by resolution in fresh oil and reprecipitated and separated by cold and pressure. 3. How can pure paraffine be made to melt at a higher degree of heat without otherwise destroying its properties? A. Its melting point cannot be elevated without altering its properties in some degree.

(26) F. W., Jr., writes: I see in some newspapers notices of "ozone" for preserving fruits, meats, etc. Can you give your opinion as to its value, method of preparing, applying, expense, and any other information you may be willing to suggest in regard to preserving fruits? A. We have no knowledge of any practical process for preserving fruit, etc., wherein ozone is employed. The liquid preserving agents called ozone preservatives, etc., are commonly solutions in water of the sulphites of lime and soda potassa or ammonia. Aside from the cost of producing ozone this substance, though a disinfectant, is not a preservative agent in any sense.

(27) F. G. asks: What can be used to prevent store show windows from sweating when the gas is being lit in the evening? I have taken the gas out and put in a ventilator, still they sweat and are of no use in the evening when we want to make the most show. A. Apply to the glass evenly a slight film of pure glycerine, and you will not be troubled by the "sweating" complained of. Glycerine used in this way will also prevent the formation of frost on the glass in cold weather.

(28) J. W. C. asks: What liquid or liquids will penetrate rubber? A. Try pure bisulphide of carbon or benzole. In these rubber (if pure) first swells and then dissolves. If 15 per cent of absolute alcohol is mixed with these liquids the rubber does not go into solution. Vulcanized rubber swells up without dissolving in these liquids.

(29) A. L. Y. asks: Please give a good receipt for a cologne. A. Alcohol 95 per cent, 1 quart; oil of cedrat, 9 drachms; oil of thyme, 2 drachms; oils of bergamot and lemon, 6 drachms; oil of Portugal, 4 drachms; oils of neroli, vervain, and rosemary, 2 drachms; oil of mint, 2½ drachms; eau de melisse, 2 drachms; tincture of musk, 24 drops. Mix, and after standing twenty-four hour filter till clear.

(30) J. N. asks: Will you please let me know in your Notes and Queries column how to make a dip for brass wire, to be used in bird cages? One that will prevent the wire from corroding or getting dirty. A. Seed lac, dragon's blood, annatto, and gamboge, of each, 4 oz; saffron, 1 oz.; wine spirit, ten pints. Triturate together and digest for several days, with occasional stirring. Then strain for use.

(31) Q. L. asks: Can caoutchouc which has been dissolved in carbon-bisulphide and then mixed with the right proportion of sulphur, be vulcanized to make *ebonite*? A. As we understand you, yes—the process is covered by several patents. 2. In vulcanizing rubber, is it necessary that steam heat be used, or will dry heat do as well? A. Dry heat will do, but steam can be used to better advantage.

(32) E. A. E. asks: How is water gas made; is it used for lighting, or only for heating; will it condense by conveying it in pipes under ground 1,000 feet; who are manufacturers of it? A. Water gas, so called, is made by passing dry steam through a column of highly heated coal contained in an air-tight furnace. A gas rich in hydrogen and carbonic oxide, mixed with carbonic acid, results. The latter impurity, together with others derived from the coal, are purified by washing in water and passing over quick-lime. For illuminating purposes it requires to be mixed with another gas—derived from petroleum—very rich in hydro-carbons. When properly prepared, very little of it condenses under ordinary conditions of temperature and pressure. See our advertising columns for addresses of those interested in this process.

(33) F. D. H. writes: A pulley 8 inches diameter is driven by belt from a pulley 36 inches diameter, making 230 revolutions. Against this belt presses a pulley 6 inches diameter. How many revolutions does the 6 inch pulley make, and what is the rule for finding the same? A. The speed of the belt is the same as that of the periphery of the driving wheel, and the relative speeds of the driving and driven wheel is as their diameters. Eg., 6 : 36 :: 230 : 1380. The speed of the 6 inch pulley is 1380 revolutions per minute.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

M. C.—It is powdered slate or argillaceous rock containing iron sulphide—and possible traces of precious metals—an assay would be necessary to ascertain what value (if any) it has as an ore.

NEW BOOKS AND PUBLICATIONS.

THE ST. NICHOLAS MAGAZINE. New York: Published by the Century Co.

It is impossible to speak in too high terms of eulogy of *St. Nicholas*. It is confessedly unapproached and unapproachable in its peculiar field. It is a marvel of perfection, both as regards its literary excellence, its artistic merit, and its singular adaptability to the requirements of an eager and alert generation of young readers.

The volumes for 1880 81, now before us, maintain the high standard set for the guidance of those who have devoted their best talents to the production of *St. Nicholas*. The index contains the names of some of the foremost writers of the land, such as Rossiter Johnson, who has struck an entirely new vein in story writing for boys. William O. Stoddard, Felix L. Oswald, Frank Stockton's irresistibly funny fairy tales, Mrs. Dodge's "Jingles," and the clever sketches contributed by Emily Huntington Miller, Lucretia P. Hale, Susan Coolidge, and others, are enough to make the reputation of any magazine for young people. It may be truly said that the boys and girls of the English-speaking race have now presented to them, in the annual volumes of *St. Nicholas*, the best work by the best writers for young people.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

November 29, 1881,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

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