

ceived for the examination for this position announced to be held on May 24th, qualified persons are urged to enter this examination.

James Smith, chairman of the manufacturing committee of the Standard Oil Co., died on May 15th in New York City, of apoplexy at the age of 53 years. He had been with the Standard Oil Co. for 38 years. It is said that Mr. Smith was the first man to succeed in refining Texas oil.

The Pelham Phosphate Co., of Pelham, Ga., is erecting a plant for manufacturing acid phosphate and sulphuric acid. The plant will have an annual capacity of 15,000 tons of acid phosphate.

Dr. Edward B. Voorhees, director of the New Jersey Agricultural Experiment Station and Professor of Agriculture at Rutgers College, died on June 6th, of paralysis.

A fire resulting from the explosion of 200 gallons of paint stored in her hold burned the lake passenger steamship *Northwest* at Buffalo, the damage totaling \$500,000.

An anonymous colliery owner through Winston Churchill, British home secretary, offered a prize of \$5,000 for an efficient electric safety lamp.

CONSULAR AND TRADE NOTES.

TEXTILE YARNS AND FABRICS FROM PAPER.

Consul Augustus E. Ingram refers to an interesting paper read at the recent meeting at Manchester of the Textile Institute, by Carl Pontus Hellburg, of Halmsted, Sweden, on *Pine Fiber: A New Fiber for Textile Manufacturing*. Mr. Hellburg, who has studied paper spinning for 10 years, traces the history of this art from the hand-spun paper twines and yarns used years ago in China and Japan to the attempts in the United States some 20 years ago to spin paper yarns for textile purposes.

The manufacture of yarns spun from wood pulp or half-made paper was attempted for many years in Germany, and at Waldhof, near Mannheim, the so-called "Licella yarn" was produced, but the yarn department of these works was closed in 1907-8 in consequence of unsuitable machinery, the high cost of production, and the unsatisfactory strength of the yarn.

A superior pulp yarn called "silvalin" was first made at the Elberfeld paper mill, but in 1909 the works were transferred to Hammern, Rheinland, Germany. The method of production employed, according to Mr. Hellburg, is unsuitable for building up a large industry, there being too much waste and too great a difficulty in keeping the rolls sufficiently moist for a few hours until the spinning process takes place. Therefore, Mr. Hellburg says:

"In order to obtain an absolutely first-class yarn from pine fiber, finished paper made from the very best sulphite or sulphate pulp must be used, this pulp to be made from the slowly growing white pine which is found in Russia, Finland, Sweden, Norway, Canada, and the United States. The spinning of yarn from finished paper gives that yarn a suitable strength. It has also been proved by the trials I have made that Swedish Kraft paper gives a yarn 20-25 per cent. stronger than other kinds of paper."

Putting aside the advantage of obtaining a stronger yarn by using finished paper instead of pulp, there is no saving in producing yarn from the pulp direct, as the pulp, or half-made paper as it should be called, in order to be spun has to be subjected to the same treatment as in making paper, with the exception of the finishing.

Paper yarn for textile purposes, called xylolin, is manufactured in Saxony and Austria, and is used for backing carpets

and for making carpets composed exclusively of paper yarn. [Samples of xylolin are on file at the Bureau of Manufactures.] The cost of production by the Claviez method is rather high, partly because the spinning mills do not make their own raw material—the paper itself; and partly because the machinery employed is not altogether satisfactory. Mr. Hellburg has consequently invented and patented a combined cutting, dividing, and rolling-to-bobbin machine. Mr. Jagenberg, of Dusseldorf, has constructed a ring-spinning machine for paper which works satisfactorily and requires only one employee at each side of the 100-spindle machine as against two for the Claviez machine of 120 spindles. The new method consists of 9 operations as against 102 in the old method.

The appearance and strength of the yarn will depend on the quality of the paper. From Swedish Kraft a very strong yarn is obtained. Pure sulphite paper which is not mixed with mechanical pulp also produces a serviceable yarn, which is good for many purposes. For specially fine yarn tissue paper is the best. At present there is no paper specially made for spinning purposes, and all Mr. Hellburg's trials have been made with common wrapping paper, the results obtained being exceedingly good. So far, coarse counts only have been produced.

Paper intended for spinning should be about 19 inches wide and in rolls; these are placed in the cutting machines, which cut the entire width in one operation in strips of one-sixth to one-half an inch or any required width. The strips thus obtained are simultaneously carried over to the dividing and rolling-to-bobbin machine, and are cut at a speed of about 44 yards per minute. They are separated and rolled on the bobbins in lengths of about 3,000-5,000 yards on each bobbin. These bobbins are then removed to the spinning machines, with one bobbin for each spindle, and the paper strip from each bobbin is carried to a dampening roller, and directly after leaving this roller is spun into yarn on a ring spindle, either upon a wooden bobbin or a conically shaped paper tube. The spinning production averages about 356 pounds per 100 spindles in 10 hours.

With regard to the uses of this paper yarn, packing twine and cord have been made; and samples of these and several other manufactures are forwarded [and will be loaned to interested firms by the Bureau of Manufactures.] Spindle bandings have also been cheaply made and have the additional advantage of

being easily washed without fraying. The cotton of which these bands are usually made could be saved for other purposes.

Carpets of all-paper yarn are already in great demand. In carpet backs the paper yarn is said to be superior to jute yarn. It is also useful for floorcloth for linoleum and in such linen fabrics as paddings, waterproof canvas, scenery cloth, etc., the paper yarn can be used as weft. There are many other fabrics to be made of a union of paper yarn and cotton such as upholstery, cloth, mattress cloth, etc. Trimmings for curtains and furniture have also been made, composed of a paper yarn overspun with silk. Samples of white paper yarn dyed in the hank are also forwarded; to insure thorough penetration of the dye, the dyeing should be effected in the pulp.

As a substitute for jute it may be very welcome for bags, sacks, and packing cloth. For wool packs a cloth of all-paper yarn would be very suitable because of its clean surface; the objectionable presence of vegetable fiber in wool might thus be lessened.

It is claimed that this paper yarn is not damaged by hot or cold water. Paper yarn tarpaulin was alternately boiled, air-dried, immersed in cold water, and ironed without suffering damage. [The full text of the inventor's address on "Pine Fiber for Textile Manufacture" may be obtained from the Bureau of Manufactures.]

NEW METHOD OF WOOD PRESERVATION.

A chemical process for the preservation of wood is described in a report sent to the Bureau of Manufactures by Consul-General William A. Prickett. A limited company in New Zealand is now engaged in treating chemically lumber of ordinary quality for railroad ties, fence posts, etc., and the claim is made that the material so treated will last as long as the best wood the forests can produce.

The preserving process is said to be simple and inexpensive, and consists essentially in boiling the wood in a saccharine solution to which certain other substances are added according to the special purpose for which the lumber is required. The lumber is not subject to any external pressure or vacuum at any stage of the process. The wood as it is received is immersed in a cold solution in large open tanks. This solution is gradually raised to the boiling point and is maintained at this temperature for a certain time, depending on the size and density of the wood. After cooling, the wood is removed and placed in a drying kiln, the temperature of which is slowly raised. When sufficient desiccation has taken place the kiln is gradually cooled down. The time occupied by the whole treatment generally takes but a few days, though in special cases and for large-sized timber it may be extended for several weeks. The action which takes place is described as follows:

As a saccharine solution boils at a slightly higher temperature than water, the moisture in the wood is converted into vapor and escapes along with the air. During the boiling the albuminous matter in the wood is coagulated and rendered inert. In some measure this coagulation accounts for the strength of the wood being increased by this process. While cooling, the solution is rapidly absorbed by the wood and penetrates every part of it.

The company is executing an order for 180,000 sleepers for the Government Railway Department, and the works were lately inspected by the Prime Minister. The company is also treating large quantities of wood for use in railway cars and carriages.

Among the advantages claimed for this process is the statement that the timber can be treated as soon as it is brought in from the woods and then immediately used for the purposes required, whereas in the ordinary way the timber must be allowed to season before being worked up. It is claimed, also, that there is no waste in lumber which has been treated, as the process stops all warpage and splitting, as well as rendering it absolutely immune from dry rot and borer insects.

CANADA'S ASBESTOS SUPPLY.

According to an official report, Canada produces 82 per cent. of the world's supply of asbestos. The companies operating asbestos quarries and factories in Canada are capitalized at \$24,290,000. In 1880 only 380 tons of asbestos were produced in the Dominion, valued at \$24,700; in 1909 the output was 63,300 tons, valued at \$2,300,000. In 1909 2,000 men were employed in the asbestos industry, and received wages amounting to \$1,350,000. In the Black Lake quarries, in the Province of Quebec, there are 45,000,000 tons of asbestos rock in sight.

The asbestos slate or shingle industry is being developed by the plants in Canada, and predictions are made that in a short time 75 per cent. of all the asbestos produced in the Canadian quarries will be used for asbestos shingles. The asbestos-slate business is only five years old, but during that time the demand for this article has increased enormously, and large factories are being established to supply the demand for this new roofing material.

NATURAL GAS DISCOVERIES IN HUNGARY.

The Hungarian Government has decided to monopolize the tremendous natural gas source recently discovered at Kissarmas, in Transylvania, of which the daily yield amounts to 26,000,000 cubic feet. The gas comes out of the ground at a pressure of over 30 atmospheres, and the noise it makes is heard many miles away. The prices for land in the neighborhood have already increased tenfold, and Kissarmas, from being only a little hamlet lost in the mountains, promises to become a very important industrial center.

The Government engineers estimate that the yield will be sufficient to illuminate all the towns and villages in Transylvania, and also to bring over by pipes large quantities of gas to Budapest. Other borings for gas have already been commenced at Dieso-Szent-Marton, Ura Maros-Szent-Gyorgy, Sachsish-Regen, and Szent-Benedek.

The annual report of an artificial-silk factory near Frankfort shows a clear loss of \$346,052 for 1901. This same company in former years paid as high as 35 per cent. Shares, which at one time brought as high as \$133 on the local stock market, have been as low as \$23 and are now selling at \$30. The price of artificial silk has dropped 60 per cent. in the last few years, being now \$1.20 per pound.

BOOK REVIEWS.

Nitrocellulose Industry. By EDWARD C. WORDEN. Vol. II. Octavo, xxviii, 672 pp., 176 illustrations. D. Van Nostrand Co., New York. 1911. Price, \$5.

The review of the first volume of the "Nitrocellu-

lose Industry" appeared in the June number of THIS JOURNAL. The general criticism of the work there given also applies, for the most part, to the second volume, which includes the following additional sub-