M.R.O. 1—30,000—16-10-20.

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.C. No. 1728 Press Mis.

398-399

Dated 17 June 1969

Not to be folded or roughly handled

No. 398. Read the following despatch from the Right Honourable the Secretary of State for India, (Revenue,) to His Excellency the Right Honourable the Governor in Council, Fort Saint George; dated India Office, London, 28th October 1868, No. 46.

I HAVE considered in Council the despatch from your Excellency in Council, numbered 29 and dated the 16th of June last, with which you forwarded a report from the Board of Revenue and one from the Agent for Remounts at Oossoor on the results of experiments made with the English agricultural machinery sent out to your Presidency.

2. In reply, I transmit herewith fifty printed copies of the observations which Major General F. C. Cotton—who, at the request of this department, selected a great number of the instruments in question, and whose practical acquaintance with machinery of all kinds, and his knowledge of farming operations in this country, make his opinion of especial value—has made on these documents.

3. The general circulation of many of the observations in this paper cannot fail, as it seems to me, to be very useful to all persons engaged in agricultural pursuits in your Presidency. But, with respect to the suggested appointment of an officer to superintend all questions relating to agriculture, while I leave it to your Excellency in Council to suggest such an appointment to the Government of India should it appear expedient to you, I must state at once that I should deprecate any disturbance of the present arrangements in regard to the Forest Department. The present system has been working well: the department has quite enough on its hands without the addition of work which it does not seem to me would be so closely connected with it as peremptorily to call for amalgamation with it. In this view I should deprecate, at least for the present, any such interference as that proposed with the existing organization of the Forest Department.

4. In conclusion, I will add that, considering the slow growth of public opinion in this country in regard to the use of machinery for agricultural purposes, I regard with satisfaction the experiment which has been made in Madras, where the difficulties, from the prejudices, habits, and poverty of the people, are so much greater than in England, and I think that there is reason to hope that it may be the forerunner of a general improvement in the agriculture of the country.

5. I rely on a continuance of the interest which your Government has taken in a question so closely allied to the welfare of the people of your Presidency, and shall be glad to receive your opinion on the paper forwarded with this despatch.

Read the following letter from Major General F. C. COTTON, to the Under Secretary of State for India; dated Grasmere, August 7th, 1868.

I BEG to acknowledge the receipt of the report upon the agricultural implements sent to Madras, and to express my thanks for the opportunity afforded me of remarking upon it.

I consider the report quite as satisfactory as could, under the circumstances, have been expected, and I am confident that a most important step has been taken towards the introduction of better tools and machines for the use of the cultivators of the Madras Presidency.

The first thing, however, which strikes me in this respect, is the hopelessness of attempting to do anything vigorously for the improvement of Indian agriculture unless it is made the special duty of some one to look into the results of such trials as these; to see that the implements are skilfully used; to suggest modifications of them to suit the peculiar crops of the country, so unlike in many cases the crops they are prepared for in England; and to give immediate advice and help to those who venture to take them into use.

It is evident that several of the Collectors have done all they could in this respect; but it is impossible that these officers can do much, even in the very few cases where they have any knowledge of the subject they have to teach. There are no men in office, in any part of the world that I have seen, who are so many hours of the day occupied in their work as the Collectors of the large districts of the Madras Presidency. All they can be expected to do in this case is to place the implements in the hands of the natives, who, not understanding their use, work them without skill, and, consequently, without success, in many cases no doubt to the delay of their introduction, under the idea that, whatever they may do in other countries, they are unfit for India.

The marked difference between the report from the Oossoor Farm and those from other sources shows clearly enough that, where the English implements are placed in the hands of an officer who is actually engaged in farming, and who can look into their use, watch their working, and apply them judiciously to the work required, their success is complete. The native ryots of the neighbourhood see what they really can be made to do, and what the economy would be in using them.

The report of the Agent for Remounts shows, as might be expected, that our English machinery may be worked to advantage in India; and he points out the real difficulty that exists to its being brought into general use by the cultivators of Madras, from the smallness of their farms and their want of capital.

This is quite true as to the introduction of machinery amongst the ryots in general: it must be a long time before the poor ryots can have the benefit of machinery in their own possession. But it need not be so long before they have some advantage from the use of hired machinery, which, as in the case of the travelling thrashing machine, is all that the small farmers trust to in England. In this way, expensive machinery might be brought into general use throughout India.

But amongst the poorer class of ryot there may be a great saving of labour by the introduction of the very simplest tools of better form than those now in use; and, if that saving is multiplied by mullions, as would be the case if a better rake or fork, hoe or scythe, or plough were adopted throughout the country, the result would be an enormous economy of labour. It is in this light that I view the effort now made by the Government, and I feel assured that any sum spent in bringing these simple tools to the notice of the cultivators of the country must be re-paid over and over again, even if only one of them were brought into general use by the millions employed in agriculture.

And, with regard to machinery, there are not a few natives in the Madras Presidency quite as well able to purchase machines as the farmers of England who

now use them. Though they may not be numerous in any one neighbourhood, their number altogether is very great, quite sufficient to make Madras an important market for the agricultural implement-makers of England.

It is not, of course, to be expected that all the native gentry will take so intelligent an interest in these novelties as the Maharajah of Vizianagram has done. It was not so in England, where the country gentry were very slow to admit the advantage of draining and the use of machinery; but those who doubted followed those who were bold enough to spend their money in successful experiments. And so it will be in India; and, when once the well-to-do ryots are induced to employ machinery, the next greatest difficulty will be overcome, viz., the restoration of broken parts and the modification of machines to suit particular crops by manufactories of machinery being established in India.

I am not in a position to give an opinion upon the several implements that have been tried, because they are not so designated as to enable me to make out which article is spoken of, or, indeed, whether they were sent out by me or not. Some certainly were not in my list, such as Burgess and Key's combined reaping and mowing machine, which I considered too heavy for India, and, if I recollect right, the only implement of that class recommended by me was by Samuelson. There are other implements alluded to, such as the chain pump, of which I have no recollection, and which were not sent out nor seen by me.

But there is another difficulty in turning to account such reports as these, which is the impossibility of judging whether, in case of an implement failing or breaking, it was the fault of the instrument itself or the want of skill in using it, or whether it was expected to do more than it was prepared for. When the plough sent to Vizianagram was employed to turn up undisturbed soil to the depth of a foot, and with a furrow-slice a foot broad, more was demanded of the cattle than is expected of a large pair of English cart horses, excepting in peculiarly light soils.

I am quite aware that every allowance must be made for the want of skill in the use of the implements; but, on the other hand, it would be very unadvisable to send them out so strong that no clumsiness could break them, because they would be too heavy and too costly for their purpose, and the latter fault would be excessive if cast-iron was abandoned and steel or even wrought-iron used in its stead in all cases.

I have great confidence in the skill that can be acquired by the natives of India as remarked upon by the Agent for Remounts. They will use the tools given them with much more delicacy of hand, if I may use the term, than could be hoped for from the English ploughmen; and we may take advantage of that in using lighter and cheaper tools, always provided that their first introduction is made under careful warning and instructions.

There were some very light ploughs sent out especially fitted with poles for bullocks, the success of which was said to have been established in some plantations in India. I imagine that one of these ploughs is alluded to by Mr. Kees when he remarks "that the increased length of the pole apparently lightens the labour of the drag." I had great hopes from these ploughs, and still think it probable that they come nearer to what is required than any other. And, when deep

ploughing is attempted, such a plough turning over about four inches, followed by the sub-soil plough without a mould-board, which only breaks up the bottom of the furrow without bringing the sub-soil to the surface, would do the most excellent work and not distress the small cattle of India.

With regard to the improvement of the native plough, I must confess I can see no great object in that. The work done by the country plough is precisely what is done by the cultivator in England, *i. e.*, it breaks up the surface but does nothing more, and the cattle go over a great number of unnecessary miles before an acre is turned up. It was to remedy this that I sent out very light cultivators, which, if used judiciously to suit the cattle, the soil, and the work required, would, I hope, break up the surface as the native plough does it, and enable the cattle to do more work with the same amount of labour. This class of digger set to a greater depth is an admirable implement, and is now being used instead of the plough in soil that only requires loosening. It may be necessary to turn the soil over occasionally, as only the common mould-board plough can do it; but this plough in constant use has the disadvantage of forming a "pan" or hard bottom to the furrow, and that is only to be got rid of by one of these cultivators or the sub-soil plough.

The difficulty of getting cattle strong enough to plough the soil to a sufficient depth in India is only to be met at present by going over the ground more than once, by ploughing a moderate depth with one plough and following it by another. I am confident that this is one of the improvements specially needed in India, as it is of infinite importance that, where the sun is so scorching as it is in the tropics, the roots of all plants should have as deep a bed as possible. The security afforded the plant by deep cultivation is well exemplified in England in this extremely hot season, and it would be felt every year in India.

Before leaving the subject of ploughs, I must remark upon the suggestion made by Mr. Kees on the difficulty of preventing the iron shares from wearing out, and the advisability of using steel shares. The use of steel for iron is in almost every case good economy, but we are met in India by the difficulty of the original cost. Those who can afford it may do well to purchase steel shares; but, when properly "chilled" as it is termed, the cast-iron share may be made to stand quite as much wear. The great establishment at Ipswich of Messrs. Ransome and Sims was first founded upon the application of this beautiful process to plough-making. It consists in changing the nature of the surface of the cast-iron to a limited depth by sudden cooling, the effect of which is to give a surface as hard almost as glass, while the rest of the metal retains its softness and toughness. This process is very simple, and might be introduced into the manufacture of ploughshares in the Madras Mint; and, when the use of the English plough is taken up in India, it would require a very small capital to set up a cupola for casting such "chilled" shares as I have alluded to.

The value of the winnowing machine is evidently appreciated by all who see it, which is not surprising, as the waste of labour by the present mode of tossing the grain into the air when the weather suits the operation is beyond all calculation and must be evident to every one. This is a machine that might be of the greatest use not only in saving the vast amount of labour now wasted but in helping to

Proceedings of the Madras Government, Revenue Department,
17th June 1869.

introduce the system of getting work done away from home, or, rather, by other hands than those of the family. The setting up of a winnowing machine in a small village would require an exceedingly small capital, and could hardly fail to answer.

In like manner, the benefit of the chaff-cutter is well understood at once, and the establishment of them at the halting places would soon lead to their use in villages and in the farms of the more well-to-do ryots.

The fault found with the scythe as shaking out the grain too much was the objection made to mowing wheat in England when that process was begun, and the difficulty has been got over by cutting the crop before it is too ripe to the great advantage of both the grain and the straw, and I have no doubt that the same remedy might be applied to the crops in India. The scythe, especially the Drummond scythe, will, I am sure, be readily adopted.

The thrashing machines must be too expensive for the ryots; but so they are for very many of the farmers of England, yet nearly all the grain of the country is now thrashed by them; and I have no doubt that it is only necessary for such men as the Maharajah of Vizianagram and other native gentlemen to give their aid and support, and travelling machines would soon be brought into general use, as the saving of the grain now wasted would go far to pay a profit upon them.

There is a very cheap American thrashing machine, which might be of use as a pattern; but I could not venture to send one out, as the workmanship and material of the one brought to my notice was excessively bad. I think it, however, very probable that American machinery might be found cheaper than English if any one could be trusted to select it in that country.

The thrial of the hulling mill for rice is of great importance, and we are very much indebted to Messrs. Haiden and Co. for their report. I can quite imagine that the mill may be too small to be worked profitably. I hope, however, that the Collector of the Kistna district will try it in some other position, and for the present it is far better placed under the officers of Engineers than out of Government control. It is not long since I received a letter from the experimental farm at Madras regarding one of these mills, and I spoke to Messrs. Dray, Taylor and Co., the makers, on the subject. From them I ascertained that the use of that description of mill had been very successful in Burmah, where Messrs. Neihbur and Co. of Rangoon had several employed, and had lately ordered several more. There is no doubt that considerable nicety of adjustment is necessary both as to the position of the stones and the speed at which they ought to run, and I suggested to the Madras Farm Committee that it might be necessary to communicate with the Rangoon firm, which could best be done by one of the Engineers of the Government steamers running to Burmah. The introduction of this machine is of great importance and worth any effort that can be made.

A cotton gin really well suited to the cotton of Madras appears to be still a desideratum, and I had hoped before this that the trials in Manchester promised by Dr. Forbes Watson would have determined what new machine or modification of the one sent out it would be advisable to adopt in India. It has, I know, been doubted by those who have taken much interest in the subject, whether the gin can ever be used to advantage with the short-staple cotton of India. But I made so successful an experiment with the one I sent out, that I have great confidence in

machinery as a means of saving labour, and doing the work much better than it can be done by hand.

The Government has found it advisable to place a department in charge of the forests of India, and there can be no question of the wisdom of this measure. But with all deference I submit that there would be far greater results obtained from a department of agriculture. Indeed, I would recommend that the Forest Department should be one branch of that of agriculture, as the duties of the two would be in so many ways connected.

The Agricultural Department would be especially interested in the advantage to the climate hoped for from the growth of forests, and would have a like interest in the supply of firewood, not only for the use of steam machinery but also for the economy of the animal manure, now turned to the worst possible account as fuel.

The best mode of cultivating trees would be no less the study of the Agricultural Department than the cultivation of grains and roots. The extension of cultivation into the forests and the planting of woods in the open wastes would all be under the same control. And that great inquiry, which it is so essential should be made at once and followed up continually, of the sources from which chemical manures can be obtained, would be made under great advantages if both the fields and forests were searched by the departments upon which the improvement of the land depended.

I must beg to apologize for having written so great length upon this subject; but it is one which is of extreme importance to the Government and people of India, and which I cannot but think worthy of all the attention that can be given to it.

No. 399. ORDER THEREON, 17th June 1869, No. 1,728.

Miscellaneous.

THE consideration of the foregoing despatch has been deferred pending the receipt of a report from the Farm Committee on the Steam Plough, and from the Board of Revenue regarding the pattern of ordinary English Plough which has been found to be most suitable to Indian agriculture.

2. These reports have now been received, and have been disposed of in the Government Orders of the 20th May and 1st June 1869, Nos. 1,425 and 1,532. It appears from these communications that the pattern of Steam Plough has been condemned in England, so that no satisfactory results can be expected from further experiments under less favourable circumstances in this country; and that the light iron plough by Ransome and Sims, marked B. F. I. No. 3, is found to be the most convenient for use in this country.

3. The Government agree with the Right Honourable the Secretary of State in considering that an amalgamation of the present Forest Department with a department of agriculture would not be expedient, and they are not at present prepared to recommend that any special department of the nature indicated should be created.

these gins being brought into use: and, as the cotton improves under better cultivation, the gin will every year have a better chance.

The trial of the Steam Plough has as yet led to no important results, but it can hardly be said that the best field has been chosen for its trial. I would rather it had been made in the great cotton fields of Bellary, where there is nothing to obstruct its working, and where the crops would be especially benefitted by deep cultivation. That it can be worked with success is no longer an experiment: the only question is as to the cost of work done compared with the results, not only of extent ploughed but of crops raised, and I should imagine that, in the great plains of cotton soil, the maximum of each would be obtained. There would be neither "drains," nor "wells," nor "telegraph posts" to impede its working as in the esplanade of Madras, and such large plants as the cotton and cholum grown there would be peculiarly benefitted by a deep soil for their roots. I hope that further trials may be made with this machine; but I fully admit the difficulty of this, while those who must undertake it have other duties to attend to.

As I have before said, I consider the reports in general satisfactory, and that of the Agent for Remounts is strikingly so. No slight benefit will result from this effort of the Government, which has acted most wisely in giving the aid of the Mint and other establishments in the repair and alteration of the implements. This is all that could be done under the circumstances. But is it advisable to trust to such an effort for the improvement of Indian agriculture?

In the present state of affairs, the *Government* must act if anything is to be done, there being no Agricultural Society to press on improvement, and too large a field for any but Government influence to reach it all.

It is probable that in every country a great deal more would be done if there was a department of the Government that had the power of fostering every new effort to economize agricultural labour and turn the soil to the best account. I find in England and Scotland even now, in spite of all the information circulated by the great Societies, by implement-makers, and agricultural writers, that there is scarcely any part of this country where the value of *all* modern machines and improved modes of cultivation are fully appreciated. One county has adopted certain novelties, a neighbouring county others, each looking doubtfully on the means not yet adopted by themselves. The introduction of machinery till lately has indeed been very slow. And if so in England, with its small extent and great facilities for intercourse, what hope is there for India unless the Government goes into the subject in all parts of the country and makes the importance of it fully understood?

If this is to be done, the Government must do it; and the only question seems to be, Whether so much advantage can be derived from the better treatment of the land and the economy of the labour now wasted as to justify the attempt on a great scale? And no one who has looked into the results of what is called "high farming" in this country can question this. We are every year more and more astonished with the yield of the land, which really seems to have no limit. And the great fortunes made by the manufacturers of agricultural machinery, with the considerable establishments set up in every small town for making and repairing agricultural apparatus, shows the immense importance now attached to

4. They, however, fully concur with General Cotton in considering that it should be made the special duty of some officer to look into the results of all experiments made with the English implements, and they accordingly resolve to request the Board of Revenue to forward all reports of experiments, whether of culture or of farm implements, to the Superintendent of the Government Farm, through the Honorary Secretary to the Farm Committee, for his remarks, before submitting them to Government.

5. Paragraph 5 of the despatch will be referred to the Board of Revenue with the request that they will consider and report by what means the wishes of the Right Honourable the Secretary of State can best be carried out.

(True Extract.)

(Signed) R. A. DALYELL,
Acting Secretary to Government.

To the Board of Revenue.
,, Honorary Secretary, Government Farm.

Exd. A. S. Rodgers.

Govt. of [1869] [illegible]

REVENUE.

To

THE BOARD OF REVENUE.

&c., &c.

Dated June, 17th.

Rec'd.

G. O., 17*th June* 1869, *No.* 1,

From the Secy to the Bd of Revenue dy 22d Jany/70 No 22.

From Bd of Revenue 21 July/70 No 2396

JUNE.

Nos. 388-389.

English Agricultural Machinery.—reference to Home despatch, No. 46, of 1868, amalgamation of the Forest Department wi department of agriculture considered inexpe Board requested to forward all reports of expe ments, to Superintendent of Government Farm his remarks through Farm Committee, and also report with reference to a letter from Major Gen Cotton on the subject.

Revl. Department

Proceedings of the Madras Government
Under date the

Read the following
Despatch from the Secty.
of State.

Reviewing the report
on the results of Experiments
made with the English Agri-
-cultural machinery sent
out to the Madras
Presidency.

(H.C. 28th Octr./68 No. 40)

I don't the Govt. / considering the proposed
steps with the duty levied
suggested. It may be
questioned whether
any great practical
result will be
attained by the

The consideration
of the foregoing Despatch
has been deferred pending
the receipt of a report
from the Farm Committee
on the Steam Ploughs,

and

and, from the Board of Revenue regarding the pattern of ordinary English Plough which has been found to be most suitable to Indian Agriculture.

2. These reports have now been received and have been disposed of in the Government orders of this date numbered respectively and

It appears from these communications that the pattern of Steam Plough has

exhibition of English agricultural implements in this way. I think the question had better be discussed in Council

Judging from the result of the recent exhibitions we have made for our imported agricultural & other implements & I think we should not only

has been condemned in England, so that no satisfactory results can be expected from further experiments, and that the light iron plough, by Ransome and Sims, marked B. E. I. No. 3, is found to be the most convenient for use in this country.

3. The Government agree with the Right Honorable the Secretary of State

State in considering that an amalgamation of the present Forest Department with a Department of Agriculture would not be expedient, and they are not at present prepared to recommend that any special Department of the nature indicated should be created.

4. They however fully concur with

5. Para 5 of the despatch will be referred to the Bd of Revenue with the request that they will consider and report by what means the wishes of the Rt Honble the Secy of State can best be carried out.

Wood.

with General Cotton in considering that it should be made the special duty of some officer to look into the results of all experiments made with the English Implements, and they accordingly resolve to request the Board of Revenue to forward all reports of experiments whether of culture or of farm implements to the Superintendent of the Govt Farm, through the Hon'ble Secretary to the Farm Committee for his remarks before submitting them to Government.

5. With advertence to para: 5 of the Despatch, and in reference to the adoption of a more

regular system of experiments
than has hitherto been attempted
if the Government resolve
to authorize Mr. W. S. Thomas
to obtain a small plot
of land, not in excess of
or 25 Acres, a portion of
which should be irrigated
in the vicinity of his
head quarters for the
purpose of conducting
agricultural experiments
and exhibiting the im-
proved implements. The
Board of Revenue will
also be requested to select
two officers of the grade
of Collector or Sub Collector,
who are likely to remain
for some time in their
present appointments,
one a Southern and
the other in a Northern
district, for the purpose
of

of carrying out similar
experiments.

6. Each officer should
be supplied with a winnowing
machine, two ploughs, &c.
two cultivators, two Sem-
mond Coythes & such other imple-
ments as have been found to work successfully
a pair of bullocks and a
ploughman trained at
the Government Farm
should also be despatched
to them.

7. The Government
will be prepared to
sanction a monthly ex-
penditure by each officer
conducting an experiment,
not in excess of Rs. 150
which can be drawn
on a contingent bill.
The rent of the land if
any, the pay of the plough-
man and the cost of
the bullocks to be

sent

...ment from Madras, as
...ll as charges connected
...with the experiments
...will of course be included
...in their amount.

8. The officers to be
entrusted with these
experiments should not
confine themselves to the
cultivation of the land
taken up by them, but
should undertake the
ploughing of fields and
reaping and thrashing of
crops for any ryots
in the neighbourhood
of their stations, in
order to make the
implements generally
known, this should
be done without making
any charge at any rate
at first. A quarterly
report

Report of their proceedings
should be submitted
to Government through
the Board of Revenue.

S. W. Doll

Revd. Department

Fr. 1728

Proceedings of the Madras Government
Under date the 17th ~~May~~ June 1869.

Read the following
Despatch from the Secy.
of State.

Reviewing the report on the results of experiments made with the English Agricultural machinery sent out to the Madras Presidency.

(P.C. 28th October/68 No. 46)

The consideration of the foregoing Despatch has been deferred pending the receipt of a report from the Farm Committee on the Steam Plough, and from the Board of Revenue regarding the

the pattern of ordinary English Plough which has been found to be most suitable to Indian Agriculture.

These reports have now been received and have been disposed of in the Government orders of ~~this date~~ the 20 May and numbered respectively 1st June 1869 Nos 1425 and 1532 and It appears from these communications that the pattern of Steam Plough has been condemned in England, so that no satisfactory results can be expected from

1 under less favourable circumstances, in this country.

from further experiments and that the light iron plough, by Ransome and Sims, marked B.F. I No. 3, is found to be the most convenient for use in this country.

3 The Government agree with the Right Honorable the Secretary of State in considering that an amalgamation of the present Forest Department with the Department of Agriculture would not be expedient, and they are not at present prepared to recommend that any special Department of

of the nature indicated should be created.

They however, fully concur with General Collon in considering that it should be made the special duty of some officer to look into the results of all experiments made with the English Implements, and they accordingly resolve to request the Board of Revenue to forward all reports of experiments whether of culture or of farm implements to the Superintendent of the Govt

Government Farm, through the Honorary Secretary to the Farm Committee, for his remarks, before submitting them to Government.

5. Para 5 of the Despatch will be referred to the Board of Revenue with the request that they will consider and report by what means the wishes of the Right Honorable the Secretary of State can best be carried out.

14 To the Bd of Revs Des: 17.

Edwd