cents per week; every number contains from six to ten engravings of new machines and inventions, which cannot be found in any other publication. It is an established rule of the publishers to insert none but original engravings, and those of the first class in the art, drawn and engraved by experienced persons under their own supervision.

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TO THE MILLWRIGHT AND MILL-OWNER!

Useful and practical information appertaining to the interests of millwrights and mill-owners will be found published in the SCIENTIFIC AMERICAN, which information they cannot possibly obtain from any other source. To this class the paper is specially recommended.

TO THE PLANTER AND FARMER!

Subjects in which planters and farmers are interested will be found discussed in the SCIENTIFIC AMERICAN; most of the improvements in agricultural implements being illustrated in its columns.

TO THE MAN OF LEISURE AND THE MAN OF SCIENCE!

Individuals of both these classes cannot fail to be interested in the SCIENTIFIC AMERICAN, which contains the latest intelligence on all subjects appertaining to the arts and sciences, both practical and theoretical; all the latest discoveries and phenomena which come to our knowledge being early recorded therein.

TO ALL WHO CAN READ!

Everyone who can read the English language, we believe, will be benefitted by subscribing for the SCIENTIFIC AMERICAN, and receiving its weekly visits; and while we depend upon all our old patrons renewing their own subscriptions, we would ask of each to send us one or more new names with his own. A single person has sent us as many as 160 mail subscribers, from one place, in a single year! The publishers do not expect every one will do as much; but if the 2,500 subscribers, whose subscriptions expire with the present volume, will each send a single name with their own, they will confer a lasting obligation upon us, and they will be rewarded for it in the improvement we shall be enabled to make in the paper by thus increasing our receipts. The following are the—

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