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Applied Entemple

THE CONSTITUTION OF THE KOCH LYMPH DISCLOSED. The scientific and medical world has been much interested in the announcement by Dr. Koch of the composition of his famous lymph. Conservative as ever in his estimate of its worth, he claims for it distinct value as a reagent for testing the existence of tubercular disease. As a remedy for disease of this nature he attributes to it a proved efficacy, particularly in earlier stages of the disease. He announces also that he proposes to see if his discovery cannot be followed up, so as to lead to analogous treatment for other diseases.

The discovery was based on observation of the effects of injection of pure cultivation of tubercle bacilli upon animals affected with tubercles as well as upon animals in good health. A healthy guinea pig thus inoculated dies. The wound caused by the inoculation closes with a sticky matter, shows signs of healing, but after ten days or two weeks a hard nodule appears, which develops into an ulcerating sore, and death ensues. But if the animal inoculated already has tuberculosis, no nodule forms in the injection wound. It hardens, turns dark, and eventually a piece falls off, leaving a flat ulceration that soon heals. The same whether the bacilli are alive or dead. It is the effect | probably of a decomposition product or extract of the dead bacilli, but not the life action of the bacilli themselves. A prolonged application of a low heat, the temperature of boiling water, and certain chemicals are alike fatal to the bacilli in the cultivation.

found to be practically without action on healthy animals, but of very powerful action on those already affected. The tubercular reaction, which has been observed and described so often, was next discovered. The injected tuberculosed animal was killed by a dose that a healthy animal was indifferent to. By great dilution of the fluid before injection, death was avoided and only extended necrosis of the tissue near the place of inoculation was obtained. By extreme dilution the wound produced at the point of injection after a few days' suppuration became covered, and the lymphatic glands became reduced from their swollen condition, and a generally better condition followed.

Dr. Koch, from his studies, became convinced that the action was due to matter extracted from the dead bacilli. He, therefore, sought for a solvent, and processes for preparing a solution. As solvent he adopted a fifty per cent solution of glycerine. The processes he eventually chose he does not divulge.

The essential constituent he thinks is a derivative of the albuminous bodies. He thinks that it acts by unbacilli. The bacilli are killed in the patient by a product of the dead bodies of their own species, as a man might be killed by a cadaveric alkaloid, and as surgeons are killed by blood poisoning from wounds inflicted while dissecting corpses. The death of a patient is due to necrosis of the tissue. This necrotized tissue soon becomes unfit for propagation of the bacillus. By injection with lymph the same condition of unfitness is imparted to the whole body without accompanying necrosis, unless the dose is too large.

The effective constituent of the lymph can be precipitated by alcohol, and obtained mixed with other matter as a white or colored powder. In the glycerine extract it is estimated to be present in fractions of one percent. As diluted, the quantity injected is almost inappreciable. Its potency upon affected organisms is far beyond that of the most powerful known drugs, when the infinitesimal amounts added, and the intense reaction produced in the system, is considered. As yet guinea pigs have proved them to be fatal.

----JARRAH WOOD.

Considerable interest in the utilization of woods date. The authorities of the Royal Gardens at Kew national right can find a higher tribunal for adjudica-

forming mainly the forests of these tracts. Baron Mueller, in referring to these woods in his "Report on the Forest Resources of Western Australia," says :

"The wood has attained a world-wide celebrity. When especially selected from hilly localities, cut while the sap is least active, and carefully dried, it proves impervious to the borings of the chelura, teredo, and termites. It is extensively in demand for jetties, piles, railway sleepers, fence posts, and all kind of underground structures, and it is equally important as one of the most durable for the planking and frames of ships. It is also much used locally for flooring, rafters, spars, and furniture. It is one of the least inflammable for building structures, and one of the best in Western Australia for charcoal."

Vessels constructed of jarrah wood have, after 25 years constant service remained perfectly sound, although not coppered. The wood has been tried at three places in the Suez Canal, at Suez, Port Said, and Ismailia, and after having been down seven years the trial samples were taken up in order that a report might be forwarded to Paris, and the certificate of the resident engineer pronounced the timber to be practiresult follows the injection of the bacilli cultivation, cably indestructible. Jarrah wood has been used for street pavements in Melbourne, Australia, and in the King's Road and Westminster Road in London.

The eucalyptus is of very rapid growth, and the timber, when green, is very easily felled, split, or sawn up, but when dry it becomes very hard. The bark of many of the species abounds in tannin, and has become to The next point ascertained referred to the action of some extent an article of commerce. Some of it issaid the dilute cultivation with killed bacilli. This was to be twice as strong as oak bark. The bark of some species is remarkable for its hardness; while some throw off their outer bark in longitudinal strips or ribbons, which, hanging down from their stems or branches, present a very singular appearance.

CELEBRATION OF THE BEGINNING OF THE SECOND CENTURY OF THE AMERICAN PATENT SYSTEM.

The first century of existence of the American patent system has now been completed. In the history of the country there are to be found few more important epochs or more worthy of being adequately signalized. The inauguration of the patent laws marks the beginning of a career of unprecedented prosperity among nations. It indicates the fostering by the federal power of the most distinctive feature of the national character. The many inventions, now nearly half a million in number, set forth in the records of the United States Patent Office are a history of mechanical genius and progress of which our country and the world at large should be proud.

It is hard to believe that those who composed and fitting the bodily tissue from sustaining the life of accepted the constitution of the United States, and those who subsequently amended it, could have foreseen the influence which each paragraph would have on the fortunes of so many millions of people. It is definitely certain that the clauses relating to patents could never have been supposed to embody the foundations of the edifice that has been based upon them. In the first days of the republic there was but little interest in the subject of invention. The people were largely agricultural in their pursuits, and carried on their work with primitive appliances. Gradually a few patents were taken out, but up to the year 1825, including the first thirty-five years of operation, only 4,183 patents had been issued. The annual number of patents granted gradually increased from ten or twenty per annum to 299 in the year 1825. In 1854 the first great increase is observed, when the number rose from 846 for 1853 to 1,759 for 1854. Since that period they have increased until now over 20,000 are issued annually.

It is not in the mere granting of letters patent that no large doses have been tried. The experiments on the fostering arm of the government appears most prominent. Entitled by statute to federal protection by the judiciary, the rights of patentees have formed one of the great subjects of defense by the highest courts of the land. The district and circuit judges are grown in the English colonies was awakened by the the first appealed to, but from them case after case is Colonial and Indian Exhibition of 1886, and this inter- | brought before the United States Supreme Court at est seems to have been steadily increasing since that Washington. No subject of personal or even inter-

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have recently issued a report on the jarrah timber tion of its claims than is afforded to the right of the in-(Eucalyptus marginata), of which the following are the ventor. The highest judges in the land, and those who have

salient features :

Various species of encalyptus have been recommend- obtained the highest reputation as expounders of the ed for use in England for outdoor work where strength 'law and as interpreters of the intentions of the legisand durability are specially desired. The freight lative bodies, have pronounced strongly and unhesitatcharges from Australia, where all the species are native, ingly in favor of the inventor. No class of citizens are heavy, and this is one reason why the wood has has been the subject of higher encomium from the not been generally introduced. Another reason is that | bench. Those judges who have been most outspoken its intense hardness makes it well nigh impossible to in their appreciation of the poorly rewarded efforts of work in with English tools. The species of eucalyptus mechanical genius have been those who have attained to which most attention was drawn at the Colonial and the highest reputation. Numerous attacks have been Indian Exhibition as structural woods was jarrah, Eu- made upon the system in Congress, but all have met caluptus marginata, Smith, and the karri, Eucalyptus with the same fate, and have failed at an early stage. diversicolor, F. Muell Much more attention has since To-day the nation at large may be thankful in seeing been given to the development of the jarrah than the the statutes undisturbed and intact. It is a guarantee of karri. The tree which produces it grows generally to the future progress of the country. The maintenance the height of 100 feet, but sometimes to 150 feet. It is of laws so fruitful in good in the past promises well for found only in Western Australia, extending over the the future, and is the best insurance of the continuance greater portion of the country from the Moore River to of inventors' efforts. The more enlightened of our King George's Sound, advancing to Cape Leeuwin, legislators have uniformly opposed on the floor of the