VALUABLE BY-PRODUCTS OF COTTON.

The question of opening up the markets of Japan and the far East for our cotton has given the Southern growers a slight hope for better times; but, while the The action of this bark is similar to that of ergot. Some of them attempted to escape, but they were prospects of another large crop keep prices down, and affect the planters disastrously, science is steadily laboring to widen the field of consumption and to create new industries that will utilize all of the by-products of the crop. The achievements in this direction of great value. Chemists have approved of it, and it which has resulted in great excitement in medical cirhave been so noteworthy in the past that one is led to 'is now largely a question of extracting it profitably. place implicit confidence in the promises for the future. By the single discovery of the value of the cotton seed for manufacturing oil and cotton-seed meal, some ten of the crop can be utilized in making artificial fertil- heroically took observations of his own condition and to fifteen million dollars were added to the receipts of izers. Cotton-hull ashes are very valuable for furnishthe annual cotton crop. Now that an enormous indus- ing a cheap potash for the tobacco crop, and there is try has been built up and permanently established for |quite a demand for it in all of the tobacco growing disconverting the cotton seed into oil, the question of tricts of this country. The quality of these ashes varies, suspended, and the animals used in the experiments utilizing other parts of the cotton plant for commercial but, as a rule, they are of considerable value. purposes has come rapidly to the front.

part of the cotton crop, and the seeds, the stalks, the turned to some profitable use. and as the years go by roots, and hulls were either burned on the land or new uses for the products will be discovered. Already turned under the soil by the plow to increase the fer-¹ the cotton-seed oil-the most valuable by-product of tility of the land. It was supposed that the cotton the crop-has found its way into fields never dreamed drew so much fertility from the soil that it would soon of when it was first extracted. Improved methods of rob it of all power for plant production and in time refining it are gradually forcing the oil into direct commake it worthless. Scientific investigations and analy- petition with more expensive oils. It has been found sis of the soil have demonstrated, however, that, of all that the upland cotton seeds yield a purer and better the staple crops, cotton imposes the slightest drain oil than the cotton raised along the seacoast. The upon the land. By applying special fertilizers, all of climate also has much to do with the quality of the the crop can be removed year after year without mate- oil, and under the same conditions, cotton-seed oil rially injuring the soil. Thus cotton has been raised made in this country is superior to that manufactured the land to-day is almost as fertile as when the virgin extracted by expression is odorless, and of a dark, soil was first broken with the old wooden plow.

This demonstration has led to important results. After the cotton seed, the cotton-seed hulls were selected for scientific investigation. The hulls of a cotton enters largely into the manufacture of soaps. The crop constitute about half the weight of the ginned seed. These hulls are hard, dry, and apparently use- makes a good substitute for salad and cooking oils, less, and they are covered with a fuzzy lint that fur- and also for packing sardines and other fish. It has ther detracts from their appearance. In fact, until its limits, however, and the manufacturers have not very recently they had no practical value, and they been able to make it take the place of oils for mixing were disposed of in various ways by different planters. paints and wood-fillers. It dries very slowly and im-The majority returned them to the soil to help fertilize it; but analysis showed that their constituent elements ing into competition with linseed and similar oils for did not enrich the land to any great extent.

of incalculable value. Heretofore the hulls have been considerable demand in the machine trade. used by a good many of the cotton-seed mills for fuel. and as fuel they are worth about 80 cents to 90 cents per ton; but as animal food they are worth far more. process of refining, through treatment with alkaline Experiments were first made a few years ago in the vicinities of the oil manufacturing centers, such as Then the white oil of commerce is obtained by shak-Memphis, New Orleans, Houston, Little Rock, Raleigh, ing the yellow oil with 2 to 3 per cent of fuller's and Atlanta. It was found that when mixed with earth. In purifying the yellow oil about 25 per cent of condensed foods the hulls were readily eaten by the it is separated in the form of stearin. This cotton-seed animals, and that they were of great value in helping stearin is employed in making candles and the various to digest and assimilate bran, cracked corn, and meal. preparations of butter and lard surrogates. Moreover, it was proved by a succession of feeding tests that 10 per cent of the protein of the hulls was lard intended for cold climates, and then its fluidity digestible, 38 per cent of the fiber, 40 per cent of the was corrected by mixing it with beef fat. Now this is nitrogen extract, and 77 per cent of the fat. The hulls often sold on its own merits in the market in open are light and bulky, but otherwise they make a good competition with lard. substitute for hay in the South, where grass crops have always been notoriously small and inferior. The stock that owes its origin to cotton-seed oil. This is hulls are baled or pressed into sacks, and in this con- obtained from the residue left after the oil is refined. dition they keep for a long time. When packed away in bulk, like hay, they ferment and heat.

Now that the cotton seeds and hulls have been pro- been found to be of special value in washing woolen show the masses the persons who have gained honor by fitably disposed of, the stems of the plants have at- goods, which it does not injure nor cause to shrink. their talents and genius; while they shall also be allowed tracted attention, and already they have been success- | Thus it is that the by-products of the cotton crop are to enjoy the fruits of their labors by being presented with fully utilized. As a by-product of the cotton crop, the multiplying, and in the end they may prove more valupapers empowering them to be the sole manufacturers stems promise to prove as important as the hulls. The able than the lint. At present not much more than and sellers within a certain limit of time. Again, to plants of the cotton crop have long ranked in the one-third of the cotton seed is used for manufacturing such as have administrative talents and the necessary South as a coarse animal food, about equal to the same joil and similar products; but, as the demand increases, funds either to build schools, or begin irrigation works quantity of rye, wheat, or oat straw. After the crop and facilities improve for handling the seed, the value for the benefit of agriculture, or build rifle factories or was harvested the animals were generally turned loose of the crop will increase, and in time cotton-seed oil cannon foundries, all of which will be of great benefit on the land, and they would eat the stubble in places will represent an annual value more than equal to the to the population of the empire at large, shall be grantand grind some of it into the soil. These stems would be | actual worth of the cotton lint. ed rewards on the same scale as men who have gained stripped of their foliage and tender twigs by the cattle, ست من م distinction in the army or navy, in order to give them but the hardy, dry stalks would be left untouched. THE PLAGUE IN VIENNA. special encouragement to work for the good of them-The question of utilizing these stems as fiber for cot- The outbreak of the bubonic plague in Vienna, due selves and their country. We hereby further command ton bagging attracted attention some years ago, but it to the experiments in Prof. Nothnagle's bacteriological the Tsungli Yamên to draw up the regulations which was only recently that a process was patented for this establishment, has spread terror in the Austrian capital. shall govern the various matters noted within this purpose. The stems are very rough and coarse, and They have several cases in addition to those which reedict, and report at once to us." scientists found some difficulty in making machinery sulted in the death of Dr. Mueller and Herr Barisch. ----that would work up the material satisfactorily. The Dr. Mueller was considered an authority on the plague DEATH OF COLONEL WARING. fiber was found to be good when once stripped and and spent some time in Bombay for the purpose of sorted out. Samples of the bagging made from the studying the plague on the spot, and he survived all Just as we go to press it is our painful duty to record stems have been tested in the South, and it is pro- the dangers of this place to succumb to the deadly the death. on October 29, by yellow fever, of Colonel nounced by experts to be first-class in every way. The bacillus at Vienna. Extraordinary precautions have George E. Waring, Jr., at his apartments in New York yield of the fiber is large, and when satisfactory ma- now been taken to prevent an epidemic. The plague city. chinery is produced a considerable bagging industry patients lie in an isolated building and are attended by Co Colonel Waring contracted the dread disease while will be built up near the cotton fields. Five tons of Dr. Pooch, a volunteer physician, and by Sisters of in the service of the government at Havana, so we good stalk will yield about 1,500 pounds of first-class Charity. They are cut off by a rope which no one is must add one more name to the honorable roll of fiber. At this rate the annual cotton crop will pro-allowed to pass. The doctor writes the prescriptions those who have died for their country as a result of duce all the bagging needed for cotton baling and and pastes them on the window pane. The doctors the Spanish-American war. Colonel Waring was sent leave a good percentage for other purposes. Of course outside read them and have the medicines put up and to Havana to give advice in his capacity of expert the industry is largely in the experimental stages yet, they are placed on the window ledge; after they have sanitary engineer, and he contracted the disease while but if it works as well as the cotton-seed oil industry retired to a safe distance, the medicines are taken in- devising means to drive the scourge from its home in did, it will not be many years before it will assume side. Food is conveyed to the patients and their at- Havana. We will give a biographical notice of Colonel ¹tendants by the Sisters of Charity in a similar manner | Waring in our next issue. gigantic proportions.

(Gossylii radicis cortex) produces a large root, the bark the changes in the patients' condition. Everyone who of which has long been used for medicinal purposes. This fact has led to investigations here, and it is all captured and locked up, but it is feared the believed that another by-product of the cotton crop precautions were taken too late. Both he and his will be soon found in the roots of the plants. The wife have visited friends, rode in public conveydrug would be useful in many ways and might prove ances, and came in contact with dozens of persons,

as food for animals, it might be said that any surplus ary hospital was erected by torchlight. Dr. Mueller

This leaves little of the cotton plant either to go to Originally the lint was considered the only valuable waste or to be returned to the soil. Every part of it is on the same plantations for over half a century, and of the Egyptian or Indian cotton seed. The oil first brownish-green color. This is treated with alkaline solutions, and a clear, yellow, pleasant, and odorless oil is produced. The residue is called soap stock and refined oil is consumed chiefly as a food product, as it perfectly, and this seems to debar it forever from enterthe drug and paint trade. As a lubricant, the best But as substitutes for hay the cotton-seed hulls are refined cotton-seed oil is very satisfactory, and it is in

> Refining processes are constantly developing new uses for the oil. The yellow oil resulting from the first solutions, is further purified by heating and filtration.

For some time this cotton seed oil was mixed with

Finally, there is a wash powder made from the soap The soap itself, made from the oil, is used extensively by the woolen mills of this and other countries. It has

In Egypt, the common cotton of the Nile districts and a telephone is used to give information regarding came in contact with Herr Barisch has been isolated. cles. It is the opinion of the doctors at the Austrian In connection with employing the cotton-seed hulls capital that the plague is likely to spread. A tempor-

the questions of the disease until he died. His coffin was partially filled with sawdust saturated with carbolic acid. All bacteriological observations have been have been burned.

PATENTS AND COPYRIGHTS IN CHINA.

Under date of July 18, United States Minister Conger sends from Pekin the following clipping from the North China News of July 12, purporting to be a translation of a recent decree of the Emperor in regard to the enactment of copyright and patent laws.

It would appear from this decree, says Mr. Conger, that China is about to give her men of literary and inventive genius the same recognition and protection accorded them by other nations; and it is indicative of the great changes soon to take place in the country. Unfortunately, since the issuing of this statement by Mr. Conger affairs have taken an unfortunate turn in China, and it is impossible now to tell when the new laws will be enacted. It remains to be seen how far the Dowager Empress and Li Hung Chang will allow the measures of reform and reconstruction to be carried

"The following important imperial decree, which is really the promise of the enactment of copyright and patent laws, was issued on July 5.

"From ancient times until now, the first duty of government has been to bring order out of chaos and shape the rough materials at hand. With the increasing facilities of international commerce, our country has been filled with an influx of scientific, mechanical, and artistic things which are an education to the masses, whose eyes are daily being opened to their usefulness. China is a great country, and our resources are multitudinous. Men of intellect and brilliant talent. capable of learning and doing anything they please, are not lacking; but their movements have hitherto been hampered by old prejudices which have formed a bar in thinking out and introducing to practical use new inventions. Now that we have entered upon the highroad toward the education and enlightenment of the masses, for the purpose of making our empire strong and wealthy like other nations, our first duty should be the encouragement and employment of men of genius and talent. We therefore hereby command that from henceforth, if there be any subject of ours who should write a useful book on new subjects, or who should invent any new design in machinery, or any useful work of art and science which will be of benefit to the country at large, he shall be honored and rewarded by us in order to serve as an encouragement and exhortation to others of similar genius and talent. Or, if it be found that such geniuses have real ability to become officials, we will appoint them to posts as a reward, or grant them decorations or fine raiment in order to