

Energy spent:—

700 lbs. weight of animal walking up a gradient of 1 : 3.5 over 20 feet length-height to which water is lifted.

i. e. $700 \times 20/3.5$ equal to 4000 foot pounds.

Work turned out:—

20 gallons of water lifted to 20 ft. height.

Or 200 pound lifted to 20 ft. height.

i. e. 22×20 or 4000 foot pounds.

Here the work of the driver is not calculated as was done by Mr. Chatterton C. I. E. in his bulletin No. 35 of 1912 on Water-lifts.

The efficiency of Kavalai as per above bulletin is 33%. The above calculations will speak for themselves.

S. RAMACHANDRA IYER.

Notes.

Prickly-Pear for fodder purposes:—An interesting machine called the "B and H Pear-burner," obtained from Texas U. S. A., is now under trial by the Department of Agriculture, Bombay. It consists of a 2 gallon vessel to which is fixed an air pump and from which a metal lance tube leads to a vaporizer 4 feet away. The tank is filled two-thirds with petrol and the air is pumped in. A strong flame easily adjustable and capable of being turned in all directions is obtained at the vaporizer end and this easily burns off the spines. The next thing is to teach cattle to feed on such treated bushes. The machine costs Rs. 68—2—0 landed in Poona. The cost of working is not yet known. T. S. V.

Destruction of field Rats:—Mr. Jhaveri of the Bombay Agricultural Department is said to have successfully used the "White-Ant Exterminator" for the purpose of killing field rats in their

excavations. Sulphurarsenic fumes are produced inside the machine and are pumped into the rat-hole. Some 60 to 80 distinct rat excavations can be dealt with in a day, by a party of 2 or 3 coolies and one machine, at an aggregate cost of less than one rupee. When there are several holes or entrances leading to the same excavation, only one fumigation is necessary as the rest can be blocked up with earth.

In Coimbatore *Oddars* do smoke rat-holes in the above manner, but they use a small mud pot with a hole on one side. The pot is filled with some material such as cow-dung cake and a smouldering fire is kept up. The hole is then applied to the rat excavation and the smoke is then blown in, after previously blocking up all other holes with wet mud. The rats either die in the holes or escape in a half-stupified condition, when they are easily killed. T. S. V.

Sex in the Papaya plant :—Our readers are probably aware that the Papaya bears either male flowers alone or female flowers alone. Mr. L. B. Kulkarni of the Bombay Department of Agriculture has made the interesting discovery that some trees change their sex as they grow. T. S. V.

Another use for the "Tulasi" plant :—Mr. Rama Rao Kasargode L. Ag., lecturer in Entomology Poona, has discovered that a distillate of the Tulasi plant is peculiarly attractive to the males of the mango fruit-fly and can be used as a bait to lure them to fly-papers and traps. T. S. V.

India's possibilities in sugar-production :—"If the Indian Empire produced 800,000 tons of white sugar that she at present imports, plus another 500,000 tons to send to the United Kingdom. She would be £ 26,000,000 a year richer at £ 20 a ton, and half as much again if calculated on a basis of £ 30 a ton ; and to do this she has only to produce 2 tons of white sugar per acre

as compared with over 4 tons per acre, the average return in Java." *Agricultural News July 1st 1916.* What a big "If"—

K. K. Rao.

The Stethoscope :—It was just a century ago that Laennec, a physician of Paris, invented the *stethoscope*. In the year 1816, he was consulted by a patient who had apparently symptoms of heart disease and in whose case percussion was of no use owing to the patient's obesity. Remembering the simple acoustic fact that the impression of a sound is conveyed through solid bodies, he rolled a quire of paper into a cylinder and applied one end of it to the heart and his ear to the other end, when he found that the action of the heart was more clearly and distinctly audible. Such was the origin of "the listening tube of Laennec" which had its critics for several years and was considered a toy. The real fact is that the simplicity of the discovery and its overwhelming usefulness concealed its greatness. No medical man, Veterinary practitioner included, can afford to be without it now.—*From the Pharmaceutical Journal.* (M. R. R.)

Estate Notes.

Officers' Club Anniversary :—Advantage was taken of three consecutive holidays for the celebration of the second Club-day in commemoration of the opening day of the new building. Tournaments in Tennis, Badminton, Ping-pong and Cards (Bridge & "304") were started. Members joining the tournaments had to pay entrance fees for the various items, which were utilised for providing prizes to the winners. As the ties were arranged by drawing lots, much fun was witnessed during the course of the tournaments. On the night of the 20th Mr. C. Narayana Ayyar entertained all the members of the club at a dinner arranged at the premises of the Officers' club. On the 21st the finals of the various tournaments were played; at 10 A. M. on the same day a

long procession of cyclist-members marched over to Chettipalayam and back. The club building was tastefully decorated with ferns and flowers. Group-photos were taken of the members, and the children of the estate were entertained at Tea. At about 4 P. M. Dr. and Mrs. Harrison, Dr. and Mrs. Barber, Mr. and Mrs. Mac Rae and Mr. Wood, our Principal, kindly responded to our invitation and partook of tea and refreshments. Mrs. Barber kindly presented the prizes to the winners in the tournaments. Some entertainment was provided in the shape of music and mimicry. On the whole the *Club-day* proved to be a notable success.

Games.

Foot-ball.—A friendly foot-ball match was played in our grounds between the Stanes High School and our team. The match was well-contested and a few alterations of players in the team kept the game steady. The opponents tested our goal with all their might, but the backs proved invincible barriers. The combination of our forwards was not steady during the first half, however in the second half they fared better and put in a goal. Thus the match ended in a win for the A. C. & R. I.

Hockey.—A return match at Hockey was played in our grounds between the teams representing the Coimbatore Reserve Police and the A. C. & R. I. The play from the bully off was more favourable to the opponents who came like torrents. Before the play was brought to a close the Reserve Police were left the winners of the day by three goals to one.

Hockey. A third match at Hockey was played with the Reserve Police. From the bully off our forwards had a very good combination and they were visiting their opponents' goal very often. The opponents' forward tried their best. A change made in our team especially in defence equalised matters for the time. Our forwards had a beautiful pass and to their credit they put in 3 goals.

Departmental Notes.

1. E. K. Kunhappa Nambiyar for training in office work, Central Farm.
2. M. A. Balakrishna Ayyar :
To continue to work as Sub-Assistant in Botany until return of K. Ramanujachari from leave and then posted to Manganallur for training.
3. C. Arulanandam Pillai :
To Palur for training in office work.
4. A. K. Ganesha Ayyar :
To Koilpatti for training.
5. Leave.—M. R. Ry. T. V. Rajagopalachari, Farm Manager, Hegari, has been granted privilege leave for 23 days from 8th September 1916.