THE TWENTY THOUSAND DOLLAR PRIZE FOR HARVESTERS.

The last mail from Australia brought us files of Adelaide exchanges which contain reports of the contest for the prize of $20,000 offered by the government of South Australia for a combined reaping and threshing machine. It is somewhat disheartening to announce at the outset that the contest was only a partial success, so far as bringing to view a full-fledged and well-working combined machine is concerned. The magnificent prize has failed to secure the objects aimed at in its offering.

There had been 27 entries for the government prize of $20,000, but at the roll call only 14 responded and brought forward their machines. Of these there was one from the United States, entered by S. L. Gaines, of Oregon; the others were of colonial invention. Mr. Gaines was obliged to retire from the field soon after starting up. His excuse was that he had lost a pulley from his machine on the voyage, and the smaller one with which he attempted to work would not serve the purpose. The colonial machines did better, and after making their rounds, the grain was poured upon a tarpaulin and examined by experts. One machine was found to crack the wheat, but otherwise to yield it clean and in marketable condition; but those following the machine found so much wheat on the ground that its "saving" qualities were rated low. Another machine, which the reporters describe as having the appearance of an "infantine dredger," yielded wheat not so badly cracked as the preceding, but it was not so clean. The third machine to finish its round produced "very clean grain, with little waste." The fourth machine, which is pronounced by the *Observer* to "stand a chance of distancing its competitors," was entered by Mr. Phillipson. It reaped, threshed and bagged the grain, and in "all respects did its work better than any other exhibited."

We shall select, from the list of machines exhibited, one on account of its American origin, and others because they succeeded in turning out threshed wheat on the trial field. Mr. Gaines' machine was an adaptation of the Californian header, with a threshing and winnowing attachment. From the header the grain is thrown back upon a "draper," or rather three "drapers." These are revolving endless bands of canvas; one at each side carries the heads, which are cut off to a central draper, which in its turn conveys them back to a thresher, which afterwards forwards the chaff and wheat into a winnowing arrangement, where they are separated, the chaff, straw and other rubbish being scattered over the field.

The machine which is spoken of above as wasting grain was planned in this way: On the "off" side of the arrangement is a Ridley reaper contrivance for stripping the grain and chaff off the straw, from whence it is thrown up into a chute, which conveys it to a winnowing machine, carried upon the "near" side, one pair of wheels and a very long and strong axle supporting both winnower and reaper. The driver occupies a place with respect to the reaper portion of the machine similar to what he would were the winnower absent; but on the platform, to the left of him, stands a man with a scoop, who continually gathers up the cleaned wheat from a receptacle in the platform beneath his feet, and deposits it in a bag hung up in front of him. This labor appeared to be very heavy, and the continual bobbing up and down seemed unsuited for very hot weather. The wheat and chaff is passed through a number of sieves until it is separated into fine wheat and refuse, and at the end of the round the wheat bagged by the second man is laid upon the ground, whilst the chaff, chogs and other waste is cleared out of the body of the winnower.

The machine which did the best work at the trial was made by Mr. Phillipson, of Victoria. The local report says: The grain passes into the machine the same as in the ordinary stripper. After passing through the beaters it falls on to an apron which elevates it to the top of the machine, and whilst it is being carried up it is acted upon by the wind from the front fan, which blows a portion of the chaff out of chimney at top of machine. The grain and straw then fall on to a straw-carrier which carries away all the rough straw and discharges it at the back. The grain then falls through a hopper on to the riddles, and while falling is acted on by the wind from the second fan, leaving nothing but white heads and drake to be taken out of the wheat, which is effected by the riddles, the white heads passing out on the off side into a set of elevators which convey them back to the beaters to be rethreshed. The clean wheat passes out on the near side into a set of elevators, and is then elevated and discharged into bags which stand on a platform on near side of machine. The drake falls from the riddles into a box placed to receive it. The bags when full are sewn up and tipped on to the ground. The machine requires two men to work it.

Of the machines which were brought upon the ground, but for some reason or other did not start, there were various styles, and they are described as "like a dredger," "a threshing machine mounted on the back of an ordinary reaper," "like a smutter in a flour mill," "like an emigrant wagon," etc. There was to be another trial in the week following the one we have mentioned, and the next Australian mail will doubtless bring the results of it, and it is to be hoped that something more definite may be attained than was brought out at the first trial.—*Pacific Rural Press.*

ELECTRIC LIGHT.

American inventors are in the advance in discovering appliances by which electricity can be practically used for lighting, and the rapid progress made in this direction shows how indefatigable they are in such matters, and how capable they are to effect the purpose they have in view. They have ever evinced a wonderful degree of ingenuity in mechanical constructions, and their superiority has been acknowledged throughout the world by the readiness with which their inventions are adopted. It is truly said that "A prophet is not without honor, save in his own country," and the same axiom might be justly applied to new inventions.

In England and in Europe they are far ahead of our own people in applying our inventions to their own benefit. There are already three points on the English coast where the electric light is used in lighthouses. Two lighthouses are using it in France, and Russia has one at Odessa, and with all the progress already made in electric illumination, the United States have not yet placed it in any lighthouse.

In England, at Charing Cross, a 20-horse engine sustains 60 electric lights, of which 10 are at the Victoria station of the District railway, 40 on the banks of the Thames, and 10 on Waterloo bridge. There is a distance of over two and a half miles between their extreme points. The longest radius from the electric engine is a mile and a half, and this with the number of lights in proportion to the power of the engine, demonstrates that previous calculations as to the capability of this method of lighting have been greatly below what they should be.

The electric light has been recently introduced into some of the mines on this coast with very faverable results. It has given full satisfaction in one of the leading gravel claims in Nevada county, in this State. Now that a commencement has been made in its application to our mines, and also in a moderate degree in the illumination of some of our public buildings, we hope that we will soon outstrip our European brethren in putting into use this valuable light.

The Free library in San Francisco use three electric burners, which give a strong, white light sufficient to illuminate the large room, and at a cost of about one-third of the gas heretofore used, with a far greater volume of light. The cost would be still less if the charges for light were confined to the actual time it is used; the Electric Light Co. charges for the whole time that the electricity is generated. The lamps are used from about 5 P. M. to 9:30 P. M., and the company charge the library for them until 12 midnight, which is two and one-half hours in which they are not used.

CATALOGUE OF THE PACIFIC COAST FUNGI.

Previous to the year 1876 nothing had been accomplished in the study of the fungi of this coast, with the exception of a few species collected by the Wilkes expedition, which were at that time referred to Professor Torrey for identification. But four or five of these were determined and of these but one or two can now be traced. Since that period, although the flowering plants have been most thoroughly studied, the fungi of this coast have been entirely neglected.

Fully realizing the importance of the undertaking, not only for its scientific value, but also from an economic standpoint, Dr. H. W. Harkness, of this city, and Justin P. Moore, of San Rafael, some four years since determined to devote their leisure to making a collection of the Pacific Coast fungi. These gentlemen have now published, under the auspices of the California Academy of Sciences, a catalogue, of which we have seen the proof-sheets. The list is the first of the kind ever published on this coast, and will be of great service, no doubt inciting many others to a study of this most interesting department of botanical research.

The authors do not claim that the catalogue contains anything like a full list of the fungi of this coast, or even of their own collection. It is merely a catalogue such as they know to be found here, and such as they have fully determined. A large mass of material still remains in their hands for study and determination, as leisure will allow. In the cave fungi, or fungi of our mines, comparatively little has been done. Want of literature on this subject has been a great hindrance to them in their work.

While they have not been able to visit every portion of the coast, a glance at the catalogue will show that their explorations have extended over quite a wide range of territory—from Mt. Shasta on the north to Fort Yuma on the south—from the seashore to the eastern limits of the Sierras.

In reference to the geographical distribution of the fungi, it is noted that most of our species found upon the low lands are common to both Europe and America, whilst of those growing along the Sierras, many are the same as the Alpine species of Europe; others are peculiar to our own coast. Again, it will be seen that the hot and arid desert at the south yields species common to Africa. The distribution, the authors have aimed to make clear by giving in every instance the locality where found. They have, in the case of the Hymenomycetes and other edible fungi, indicated the fact by appending an *E.* They have also added the habitat of our *parasitic fungi*, to aid the student, and have indicated the *new species.*

Messrs. Harkness and Moore have brought a great deal of intelligent labor to bear on their task. Both gentlemen are enthusiasts in their specialty, and the result of their work is a credit to themselves and the society under whose auspices the catalogue is published. They have followed in the first part the arrangement of the genera as given by Fries, in his Hymenomycetes Europæi. For the rest they have adopted the order, as far as practicable, as given in Cook's Hand-book.—*Science Record.*

JAMES W. CLAYTON, for fourteen years clerk in the House of Representatives, died at Baltimore recently.