treating on laundry blue, blacking, inks, and flavoring extracts. A. We can supply the Techno-Chemical Receipt Book, $2.

(2286) S. H. P. writes: Can you tell me what will take the stains made by poison ivy juice out of a handkerchief? I pulled up some sprouts of ivy, and to save my hand from danger, covered it with a handkerchief, then threw that into a tub of water overnight, and the next morning it was covered with black spots, looking like ink or thin tar, and the usual washing and boiling didn't move them at all. A. We advise you to try the effect of Javelle water, followed by a weak solution (1 to 20 or less) of oxalic acid, washing out the handkerchief thoroughly between and after both applications.

(2287) A. E. H. asks for a receipt for making a paste or glue that will strongly fasten felt or thick woolen goods to iron or steel. A. Soak pulverized shellac in ten times its weight of strong ammonia. It will eventually form a transparent liquid. Or to rather thin hot glue solution add tannic acid until sticky and curdled and apply at once.

(2288) J. J. Y. asks: What cheap fluid, and one that will mix thoroughly, can be used to thin vegetable tar? A. Benzine or turpentine.

(2289) C. D. asks (1) how butter can be renovated and colored. A. Butter color is sold for the purpose. Bad butter cannot be renovated. Treatment with lime water and other chemicals has been suggested. 2. How can eggs be packed so they will keep fresh for winter markets? A. Eggs are preserved by being dipped in melted paraffin or by being packed in a barrel with lime water.

(2290) G. R. writes: By adding potash lye to flour and water you make a paste the same as by boiling. What can I add to this to prevent from souring? A. Add one part salicylic acid to 1,000 of the paste.

(2291) G. M. E.—The sample sent is galena or sulphide of lead.

(2292) O. McN. asks: How are crayons, such as those used in the public schools, made? A. By compressing proper materials, such as sulphate of lime.

(2293) W. E. A. asks: 1. What is the best make of dynamo and motor that one could use to transmit 40 horse power 200 yards over dikes, etc., where rope transmission would be impracticable? A. Any of the principal makers could supply you with machines for this purpose. 2. What power would be required to run the dynamo to obtain 40 horse power from motor? A. About 54 horse power. 3. Would a current of 110 volts E. M. F. with the proper strength develop 40 horse power in a suitable motor? A. Yes. 4. What is the least E. M. F. and amperage practicable to develop the above power? A. 746 watts constitute an electrical horse power; $746 \times 40 = 29,840$, the number of watts required. This amount divided by the E. M. F. will give the current in amperes, or if divided by the current in amperes it will give the E. M. F. in volts. 5. Can I build a dynamo and motor of the same pattern as the 8 light dynamo described in SUPPLEMENT, No. 600, to obtain the above mentioned power? A. Yes; but it would not be advisable for one inexperienced in dynamo building to attempt a job of this magnitude. It would be better and less expensive for you to purchase from reliable makers. 6. Are the different field magnets in use patented? Also, has not the patent on the Gramme armature expired? A. There are patented field magnets, but the ones commonly in use are not patented. The Gramme patent is not in force.

(2294) J. A. M. asks for a solution of the following questions by algebra: 1. Says B to A, give me one of your apples and I will have twice as many as you. No, says A to B, give me one of yours, and we will have both the same. A. The statement gives the following equations: Let A's apples $= x$, and B's apples $= y$

$$(1)\ y + 1 = 2(x - 1)$$
$$(2)\ x + 1 = y - 1$$

Solving by regular process, we find $x = 5$, $y = 7$. 2. In any right-angled triangle whose base is known (say 40 feet), and also the sum of hypotenuse and altitude (say 60 feet), to find length of hypotenuse and base respectively. A. Let $= x$ hypotenuse, and $y =$ altitude. We then have the following equation from the properties of a right-angled triangle:

$$(1)\ y^2 + 40^2 = x^2, \text{ or } x^2 - y^2 = 1,600$$

From the statement we have the following equation:

$$(2)\ x + y = 60$$

Dividing (1) by (2) we have (3) $x - y = 26{\cdot}66$. Solving the simultaneous equations (2) and (3) we find:

$$x = 43{\cdot}333,\ y = 16{\cdot}666.$$

(2295) I. S. asks: Is it possible to succeed in photography with any of the advertised outfits, without first serving an apprenticeship to the business? A. Yes; with a few practical lessons from an experienced photographer you can succeed. To do satisfactory work, a good lens must be used.

(2296) C. E. W. asks for a recipe for making a cement or glue which will stick paper to polished iron. I wish to use it for covering pulleys. A. Roughen the face of the pulleys with a file, and use the toughest light brown glue that you can find, or fish glue.

(2297) C. F. H. asks for the formula of "paste diamonds." A. The following are representative formulas:

	I.	II.	III.
Silica	100	100	100
Red lead	156	00	164
White lead	00	171	00
Caustic potash (pure)	54	32	56
Boracic acid	7	9	6
Arsenious acid	3/16	1/8	1/100

Melt together to form a glass.

(2298) C. L. asks what country owns the fastest and best fighting ship in the world, and what our government is doing in this direction. A. The new British war ship Blake is claimed to be the fastest and most formidable war cruiser afloat. She has a displacement of 9,000 tons, length 375 feet, beam 65 feet, draught 25 feet 9 inches, twin screws, 20,000 horse power, maximum speed, 22 knots per hour, or over 25 miles. As a ram, at this high velocity and her great weight of 9,000 tons, it is doubtful if any vessel could withstand the shock. The Blake is constructed of steel throughout, has six inch armored turtle back steel deck covering the magazines, torpedo rooms, engines, and boilers. Fuel space, 1,500 tons. She is to carry two 9 inch 22 ton breech loaders and ten 45 pounder quick-firing guns, each capable of firing 12 times per minute, worked by two men, and will pierce 12 to 15 inches of armor plate. Cost, $1,840,000. We have as yet nothing that approaches this ship, but Congress has authorized the construction of one, known as cruiser No. 2, bids for which were recently opened at the Navy Department, Washington. It will be three years before she can be built, and the indications are that faster and better examples will be brought out in other countries. Armored cruiser No. 2 is to be of 8,100 tonnage, and is the largest vessel ever designed for the United States Navy. She will be armed with six 8-inch, and twelve 4-inch breech loading rifles, is to develop 16,000 indicated horse-power and a speed of twenty knots. Her dimensions are: length, 380 feet; extreme breadth, 64 feet 2½ inches; depth in hold, 41 feet 3 inches. Her armor varies from four to ten inches in thickness.

The new Russian torpedo boat Adler, lately built, proved on trial to be one of the fastest vessels afloat. Her mean speed during two runs was 26·55 knots per hour, or a litle over 30 miles per hour. She is 152 ft. 7 in. long, 17 ft. wide, 150 tons displacement, 2,300 h. p. It would seem as if a much larger vessel having a still higher speed might be designed and constructed. It would be a grand thing for some of our enterprising countrymen to accomplish.

(2299) W. M. asks for how long copyrights for books run, and whether the copyright is the same as a patent for an invention, and what is the fuss they are making in Congress about copyrights? A. A copyright runs for 28 years with privilege for a renewal of 14 years, making 42 years in all. A copyright is similar to and is virtually a patent. That is to say, a copyright secures to the holder the exclusive right to reproduce the book, and no one may print it without becoming liable as an infringer. Copyrights are granted to citizens of the United States, and to foreigners who are resident here; but foreigners who are not resident here cannot obtain copyrights. The "fuss" in Congress relates to an effort made to allow foreigners to take these 42 year copyrights or book patents. The bill has been defeated. It is being again urged, chiefly by the wealthy book publishers, as it would facilitate them in forming trusts to put up the prices of all books. One trust already has been formed, namely, the American Book Company, which has a capital of five millions of dollars, and has secured the control of the copyrights of most of the leading school books used in this country. It is believed the copyright law can be amended in such a way as to benefit foreign authors, and yet prevent publishers from forming combinations to advance the prices of books. The bill lately defeated was obnoxious chiefly because it secured little to authors, and nothing to the public, but helped the rich publishers to grow richer at the expense of the people.

(2300) W. M. asks how long a horse can go without food and water? A. We do not know as to horses, but it is stated that after the recent fire in the Neilson 750 ft. shaft of the coal mine at Shamokin, Pa., twelve mules were found alive in the mine that had been without food or water for 26 days.

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