Scientific American

TESTING THE MAN-ENGINE.

BY JOHN ELFRETH WATKINS.

Of the many man-engine testing plants which have been instituted within recent years, the most interesting are those which are now studying the self-directing function of the human machine. In these workshops man is continually making surprising discoveries about himself.

Perhaps the most engrossing item in their equipment is a gage for use in determining the man-engine's speed in starting, stopping, or directing its course after receiving a signal. It is a clock which records thousandths of a second, and an electric current can start and stop it within an imperceptible interval. Several complicated instruments can be connected with it in such a manner that upon the instant a sound is made, a light is flashed, or a color, a letter, or a word

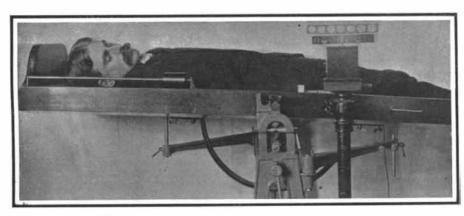
is exposed, the electrical impulse giving such a signal will start the recording hand.

The subject, with a finger pressing a telegraph key, is told that as soon as he hears, sees, or feels the signal he must release his finger from the key. The signal itself automatically closes the current and starts the clock, while the lifting of the finger from the key breaks the current and stops the clock. The number of thousandths of a second scored by the clock meanwhile measures the time required by the mind in perceiving, understanding, and obeying the signal.

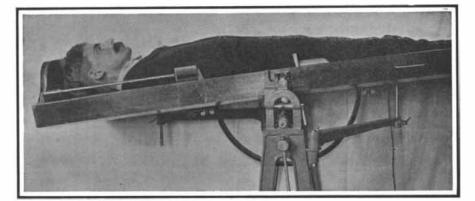
Thus, this man-engine gage will measure the time which you require to recognize or name a letter, color, or object; to read a word or sentence; to add, subtract, multiply, or divide; to remember your own name, your address, the meaning of any word in any language. Comparative tests thus far indicate that

the average mind obeys a sound signal in 125 thousandths and a light signal in 160 thousandths of a second and that the ear therefore is quicker than the eye; also that the eye requires about the same time to read a word of five or six letters as to read a single letter; that a person remembers his own name more quickly than that of his best friend—even that of his wife; that he recollects the country in which his own city is located more promptly than that in which Paris is, for instance. According to Prof. Lightner Witmer, of the University of Pennsylvania, men hear, see, or feel signals more quickly than do women, and Indians appear to be quicker in this respect than are whites.

Of all the man-engine's working-levers the arm is the most industrious. The quickness of its movements (Continued on page 420.)



Measuring circulation in brain. Asleep, head up.



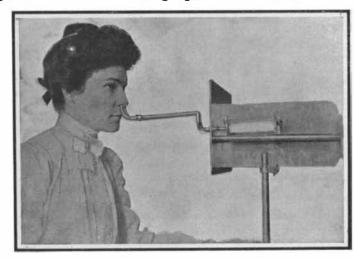
Measuring circulation in brain. Solving a problem. Head down.



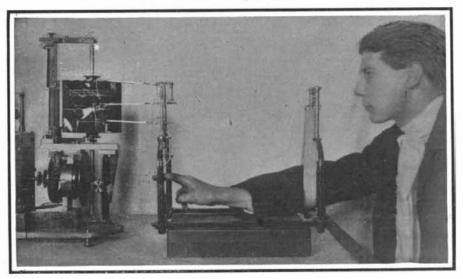
Effects of thought on muscular power.



Testing the acuteness of touch.



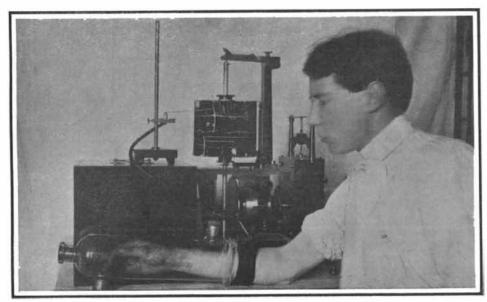
Testing the acuteness of smell.



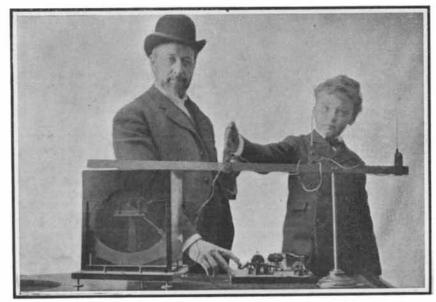
Involuntary hand movements.



Measuring lip movements.



Effects of thought on circulation of blood.



Timing the arm's speed.

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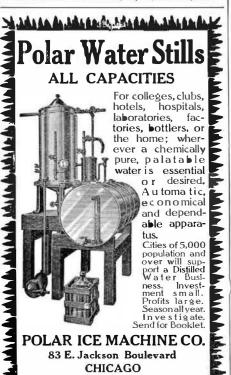
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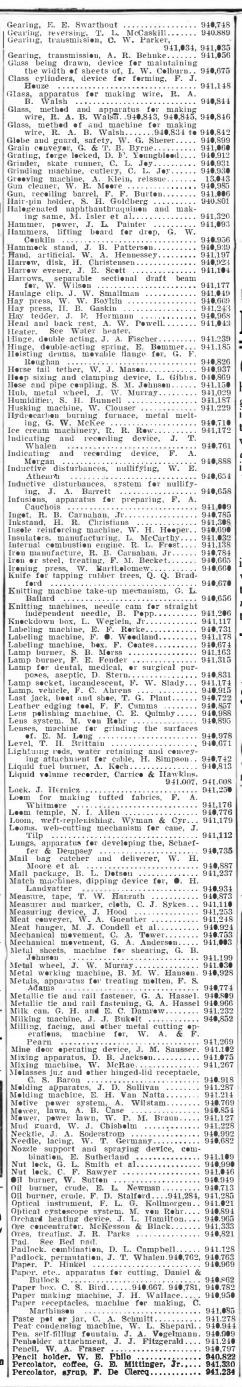




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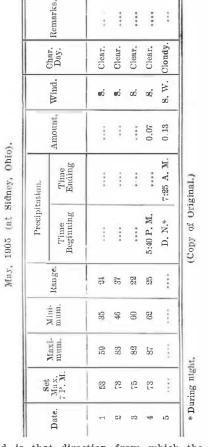
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tion of the wind, character of the day, and remarks.

Opposite the date is set down the reading of the highest and lowest temperatures; the difference is placed in the range column; the set maximum, as explained above, is the temperature at the time of reading. The time of beginning and the time of ending, with the amount of precipitation, is next entered in the record. The prevailing direction of the



wind is that direction from which the wind blows the most hours of the twentyfour. The character of the day refers to the sky, whether it is cloudy, partly cloudy, or clear. A sky of 70 per cent freedom, or more, from clouds is said to be "clear"; 50 to 60 per cent without clouds, is called "partly cloudy"; none to 20 per cent without clouds is accounted "cloudy." In the column for remarks may be entered notes descriptive of unusual phenomena, such as severe storms. meteors, killing frosts, remarkable depths of snow, floods in the streams of the vicinity, aurora borealis, deaths by lightning. To make the record valuable by the uniformity of its keeping, it is highly important that the readings be taken at the same hour each day, preferably at 7 P. M., seventy-fifth meridian time. A column for the water gage may be added, if the levels of a stream are to be ob-

TESTING THE MAN-ENGINE.

(Continued from page 413.)

is gaged by another attachment electrically joined to this clock. At the height of the subject's shoulder are arranged, upon a bar, two small hinged uprights. His hand is placed against one of these little posts and he is told to move it as quickly as possible in the direction of the other and to knock both of them down in the least possible time. The clock measures the time interval between the fall of the two uprights, and thus it is possible to time the swiftest movement of the arm in passing through a yard or foot of space. Men are found to be twice as rapid in this movement as women; Indians much slower than whites; negroes more constant than whites in rate of movement.

Another ingenious man-engine gage is a cylinder revolved by clockwork and covered with paper against which rests a marking point moved by air pressure exerted through a tube connecting with any number of attachments. This apparatus is used largely in comparing the workings of the body while under normal conditions and during hard thinking or strong emotion, or after great intellectual or physical effort. Thus when an

(Continued on page 421.)

Permutation lock. J. E. Le Myre	940,936 940,747 940,714 940,804
Picture frame making machine, J. Mueller Pictures, pieces of music, and other per-	941,331
formances, apparatus for producing audible moving, F. E. Thormeyer	941,211
Pie rimmer, A. J. Perron	941,337
Pipe, J. A. Irving	941,019
Pipe coupling, automatic, Doane & Ceeder	940,678
Pipes, flanging, C. D. Murdock	940,702
Plates, making half-tone, J. Hartnet, Jr	940,808
Pie rimmer, A. J. Perron Pincers, lasting, W. Huck Pipe, J. A. Irving Pipe, L. Morris Pipe coupling, automatic, Doane & Ceeder. Pipes, etc., coupling for train, J. E. Forsyth Pipes, flanging, C. D. Murdock Plate attachment, pie, H. Isaacs. Plates, making half-tone, J. Hartnet, Jr. Pilers, wire skinning, G. W. Goodridge. Plow, B. T. Bethune Plow, motor, W. T. Bennett Plows, weed turning attachment for, T. J. Baxter	941,224
Plows, weed turning attachment for, T. J.	941,298
Plumbing trap, J. T. Costello	341,002
Baxter Plumbing trap, J. T. Costello Plunger head or valve, J. E. Shutt. Pneumatic sweeper, S. Markstein. Potato cutter, J. A. Wise	940.900
Potato vine cutter. G. P. Gregory Power controller for machines, Wilcox &	941,001 941,247
Barthelomew	940,767
Barthelomew Power transmission apparatus, D. E. Selders Power transmission mechanism, C. Kilroy. Power transmitting apparatus, R. A. La	940,880
rounte	941,154
Draper	940,861 940,848
Press. J. C. Fiddyment	940,961
ing device, hydraulic, J. W. Nelson	941,167 941,153
Printer's galley, J. L. Lee	940,975 941,106
Printing press, A. J. Mottlau	941,162 940,743 940,720
Pulley, split metal, E. Philips	940.720 941.017
Preserving edible substances, A. J. Baldwin Press. J. C. Fiddyment Pressure generating controlling, and applying device, hydraulic, J. W. Nelson. Pressure regulator, W. F. Krichbaum. Printer's galley, J. L. Lee Printing machine, Sloane & Owsley. Printing press, A. J. Mottlau Propeller, O. P. Smith Pulley, split metal, E. Philips Pulp screening machine, J. F. Fisher. Pump, N. McCarty	940.704 940,817
Pump, automatic air, E. Reed Pump, multiple impeller, A. E. Guy	940.892 940,871
Pump, vacuum, G. H. Zschech	940,913
Rack for rolls of merchandise, C. J. Simon- son Rail connection, W. C. Bopp Rail curve seat, J. E. Dougherty. Rail fastener, F. Persic Rail fastener and bond. C. D. McAfee	941.281 940,954
Rail curve seat, J. E. Dougherty Rail fastener, F. Persic	940,954 941,312 940,986
Rail fastener and bond, C. D. McAfee Rail fastening device, Mason & Ohe	941.332 941.264
Rail curve seat, J. E. Deugherty. Rail fastener, F. Persic	9 0.7 77 941.279
Rail joint, insulated, G. W. Whiteman Rail tie, O. Carrell	941,175 941,307
Rails, etc., instrument for measuring the cross section of, R. Barthelmes	941,297
Rails, treatment of steel, F. H. Daniels Railway automatic safety appliance, W. G.	941,134
Daring Railway, cable, G. F. Roughan	941,233 940,825
Railway automatic safety appliance, w. G. Daring Railway, cable, G. F. Roughan Railway crossing gate, automatically operated, W. J. Cook Railway frog, H. G. Elfborg	940.786
Railway frog, H. G. Elfborg940,863, Railway rail structure, E. S. Nethercut	940.864 940,818
Railway rail the and orace, H. O. Wert	941,217 941,222
Railway signal, L. E. Garnett	940,800
bers	941,263
Bers switch, D. C. McCalib Railway switch, G. D. Worley Railway system, third-rail electric, C. Koze-	941,220
Snik	941,151 940,740
snik Rallway tie, F. Schumann Range finder, single observer, Barr & Stroud Ratchet releasing mechanism, C. O. L. Car- dell	941,125
dell	941,188 941.231
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Reinforced fabric, unwoven, Bayne & Su- bers	940,700
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Refrigerator, J. H. Manon Reinforced fabric, unwoven, Bayne & Subers bers Repair device, adhesive, W. N. Shelton Reversing mechanism, J. C. Ross Ribbon feed mechanism, C. M. Crook Rim holder, spare, B. B. Bradley	940,700 940,779 941,047 941,275 941,130 941,341
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Reiriggrator, J. H. Manon Reiriggrator, J. H. Manon Reiriggrator, J. H. Manon Reiriggrator, adhesive, W. N. Shelton Reversing mechanism, J. C. Ross. Ribbon feed mechanism, C. M. Crook Rim holder, spare, B. B. Bradley Road construction and repair, S. G. Howe. Rock drill, H. J. Hibschle Roundabout, vertical, W. A. Sullivan Sad iron, electrical, W. A. Braun Saggar, W. E. Rivers Sand ramming machine, H. P. Macdonald Sash lock, Pearson & Lindquist Sash lock, G. M. Blandford Sash operating mechanism, S. E. Cibulas Saw, drag, F. Hornquist Saw hanger, L. D. Reece Saw swaging and shaping device, T. W. Cross Scale, C. M. Sturgis Scale, Dlatform, M. H. Winslow Scraper, Bingaman & Miller Screen holding device, wire, Smiston & German Seiff-cleaning rake, F. W. Wieman Sewing and embroidering machine, R. Cornely Sewing machine, T. G. Plant Sewing machine, T. G. Plant Sewing machine channel moistening device	940,700 940,779 941,047 941,047 941,130 941,241 941,251 941,130 941,251 941,023 941,044 941,023 941,049 941,131 941,208 941,131 941,208 941,131 941,282 941,292 940,724
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dell Razor, safety, F. Cupelli Reel. See Clothes reel. Refrigerator, J. H. Manon Reinforced fabric, unwoven, Bayne & Subers Repair device, adhesive, W. N. Shelton. Reversing mechanism, J. C. Ross. Ribbon feed mechanism, C. M. Crook. Rim holder, spare, B. B. Bradley. Road construction and repair, S. G. Howe. Rock drill, H. J. Hibschle Roundabout, vertical, W. A. Sullivan. Sad iron, electrical, W. A. Braun. Saggar, W. E. Rivers Sand ramming machine, H. P. Macdonald. Sash lock, Pearson & Lindquist. Sash lock, G. M. Blandford Sash operating mechanism, S. E. Cibulas. Saw, drag, F. Hornquist. Saw hanger, L. D. Reece Saw swaging and shaping device, T. W. Cross Scale, C. M. Sturgis Scale, platform, M. H. Winslow. Scraper, Bingaman & Miller Screen holding device, wire, Smiston & German Self-cleaning rake, F. W. Wieman. Sewing and embroidering machine, R. Cor Reiy, Sewing machine, T. G. Plant Sewing machine, T. G. Plant Sewing machine channeling device, T. G. Plant Sewing machine, lock stich, T. G. Plant Sewing machine, shoe, T. G. Plant	940,700 940,779 941,047 941,247 941,247 941,251 941,341 940,971 941,251 941,023 941,034 941,059 941,343 941,059 941,343 941,059 941,131 940,666 941,282 940,723 940,788 940,724
Refrigerator, J. H. Manon Reinforced fabric, unwoven, Bayne & Subers Repair device, adhesive, W. N. Shelton. Reversing mechanism, J. C. Ross Ribbon feed mechanism, C. M. Crook. Road construction and repair, S. G. Howe. Road construction and repair, S. G. Howe. Rock drill, H. J. Hibschle Roundabout, vertical, W. A. Sullivan. Sad iron, electrical, W. A. Braun. Saggar, W. E. Rivers. Sand ramming machine, H. P. Macdonald. Sash lock, G. M. Blandford Sash lock, G. M. Blandford Sash operating mechanism, S. E. Cibulas. Saw, drag, F. Hornquist. Saw hanger, L. D. Reece Saw swaging and shaping device, T. W. Cross Scale, C. M. Sturgis Scale, platform, M. H. Winslow. Scraper. Bingaman & Miller Screen holding device, wire, Smiston & German Self-cleaning rake, F. W. Wieman Sewing and embroidering machine, R. Cornelly. Sewing machine, T. G. Plant Sewing machine channel moistening device, W. H. Hooper Sewing machine, lock stich, T. G. Plant Sewing machine, lock stich, T. G. Plant Sewing machine, shoe, T. G. Plant Sharpener, scraper, J. B. Ackermann.	940,700 940,779 941,047 941,047 941,275 941,130 941,241 941,241 941,251 941,242 941,059 941,342 941,059 941,059 941,343 940,876 941,728 941,131 941,059 941,131 941,059 941,252 941,292 940,686 941,282 940,788 940,724 940,691 940,725 940,788 940,725 941,087 940,788 940,724
Reifigerator, J. H. Manon Reinforced fabric, unwoven, Bayne & Subers Repair device, adhesive, W. N. Shelton. Reversing mechanism, J. C. Ross. Ribbon feed mechanism, C. M. Crook. Rond construction and repair, S. G. Howe. Rock drill, H. J. Hibschle Roundabout, vertical, W. A. Sullivan. Sad iron, electrical, W. A. Braun. Saggar, W. E. Rivers Sand ramming machine, H. P. Macdonald. Sash lock, G. M. Blandford Sash lock, G. M. Blandford Sash operating mechanism, S. E. Cibulas. Saw, drag, F. Hornquist Saw hanger, L. D. Reece Saw swaging and shaping device, T. W. Cross Scale, C. M. Sturgis Scale, O. M. Sturgis Scale, platform, M. H. Winslow. Scraper, Bingaman & Miller Screen holding device, wire, Smiston & German Self-cleaning rake, F. W. Wieman Sewing and embroidering machine, R. Cornely Sewing machine, T. G. Plant Sewing machine channel moistening device, W. H. Hooper Sewing machine channel moistening device, W. H. Hooper Sewing machine, lock stich, T. G. Plant Sewing machine, shoe, T. G. Plant	940,700 940,779 941,047 941,047 941,130 941,241 940,971 941,240 941,241 941,023 941,043 941,059 941,133 940,876 941,131 940,676 941,282 941,192 940,728 940,724 940,691 940,725 941,087 940,725 941,087 940,723
Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson.	941.087 940.773 940,883 940.914
Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson.	941.087 940.773 940,883 940.914
Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson.	941.087 940.773 940,883 940.914
Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson.	941.087 940.773 940,883 940.914
Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson.	941.087 940.773 940,883 940.914
Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson.	941.087 940.773 940,883 940.914
Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson.	941.087 940.773 940,883 940.914
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Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson.	941.087 940.773 940,883 940.914
Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson. Shingle bracket. J. B. Demary. Shipping case or box, knockdown, W. H. Doble Shoe, F. A. Critz. Jr. Shoe polishing machine, F. Humphreville. Shoe rack, S. Hermann Shoulder brace. J. U. Adams Shoveling machine, W. Whaley. 940.997 to Sign, Illuminated, F. Ward Sign, I. L. A. Hawkins Signal and air brake, combined. A. M. Jones Silicon carbid, producing, F. J. Tone. Skins and the like, machine for the treat ment of, F. A. Gelpel. Slicing machine, S. L. Garner Snap hook, swivel, W. A. Schleicher. Snow shovel, G. C. Port Soap for washing, cleaning, and bleaching purposes. substitute for, P. Mausolff.	941.087 940.773 940.773 940.983 940.983 940.957 941.014 940.856 941.345 940.812 940.875 940.999 940.697 940.847 941.144 941.259 941.339 941.377 940.867 940.867 940.867 940.773
Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson. Shingle bracket. J. B. Demary. Shipping case or box, knockdown, W. H. Doble Shoe, F. A. Critz. Jr. Shoe polishing machine, F. Humphreville. Shoe rack, S. Hermann Shoulder brace. J. U. Adams Shoveling machine, W. Whaley. 940.997 to Sign, Illuminated, F. Ward Sign, I. L. A. Hawkins Signal and air brake, combined. A. M. Jones Silicon carbid, producing, F. J. Tone. Skins and the like, machine for the treat ment of, F. A. Gelpel. Slicing machine, S. L. Garner Snap hook, swivel, W. A. Schleicher. Snow shovel, G. C. Port Soap for washing, cleaning, and bleaching purposes. substitute for, P. Mausolff.	941.087 940.773 940.773 940.983 940.983 940.957 941.014 940.856 941.345 940.812 940.875 940.999 940.697 940.847 941.144 941.259 941.339 941.377 940.867 940.867 940.867 940.773
Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson. Shingle bracket. J. B. Demary. Shipping case or box, knockdown, W. H. Doble Shoe, F. A. Critz. Jr. Shoe polishing machine, F. Humphreville. Shoe rack, S. Hermann Shoulder brace. J. U. Adams Shoveling machine, W. Whaley. 940.997 to Sign, Illuminated, F. Ward Signal, I., A. Hawkins Signal and air brake, combined, A. M. Jones Silkon carbid, producing, F. J. Tone. Skins and the like, machine for the treat ment of, F. A. Geipel. Slicing machine, S. L. Garner Snap hook, swivel, W. A. Schleicher. Snow shovel, G. C. Port Soap for washing, cleaning, and bleaching purposes. substitute for, P. Mausolff. Soda fountain, syrup pump for, H. L. Snedker	941.087 940.773 940.783 940.983 940.983 940.983 941.014 940.957 941.345 940.812 940.775 940.999 940.697 941.347 941.144 941.259 941.377 940.867 940.738 941.278
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Shaft, G. R. Moore Sharpener, scraper, J. B. Ackermann. Shaving mug and brush casing, O. Liles. Sheet metal bodies, apparatus for forming hollow, Adriance & Calleson. Shingle bracket. J. B. Demary. Shipping case or box, knockdown, W. H. Doble Shoe, F. A. Critz. Jr Shoe polishing machine, F. Humphreville. Shoe rack, S. Hermann Shoulder brace. J. U. Adams Shoveling machine, W. Whaley. 940.997 to Sign. Illuminated, F. Ward Sign. Illuminated, F. Ward Signal. L. A. Hawkins Signal and air brake, combined, A. M. Jones Silcon carbid, producing, F. J. Tone. Skins and the like, machine for the treat ment of, F. A. Geipel. Slicing machine, S. L. Garner Snap hook, swivel, W. A. Schleicher. Snow shovel, G. C. Port Soap for washing, cleaning, and bleaching, purposes. substitute for, P. Mausolff. Soda fountain, syrup pump for, H. L. Snediker Soldering machine, W. M. Holloway Soldering machine, A. Picken Sound box for sound recording and repro ducing machines, J. C. English. Sound box for sound recording and repro ducing machines, J. C. English. Sound recording, G. K. Cheney. Sound recording, G. K. Cheney. Sound recording apparatus. G. K. Cheney. Spark arrester, L. A. Coleman Spark plug, C. A. Martin Speed controller, automatic, W. A. Loomis Spring wheel. A. R. Mislin Springs machine for making coiled F. H.	941.087 940.773 940.773 940.983 940.983 940.983 940.985 941.345 940.812 940.812 940.817 940.847 941.144 941.259 941.339 941.377 940.867 940.967 941.271
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THE WELCOME elastic belt placed about the chest is connected with the apparatus the marking GIFT FOR MEN



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The Sargent Patent Cigar Chest (shown above) is a perfect little cigar store in itself. is made of oak, mission finish, glass-lined and sanitary. No pads or sponges to bother with, the moisture being supplied by a new process. With a Sargent Cigar Chest you never lose money on dried-out cigars. The chest will be sent you with your first order and is your property even if you never buy another cigar of us. OUR "MONEY BACK" GUARANTEE

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For \$2.00 extra we will send a mahogany chest instead of oak; or for \$3.00 extra, one of Circassian Walnut.

REFERENCES: Pequonnock National Bank, First Bridgeport National Bank, or City National Bank, all of Bridgeport,

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Concrete **Reinforced Concrete**

Concrete Building Blocks

Scientific American Supplement 1543 contains an article on Concrete, by Brysson Cunniugham. The article clearly describes the proper composition and mixture of concrete and gives results of elaborate tests.

Scientific American Supplement 1538 gives the proportion of gravel and sand to be used in

Scientific American Supplements 1567, 1568, 1569, 1570, and 1571 contain an elaborate discussion by Lleut. Henry J. Jones of the various systems of reinforcing concrete, concrete construction, and their applications. These articles constitute a splendid text book on the subject of reinforced concrete. Nothing better has been published.

Scientific American Supplement 997 contains a article by Spencer Newberry in which practical notes on the proper preparation of concrete are given.

Scientific American Supplements 1568 and 1569 present a helpful account of the making of concrete blocks by Spencer Newberry.

Scientific American Supplement 1534 gives critical review of the engineering value reinforced concrete. Scientific American Supplements 1547 and 1548 give a resume in which the various systems

of reinforced concrete construction are dis cussed and illustrated. Scientific American Supplement 1564 contains at

article by Lewis A. Hicks, in which the merits and defects of reinforced concrete are analyzed. cientific American Supplement 1551 contains the principles of reinforced concrete with some practical illustrations by Walter Loring Webb. Scientific

Scientific American Supplement 1573 contains an article by Louis H. Gibson on the prin-ciples of success in concrete block manufac-ture, illustrated.

Scientific American Supplement 1574 discusses steel for reinforced concrete.

steer for reinforced concrete.

Scientific American Supplements 1575, 1576, and 1577 contain a paper by Philip L. Wormley.

Jr., on cement mortar and concrete, their preparation and use for farm purposes. The paper exhaustively discusses the making of mortar and concrete, depositing of concrete, facing concrete, wood forms. concrete sidewalks. details of construction of reinforced concrete posts.

Each number of the Supplement costs 10 ents.
A set of papers containing all the articles hove mentioned will be mailed for \$1.80.
Order from your newsdealer or from

MUNN @ CO., Inc. 361 Broadway, New York City nected with the apparatus, the marking hand will record upon the paper the expansion and contraction due to breathing. Arthur MacDonald, an anthropologist of Washington, has used this instrument in studying the influence of intellectual and emotional states upon breathing and has found that, in general, concentration of thought, as in mathematical calculations or in reading, considerably decreases the breathing. Inasmuch as a falling off of oxygen in the blood results from decrease of respiration he suggests that this may partly explain the proverbial thin-blooded condition of deep students. Prof. Hugo Münsterberg, of Harvard, finds with such an apparatus that sudden pleasure makes the respiration weaker and quicker; displeasure, stronger and slower; excitement, stronger and quicker; acquiescence, weaker and slower. A similar apparatus when attached to the wrist writes a record of the pulse-beats, showing that pleasure heightens and retards them; displeasure weakens and accelerates them; and that excitement strengthens and quickens them.

There is connected to the same recording instrument a device having two rods which press between the lips and transmit a record of their slightest movements to the paper upon the revolving cylinder. Similar gages keep score on the movements of the larynx, soft palate, and tongue, and thus are all of the physical elements of voice measured while various emotions are being experienced. In one of these laboratories, an instru-

ment when attached to the hand, measures its involuntary movements in three directions-forward and backward, from right to left, or upward and downward: these three elements being recorded upon one revolving cylinder by a separate marking point. Experiments with this device indicate that the hand unconsciously follows the direction taken by the mind. When the subject commences to obey instructions to concentrate his mind on some object, above or below, or to his right or left, the record paper shows that the hand has been moved in the direction of that object. One test used by Prof. Münsterberg is to ask the subject to think attentively of a special letter of the alphabet and then spread in a half circle about the instrument cards bearing these letters. The average subject's hand will quickly record an impulse toward the letter of which he is thinking though he is unaware of it. Thus it will be seen that whither the mind leads the hand will follow unwittingly, and here we have an analysis of gesture and also of the phenomena of 'planchette" and "ouija board," as well as of the old-time parlor game of "mind reading"-really muscle reading.

These man-engine gages are revealing many other hitherto hidden truths concerning the mind's unconscious control of the body's movements and actions, and perhaps the prettiest demonstration of this is given by a device consisting of a great tray containing a man lying flat upon his back and balanced upon two knife blades at such a delicacy of poise that the least movement sets the tray to see-sawing. The subject is so placed that his center of gravity rests over the blades and so long as he relaxes his mind and holds his breath a spirit level shows but as soon as he commences to breathe it commences to rock itself in cadence with his inspirations and expirations. When the subject, in response to a command, commences to solve a problem in mental arithmetic the end of the tray toward his head sinks and that holding his feet rises, all of which indicates that when there is any call for special activity of the brain the blood rushes to that organ, as if to nourish thought. But now, if the subject relax his mind as before the tray will again balance horizontally. Next a little device which rapidly revolves two mirror-studded panels is placed before his eyes and may so fatigue

(Continued on page 422.)



Imagine for a moment that from twenty to forty years have been added to your life-that you have reached the age of fifty or sixty.

What are you doing to-day that will enable you to forecast something better for this later period than just a common job and a common salary?

Only one class of men are absolutely sure of being able to maintain their full earning capacity after fifty. These are the trained men—men who have fortified themselves in youth against the common job problem which confronts the untrained man at any time in life.

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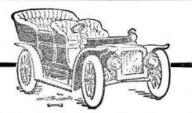
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Advertising in this column is 75 cents a line. No less than four nor more than 10 lines accepted. Count seven words to the line. All orders must be accompanied by a remittance. Further information sent on

request.

READ THIS COLUMN CAREFULLY,—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. There is no charge for this service. In every case it is necessary to give the number of the inquiry. Where manufacturers do not respond promptly the inquiry may be repeated.

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BUSINESS OPPORTUNITIES.

WANTED. Manufacturer of enamel ware to man-ufacture a useful, patented article on royalty basis. Mrs. Sarah W. Hitchcock, 407 E. 3d St., Dixon, Ill. Inquiry No. 8918.—For manufacturers of "Wydt's Electro-Cat ytic Sparking Plug."

PATENTS FOR SALE.

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FOR SALE. Patent No. 900,457. An improved lathe rest for holding cylinders while being bored in an engine lathe. For further particulars address A. E. Whiting, Weston, W. Va.

FOR SALE.—Patent No. 201.971. Shock cushioning neck-yoke. Something new, nothing of the kind on the market. Sell outright, reasonable. Address William Kleineschay, Campbellsport, Wisconsin.

Inquiry No. 8990.—For information regarding shoes not made of leather but similar to the same and are as durable.

DO you want to manufacture electric heaters? The best patent that ever was issued in the United States is No. 12,7-2; for sale. Write Moise Landry, Hotel Carolyn, Turlock, Cal.

luquiry No. 9014.—For manufacturers of machinery, supplies, etc., to equip a small plant for the manufacture of iridium-tipped gold nib making for fountain pens.

FOR SALE.

THE SANBORN BAG LIFTER. A device to assist in handling bags of grain, cement, etc. Saves the fingers and avoids damage to bag. Sample sent free onrequest. H. & E. Sanborn, Forlland, Maine.

Inquiry No. 9016.—Wanted machinery necessary for an installation of a plant for refixing salt by a modification of the Bessemer process.

FOR SALE.—Engine lathe, swings 9½ in., takes 25 inbetween centers. Complete with full set change gears to cut all size threads, \$to 40 in. Price only \$4350. Address L. F. Grammes & Sons, Allentown, Pa.

Inquiry No. 90:23.—Wanted, to buy silk machines from re-reeling, to the final process of making it into clothes.

FOR SALE.—An Alvin Clark 4-inch Equatorial Telescope, 5 eye pieces, prism, sun glass and tripod. Cost \$325.00. Sherman, 523 East 46th Place, Chicago, Ill.

Inquiry No. 9025.—Wanted, address of rubber manufacturers in Germany.

FOR SALE.—Patent 928.216. Improvement on pipe wrench. Simple in construction and automatic. For full information, write A. C. Pearson, Attorney, 37% Virginia Avenue, Indianapolis, Ind. Inquiry No. 9028. — Wanted, to buy a washing machine that is run by a coil spring motor.

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REAL REMINGTON, \$1875.—One machine only in new localities to secure desirable agent. Special agents prices supplied on all makes of typewriters. 3 ribbons \$1.00. Standard Typewriter Exchange, 23 Park Row, New York.

Inquiry No. 9029. — Wanted, catalogues and all information on machinery for braiding straw in manufacturing straw hats.

MISCELLANEOUS.

"LIGHT, HEAT, MAGNETISM AND ELECTRICITY are all one and the same thing." If you want to know what they are, send fifty cents for a copy of this paniphlet to A. M. Howland, El Paso, Texas.

Inquiry No. 9034.—For manufacturers of m ery that could reduce stumps to kindling wood.

W ANTED.—Designs for a successful single pulley drive for adaptation to machinery tools. Address A. E. Anderson, 79 Dearborn Street. Chicago, Ill.

Inquiry No. 9036.—Wanted, the address of the manufacturers of "Cycle Ball Bearing Suspenders."

HAIR GROWS when our Vacuum Cap is used a few minutes daily. Sent on 60 days' free trial at our expense. No drugs or electricity. Stops falling hair. Cures dandruff. Postal brings illustrated booklet. Modern Vacuum Cap Co., 556 Barclay Block, Denver, Colo.

Inquiry No. 903%.—Wanted, the address of the Chipman Electric Puritying Co.

LISTS OF MANUFACTURERS.

COMPLETE LISTS of manufacturers in all lines supplied at short notice at moderate rates. Small and special lists compiled to order at various prices. Est mates should be obtained in advance. Address Munn & Co., Inc., List Department, Box 773, New York. Inquiry No. 9042.—Wanted the address of Farney Safety Razor Co.

A LIST OF 1,500 mining and consulting engineers on cards. A very valuable list for circularizing, etc. Price \$15.00. Address Munn & Co., Inc., List Department. Box,773, New York.

Inquiry No. 9043.—Wanted the address of the manufacturers of mirrors that are transparent when the light in the rear is stronger.

Inquiry No. 9044.—Wanted to buy outfits neces sary for agate polishing. Inquiry No. 9045.—Wanted the address of the International Lumber and Development Co., manufacturers of hardwood.

Inquiry No. 9046.—Wanted, machinery used for scale shows his error. the manufacture of all kinds of fruit boxes, baskets and

Inquiry No. 9047.—Wanted the address of parties who install plants for making oxygen or ozone gas.

Inquiry No. 9048.—Wanted, address of manufacturers of metal table slides for extension tables.

Inquiry No. 9049. -Wanted, to buy rotary brushes suitable for a shoe shining machine.

Inquiry No. 9050.—Wanted, to buy equipment or manufacturing starch and denatured alcohol from otatoes, also manufacturers of equipments for vege-

Inquiry No. 9051.—Wanted to buy machinery for extraction of cotton seed oil on a small scale.

Classified Advertisements them that sleep will ensue. If so the and that holding his feet will fall, showing that in sleep the blood leaves the brain for the extremities. For a somewhat similar purpose is a large glass jar holding the arm, submerged in water. When any action of the mind causes the blood supply of the arm to increase or decrease—as the vital fluid is attracted toward or repelled by the brain-a marking point resting upon the paper of the moving cylinder above described is raised or lowered. With this has been determined that every emotional excitement speaks in the blood supply of every

How our states of mind unconsciously alter, also our powers of performing muscular work, are nicely demonstrated FOR SALE.—Pateut No. 936.000. A spring wheel to substitute the rubber-tire wheels actually used for automobiles. Address Luis I. Leon, San Juan, Porto ger, generally accepted by physiologists Rico. as the index to the body's muscular tone. A vise holds the forearm and hand outstretched, palm upward, upon a table, and the finger is harnessed to a cord hanging Inquiry No. 8996.—Wanted addresses of manufacturers of machinery for working orange wood manical actual and straightened it care sticks. raises and lowers the weight and at the same time a recording point worked by the cord keeps score upon a revolving cylinder. It has been discovered that if the subject concentrates his mind upon the effort of thus contracting his finger frequently and each time raises the weight with his utmost force, his finger will weaken and after a time will scarcely stir the weight. But if he continues to make this effort regardless of the results -without worrying about them-sooner or later the strength of the finger will begin to return and will move the weight almost as much as before. Thus he will continue with alternate periods of fatigue and almost complete recovery-a phenomenon akin to that of the athlete's "second wind." The experiment plainly demonstrates how fear of the results of effort will wear upon the muscles with which the effort is made.

Among the most important of the gages which measure a man-engine's comparative powers of self-direction are those which record the acuteness of the senses -of those telegraph systems over which are dispatched, from the various objects to consciousness, the subtle messages upon which our total impressions of perceived objects are based—the raw material, in fact, out of which our every thought is manufactured.

Acuteness of hearing is tested by a device in which balls of cork fall a certain distance upon a plate of glass, the ear being distant so many inches. At the outset of this test the height from which the balls fall is so slight that the ear does not perceive their impact, but the length-of drop is gradually increased until the sound commences to be audible. The acuteness of each ear is measured upon a scale in units of the length of drop at which perception of the sound just barely commences. Then there is a gage measuring the ear's estimate of direction. A graduated horizontal circle surrounds the head and after the subject has been blindfolded a sound is made with a telegraphic sounder moved to the different degrees marked in the circle. The subject's estimates of the direction whence the sound issues are compared with its actual direction.

Acuteness of seeing is measured by devices too numerous for description. One of the most interesting exposes a long black surface across which extend three movable white strips. Two are placed a certain distance apart and the third, moving automatically, is stopped by the subject at the point which he estimates to be exactly between the others. A concealed

When his acuteness of smell is tested the subject sits before an instrument from which protrude into his nostrils a pair of tubes connecting with a metallic case shielded from his eyes. The examiner fits to the open end of the tubes various cylinders filled with substances of different perfume, whose strength varies

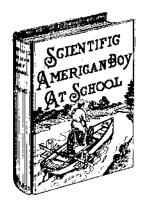
(Concluded on page 423.)

Three New Interesting Books

The Scientific American Boy at School

By A. RUSSELL BOND

12mo. 338 Pages. 314 Illustrations. Price \$2.00 postpaid.



HIS book is a sequel to "The Scientific American Boy," many thousand copies of which have been sold, and has proven very popular with the boys. The main object of the book is to instruct how to build various devices and apparatus, particularly for outdoor use. The construction of the apparatus, which is fully within the scope of the average boy, is fully described and the instructions are interwoven in an interesting story, a feature which has assisted in making the "Scientific American Boy" so popular with the boys.

It takes up the story of "Bill" and several of his companions at boarding school. They form a mysterious Egyptian society, whose object is to emulate the resource-fulness of the ancients. Their Chief Astrologer and Priest of the Sacred Scarabeus is gifted with unusual powers, but his magic is explained so that others can copy it. Under the directions of the Chief Engineer, dams, bridges, and canal-locks are constructed. The Chief Admiral and Naval Constructor builds many types of boats, some of which are entirely new. The Chief Craftsman and the Chief Artist also have their parts in the work done by the Society, over which Pharaoh and his Grand Vizler have charge. Following is a list of the chapters:

Chapter I, Initiation; Chapter II, Building a Dam; Chapter III, The Skiff; Chapter of Ancient Engineers: Chapter VII, A "Pedal Paddle Boat"; Chapter VII, The Modern Order the Chapter XIV, Hunting with a Camera; Chapter X, Signaling Systems; Chapter XII, The Hood Chapter XVII, The Haunted House; Chapter XIII, Surveying; Chapter XII, Water-Kites and Current Salling; Chapter XXII, The Wooden Canoe; Chapter XXIII, The Bicycle Sled; Chapter XXIV, Magic; Chapter XXV, The Sallboat; Chapter XXVII, Surveying; Chapter XXIII, The Boycle Sled; Chapter XXIV, A Geyser Fountain. Index.

Handy Man's Workshop and Laboratory Compiled and Edited by A. RUSSELL BOND

12mo. 467 Pages. 370 Illustrations. Price \$2.00 postpaid.



VERY practical mechanic, whether amateur or professional, has been confronted many times with unexpected situations calling for the exercise of considerable ingenuity. The resourceful man who has met an issue of this sort successfully seldom, if ever, is averse to making public his methods of procedure. After all he has little to gain by keeping the matter to himself and, appreciating the advice of other practical men in the same line of work, he is only too glad to contribute his own suggestions to the general fund of information. About a year ago it was decided to open a department in the Scientific American devoted to the interests of the handy man. There was an almost immediate response. Hundreds of valuable suggestions poured in from every part of this country and from abroad as well. Not only amateur mechanics, but professional men as well were eager to recount their experimens in the same as well were eager to recount their experimens in the man in the physics and chemical laboratory furnished another tributary to the flood of ideas. Automobiles, motor cycles, motor boats and the like frequently call for a display of ingenuity among a class of men who otherwise would never touch a tool. These also contributed a large share of suggestions that poured in upon us. It was apparent from the outset that the Handy Man's Workshop Department in the Scientific American would be utterly inadequate for so large a volume of material; but rather than reject any really useful ideas for lack of space, we have collected the worther suggestions, which we present in the present volume. They have all been classified and arranged in eight chapters, under the following headings:

I, Fitting up a Workshop; II, Shop Kinks; III, Soldering of Metals; IV, The Handy Man in the Factory; V, The Handy Man's Experimental Laboratory; VII, The Handy Man's Electrical Laboratory; VII, The Handy Man About the House; VIII, The Handy Sportsman; IX, Model Toy Flying Machines. Index.

Concrete Pottery and Garden Furniture

By RALPH C. DAVISON

196 Pages. 140 Illustrations. 12mo. Price \$1.50 postpaid.



HIS work should appeal strongly to all those interested in ornamental concrete, as the author has taken up and explained in detail in a most practical manner the various methods of casting concrete in ornamental shapes. The titles of the thirteen chapters which this book contains will give a general idea of the broad character of the work. They are entitled:

I, Making Wire Forms and Frames; II, Covering the Wire Frames and Modeling the Cement Mortar into Form; III, Plaster Molds for Simple Forms; IV, Plaster Molds for Objects Having

Molds for Simple Forms; IV, Plaster Molds for Objects Having Curved Outlines; V, Combination of Casting and Modeling—An Egyptian Vase; VI, Glue Molds; VII, Colored Cements and Methods Used for Producing Designs with Same; VIII, Selection of Aggregates; IX, Wooden Molds—Ornamental Flower Pots Modeled by Hand and Inlaid With Colored Tile; X, Concrete Pedestals; XI, Concrete Benches; XII, Concrete Fences; XIII, Miscellaneous, Including Tools, Waterproofing, and reinforcing

forcing.

The first two chapters explain a most unique and original method of working pottery which has been developed by the author. The chapter on color work alone is worth many times the cost of the book inasmuch as there is little known on this subject, and there is a large and growing demand for this class of work. The author has taken for granted that the reader knows nothing whatever about the material and has explained each progressive step in the various operations throughout in detail. These directions have been supplemented with half-tones and line illustrations which are so clear that no one can misunderstand them. The amateur craftsman who has been working in clay will especially appreciate the adaptability of concrete for pottery work, inasmuch as it is a cold process throughout, thus doing away with the necessary with the former material. The book is well gotten up. and is printed on heavy glazed paper and abounds in handsome illustrations throughout, which clearly show the unlimited possibilities of ornamentation in concrete.

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Union suit, J. E. Richards, reissue 13,040	5
Herks	1
Valve, J. C. Evans	ļ.
Valve, cut-off, J. L. Moore 940,813 Valve device for corrosive, liquids, W. H.	5
Valve, rotary discharge, O. Mantius. 941,02: Vaporizer, oil, J. F. Malcom 940,98: Vegetable cutter J. Spenko 940,83:	<u>i</u>
Vegetable cutter, J. Moreau 941,16 Vezetable masher. B. Iitsuka 941.07	1
Vehicle brake, automatic, C. E. Crumm 941,06 Vehicle canopy top, J. Reid 941,27	3
Vehicle, dumping, W. H. Phillips 940,72 Vehicle, motor, J. A. Charter 941,129)
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Venicies, pole attaching means for, J. 4r. Maloney	2
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Veterinary instrument, E. G. Lawton 941,32; Violin key, H. Harmer 941,19	5 6
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Washing machine, W. E. Devore 941,34 Washing machine attachment, S. Bowman. 941,30	4
Washtub cover, A. Adams 941,05 Watches and clocks, individual hair spring	1
Water bag, F. A. Gordon	5
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Water fountain, B. Kaminsky940.87 Water heater. D. Hanlon940.68	9
Water heater, G. C. Madsen 940,98 Water heater, G. H. Wade 941,21	0
Water power applying apparatus, F. T. Newbery	0
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Wedges, manufacturing compound tapered, C. E. Sweet	
Welding tool, W. A. Sparks 940,90 Well strainers, self-closing bottom for, J.	
A. Pollard	- 1
Wheel word or forder webiels 7 O Deb	4
erts	9
Winding, doubling, gassing, and like ma- chine, yarn or thread, Higginson &	
wheel guard or lender, vehicle, J. O. Rob- erts	3
Wire joints tool for forming A R Pro-	
baseo	3
basco	5
Yeast compound, dry, J. E. Yost 941,22	i

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, provided the name and number of the patent desired and the date be given. Address Munn & Co., Inc., 361 Broadway, New York.

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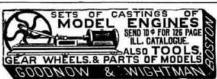
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SEALED PROPOSALS (in duplicate) will be received at the office of the Chief Clerk of the Bureau of the Census until December 22, 1909, at 2:39 p. m., at which hour the bids will be opened, for furnishing all material and labor nevessary to the construction and installation of metal cases in the fireproof vault of the Bureau of the Census, at Washington, D. C. Plans and specifications may be procured upon application to the Chief Clerk of the Bureau of the Census. The right is reserved to reject any or all bids. Address proposals to E. Dana Burand, Director of the Census, Department of Commerce and Labor, Washington, D. C.

WANTED.—Third-class assistant inspectors of engineering material at \$448 per diem. An examination will be held at the Navy Yard, Brooklyn. N. Y., and the Office of the Naval Inspector of Engineering Material, Homestead Steel Works, Munhall, Pa., December 15, 1969, to fill the above positions. For furtherinformation address "Commandant, Navy Yard, Brooklyn, N. Y.," or "Naval Inspector of Engineering Material, Homestead Steel Works, Munhall, Pa."

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The Middle West Number

SCIENTIFIC AMERICAN

On December 11th, 1909, the Scientific American will issue a number devoted entirely to the wonderful Mid-dle West region of the United States, a number which will set forth broadly and lucidly not only the agricultural interests of that region, but also those larger engineering undertakings which are des-tined to transform the Middle West, in part at least, into a manufacturing ter-

With that object in view the Middle West Number will publish articles on the following

I. The Chicago and Gulf Waterway. -- Anihus-rated description of Chicago's drainage canal, an en-cineering work which stands without a parallel in the world.

II. Chicago as a Railroad Center.—Chicago is the greatest railroad center in the world. 111. The Wonderful Grain Trade of Chicage.

—Chicago is an enormous wheat bin, into which much of the grain raised in the middle West is poured.

IV. Shipping on the Great Lakes,—Most of the iron ore that is now smelted in Pennsylvania is mined in the middle West. To transport it to the blast furnaces of the East at a cost which will enable American steel makers to compete with foreign steel makers to compete with foreign steel makers, it has been necessary to devise a new kind of lake transportation. Ships of 10,000 and 12,006 tons burden bave been constructed which convey ore at small cost through the Great Lakes, and which are without a counterpart anywhere in the world.

VI. Freighting on the Mississippi.—Freighting on the Mississipul is a more important industry than most of us may realize.

VII. The Steel Industry.—One of the greatest steel plants in the world is that which has been built at Gary.

VIII. The Freight Subway System of Chicago.—Chicago can boast of a rational system of handling freight by means of subways.

IX. The Water Supply of Chicago.—Chicago's source of water is Lake Michigan. The city is supplied with water by means of a tunnel which extends two miles out into the lake.

X. Reclaiming Arid Lands.—The United States Government has under way many irrigation projects for the purbose of reclaiming lands which are arid, but which will clossom if properly watered.

through the Great Lakes, and which are without a counterpart anywhere in the world.

V. The Handling and Shipment of Iron Ore.—
The above-mentioned fact that iron ore is mined in the middle West and smelted in the East bas necessitated not only the construction of special freisht-carrying steamers, but also the designing of special machinery for loading and unloading the ore from the steamers.

The Middle West Number will be more than twice the size of the regular SCIENTIFIC AMERICAN. It will be lavishly illustrated. It will be contained in a colored cover which strikingly depicts Chicago's grain elevators at work. Order from your newsdealer or from

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with the distance to which the cylinders are moved back beyond the tube ends. This distance is marked by a scale upon which is read the point where the subject first perceives the perfume, and thus is the acuteness of each nostril determined.

Taste is measured by solutions of sugar, quinine, tartaric acid, salt, etc., which are more and more diluted with water until the tongue—to which they are applied with a dropper-no longer perceives the flavors; and the weakness of the solution marks the acuteness of the subject's sense of taste.

When testing for acuteness of touch, the examiner holds what appears to be a rimless wheel from whose hub radiate a score of slender spokes. From the free end of each hangs a thread of slenderest cocoon fiber suspending a small disk of elder pith. All of the disks are of equal size and apparently of equal weight, but in reality are surmounted by tiny buttons of metal which give them different weights; varying from one to twenty milligrammes (1/65 to 20/65 of a grain).The subject being blindfolded, the examiner, commencing with the lightest disk, successively lowers one at a time upon the subject's skin. Several of the lighter disks are not felt, but soon there is applied one that is, and the weight of this lightest disk perceived determines the subject's sensitiveness. There are additional devices for measuring the various other elements of feeling, such as perceptions of weight, temperature, pressure, pain, etc.

INDOOR BED TENTS.

(Concluded from page 416.)

in the room, and two persons can sleep in the same bed, while only one uses the tent.

This, so far, has been a most successful device for admitting fresh air on sanitary principles to a sleeping room. It enables one to breathe the outside air without danger of being chilled or exposed to drafts and colds. Some who tried this tent felt that the fresh air was too cold in storms or wet weather, and they use an outside awning, which can be adjusted at pleasure. With these tents the body can be kept warm, while the head, which is toughened to the cold, can obtain the stimulation it needs. This last can be modified by a Canton-flannel hood, which can be made so it will come down over the shoulders, and have a face opening large enough to leave the eyes, mouth, and nose exposed. The cape of this hood covers the shoulders if by any accident the bed clothes slip off them.

Fresh air allays sweating, provides good sleep-these tents are capital for insomnia-and helps the appetite. The cold air increases resistance to disease, purifies the blood, and prevents consumption, three reasons why one should breathe it at night. The theory of keeping the head in the cold and the body warm is that the body loses eighty to ninety per cent of its heat through the skin by radiation, and cold is bracing only when it comes in contact with the respiratory organs. On this theory, no good results are obtained when the feet and lower limbs get cold. On a cold night one can move away at least twelve inches from the window and still be under the tent, get perfect circulation, and be sure of getting up in a warm room in the morning.

Not so many years ago Americans as well as foreigners were afraid of the night air, though we have no such malarial districts as around Rome. Fortunately, we are learning to know better, and workers in Little Italy and the slums where foreigners congregate in cities are pushing the fresh-air movement with all their might. Fresh air and plenty of it is the best preventive for consumption, the grip, bronchitis, common colds, and pneumonia. Some sort of inside window tent and paper napkins, tissue paper, or pieces of gauze which are now used by some people for handkerchiefs, are destined to go a long way toward keeping people well, warding off disease and the