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XIII.—*Report on the Agriculture of the Austro-Hungarian Empire.* By JOHN WRIGHTSON, F.C.S., Professor of Agriculture in the Royal Agricultural College, Cirencester.

AN empire extending from Lake Constance and the Tyrol on the west to Russia on the east, and from Turkey on the south to Prussian Silesia and Saxony on the north; and further exhibiting an extraordinary diversity of soil, climate, and population, must needs be the theatre of many systems of agriculture.

A ten weeks' tour through this vast empire, in a large part of which a knowledge of the German, Hungarian, and Slavonian languages is essential, was inadequate for more than the reception of the most general ideas.

Of the ten weeks I was absent from England, three were spent at Vienna in studying the agricultural features of the Exhibition (see former Report) and in making calls upon large landed proprietors and other gentlemen. I wish particularly to mention the kindness and hospitality of Sir Andrew Buchanan, the British Ambassador, and the valuable assistance of Baron Schwarz, Baron Kübeck, and the English Commissioner, Mr. Cunliffe Owen. Letters from Lord Granville, Lord Bloomfield (late British Ambassador at Vienna), the Secretary of the Royal Agricultural Society, and other gentlemen, procured me favourable receptions from many of the highest nobles of the empire, and I was pressed to inspect and report upon many estates which, from want of time, I was unable to visit. With funds at my disposal, more introductions than I could use, and an efficient guide and interpreter in the person of Mr. G. T. Yull, who from long residence in those countries was familiar with the ground and the people, I was well provided with all that I required.

Of the remaining seven weeks, one was spent partly in the journeys between England and Austro-Hungary, and partly in

Pesth, where I was obliged to stay for three days. There were then six clear weeks, four of which I spent in Hungary and two in Upper and Lower Austria, Moravia, Silesia, and Bohemia.

During this time I visited upwards of sixty estates and obtained particulars as to the cultivation of each. I also took notice of peasant cultivation and the state of the population, as well as of the various branches of industry both in the towns and country.

Happily neither I nor my faithful and energetic guide suffered a day's illness; and after working, on an average, from six in the morning to nine and ten at night, often tiring five and even six pairs of horses in a day, we finished our journey with the pleasant and thankful feeling that our programme had been fulfilled.

Very slow trains, and only two of them a day, render railway travelling through Hungary alike safe and wearying. At the station you are met by a pair of horses yoked to a long four-wheeled waggon without springs, and you are then jolted along, for ten or twenty miles, over "roads" that require you to hold yourself on your seat tightly with both hands; while you are pervaded by a lively and constant fear that the waggon itself will upset. The Hungarians drive well and quickly, and even the peasants trot their pair of light horses and peculiar basket-waggon along the parched road, surrounded with a dense cloud of dust.

We journeyed some 1500 English miles by waggons during those six weeks, and on one occasion drove 80 English miles in one day to Essegg through the Archduke Albrecht's estates.

Let me at once disclaim the idea of giving a complete view of the agriculture of the Austro-Hungarian domains. If I can give a tolerably clear idea of the agriculture of Hungary, and a glimpse into the rural economy of Austria proper, Moravia, Silesia, and Bohemia, I must rest satisfied. The empire of Austro-Hungary also comprises Styria, Salzburg, Carinthia, Dalmatia, Vorarlberg, Galicia, Bucovina, Transylvania, Croatia, and other less important provinces into which I never set foot. There is, therefore, abundance of work yet to be done, if it is thought desirable to prosecute further the study of the agriculture of these countries. In the mean time I must be content to chronicle the results of a first journey through some of the richest and most beautiful portions of the empire.

HUNGARY.

Those who wish to study the geography of Hungary can consult books and maps on the subject. For the purposes of this report a more general treatment seems advisable, and I there-

fore introduce my reader to Hungary by asking him to accompany me, by means of the railway from Vienna to Presburg, across the river March; at that instant he will be in Hungary, and twenty minutes more will find him at Presburg.

A pleasant but steep walk leads to the top of a high hill, on which stands the castle of Presburg, dismantled in 1848 and never since restored. It was from the summit of this eminence that I obtained my first view of the plains of Upper Hungary, stretching to the east and north and south, and shut in by the Carpathians. It is a magnificent view over flat country, extending as far as the eye can reach without interruption eastwards, but bounded westward and fringed on the north and south by the smaller Carpathians.

From another point—the summit of Bebersburg, an old stronghold of the Palffy family—situated high up in the Carpathians north of Bösing—a magnificent view over the plains of Upper Hungary is obtained. From the top of a round tower of this castle I gazed over the smooth plains southwards and eastwards, and I shall not easily forget the grand effect of that limitless expanse. Below the fearful precipice of that old castle wall was a beautiful forest glade, with its cottages and its saw-mills, happily placed on a mountain stream. Here, then, was the introduction to my labours, and descending from the old castle we drove for hours far out into that flat expanse of plain, and it was dark long before our destination was reached.

I have driven forty and fifty miles a day for ten days together over this plain of Upper Hungary, surrounded by a horizon which met the earth on all sides round, and uninterrupted by a hill.

Still more extensive and wilder is the great Alföld or plain of Lower Hungary. The whole expanse of the Alföld forms a long rectangle, bounded on the north, north-east, and east by the Carpathian mountains, on the west by the outliers of the Alps, and on the south by the rivers Drave and Danube. The river Theiss almost divides it in the middle from north to south. The mean width of this plain is 140 miles, and the mean length 280 miles, while the entire area comprises 37,400 square miles.

These two plains comprise the whole of the Hungarian *Tiefland*, or deep land. The soil throughout is black and rich, and is for the most part underlain by water-worn gravel. It is apparently an alluvial deposit, formed by the rivers Danube, Theiss, Drave, and their tributaries. In both plains the natural fertility of the soil is frequently injured by the efflorescence of soda-salts upon its surface, and this is especially observable in Lower Hungary, where immense tracts of flat land are thus rendered unproductive, forming the plains of natron between

Arad and Debriczin. The plains are almost surrounded by the mountain systems of the Alps and Carpathians, which form a strong natural boundary to Hungary, and constitute the picturesque parts of the country devoted to forests and vineyards.

In neither plain are there any hedges or visible divisions of land save the long rows of acacias which usually mark the limits of some nobleman's estate. With the exception of these the eye finds no relief, frequently not even a tree breaking the ring of sky which forms the horizon—peasant land and large estates, large estates and peasant land, alternating in apparently endless succession. At intervals villages are passed through, bearing, however, no resemblance to English villages either in appearance or constitution. The village is, indeed, an institution of deep interest—a distinct community surrounded by its own land, and consisting of a population of free proprietors. Each house is detached and exactly resembles the next, and having seen one village you know the general features of hundreds. It is in the villages that the peasants reside, each man owning and farming a portion of the common *gemeinde*, grazing his stock on what is still properly the "common," surrounding the arable part of the township, and gathering his stock and crop around him at his homestead.* On driving through the village during the day there are few signs of life or activity, though the scene may be enlivened by some peasant, with his family, trotting briskly past with his pair of horses and long, characteristic basket-waggon. He is off to one of his fields to work, and as the distance is considerable, he must not waste time on the road. Towards evening you meet herds of cows returning from the pastures to the village; also herds of long-haired goats and woolly swine. The live stock enters the village in a body, but at once begins to sort itself, each animal, be it cow, goat, or hog, turning in at the accustomed gate. Each, in fact, returns home, and only turns out again when the herd's horn echoes through the village in the early morning.

It is difficult to give an idea of the Hungarian village to one who has not seen it. It is ushered in by a pond, evidently formed by excavating for clay to build the houses. The road runs through the little town; but no attempt appears to have been made to improve its general rough and furrowed character. It becomes, however, wider, for in a road of this description there must be plenty of room to choose your course, and if it is impassable on the right you deviate a little to the left. The consequence is, that the entire space between the two rows of detached white

* See Morier's 'Account of the Teutonic Gemeinde in Systems of Land Tenure in Various Countries,' published by the Cobden Club.

thatched cottages, which form the village, is used as a road. Once through the village, which ends as it began, with a shapeless pond, you are in the open unenclosed country; it may be passing through pasture, but more commonly arable land in a more or less imperfect state of cultivation. Wheat and rye stretch away on all sides, and, standing up in the waggon to survey the strange scene, the idea of the observer is best conveyed by the expression, often forced from me, "a sea of grain!" Probably the whole of this tract of grain belongs to the village just left. The next feature which will probably attract attention is a belt of single trees extending in an unbroken line on the horizon. It is the boundary of a large estate. You come up to and pass the boundary, and have then left the peasant land for a while and are travelling over a domain where systematic agriculture is carried on, and where, in place of peasants, are the stewards and labourers of the Count, controlled from a central office by a resident Director. A deserted or unoccupied mansion, houses for the officials, and offices for the transaction of business, to be afterwards described, will all in due time be reached.

Supposing that you are driving through without staying to visit the Count or his Director, you will journey onwards for an hour or two, and after passing another belt of acacias, will be once more in the domain of the peasants. The estate usually is better cultivated and carries better crops than the peasant land, and it is generally laid off into square fields of from 25 to 40 acres each, defined by grass drives, bounded on either side by trees. These general features of the plains of Hungary are diversified and relieved by a variety of novel objects. The costumes of the peasants and labourers are often exceedingly picturesque and even rich: the fine teams of long-horned oxen yoked to the waggons peculiar to Hungary, or majestically and slowly ploughing the land—the flocks and herds on the pastures, attended by their faithful keepers—all help to give a character to the scenery; while the occurrence now and again of sugar-factories and distilleries shows that agriculture is not in undisputed possession of the country. Hungary is, however, not by any means all flat, but much of it is mountainous and hilly. It is in such districts that the famous Hungarian wines are grown, and in passing from Tokay to Pesth, and Pesth to Presburg, the traveller forgets the dreary expanse of plain, and refreshes his eye once more with bold mountain scenery, rushing rivers, and uprising forests.

The position of Hungary is somewhat isolated. She has no outlet to the sea save by crossing Croatia to Fiume. Her rivers (with trifling exceptions) all merge into the Danube, which flows

southwards and eastwards into the Black Sea. The river Saar, which forms the boundary between Turkey and the dominions of the Hungarian Crown, is navigable from Belgrade to Szissik, which is, however, still far from Fiume. The steamers ply upon the Drave to Barcs, where is a railway station. Besides these rivers, no other stream is navigable upon the entire west of the Danube. It is true there is the Platten See, but it is useless to expect much traffic upon waters whose shores are so thinly populated. Also on the north-east side of the Danube the rivers, with the exception of the lower portion of the Theiss up to Tokay, are not navigable. The railway, therefore, forms the best means of communication with western activity.

A line extends from Pesth all round the Alföld, but the centre of that vast level, where roads are in a deplorably bad condition, is cut off from the influences of European civilisation to an extent difficult to realise by those who have not visited it. Want of coast and of good navigable rivers are serious drawbacks to a country which has not a sufficient home market for its products, and they have no doubt exerted a powerful effect in keeping Hungary back in the race with other nations.

The Soil and Country.

If we restrict ourselves to the vast plains of Hungary, the extent and position of which have already been pointed out, we shall have no difficulty in describing the character of the soil. These plains are almost throughout composed of alluvium brought down from the mountains by the Danube, the Theiss, the Save, the Drave, and other rivers, and spread over the plains through which they flow. The alluvial deposit thus formed is exceedingly rich in quality, and is almost always underlain by a fine water-worn gravel. The soil is often black and "greasy," from the accumulation of vegetable matter; and in many places in Lower Hungary is capable of growing any number of crops consecutively without dung. The value of land in Hungary is rising and must rise. It is of fine quality, but neither skill nor capital has yet been brought to bear upon by far the greater part. The old price of 3*l.* 10*s.* to 4*l.* 4*s.* per acre is now seldom heard of. It is only occasionally that an acre can be purchased at 7*l.* The price more commonly ranges at from 14*l.* to 28*l.*, according to quality and situation; and it is let at from 21*s.* to 28*s.*, and even 35*s.* per acre.

The first district traversed was that of the Schütt, a flat tract stretching from Presburg to Komorn. Some of the soil is of the rich character so generally met with on the Hungarian plains, and especially noticeable at Talos and Tarnok. In other

parts it is exceedingly light, and all of it is underlain by water-worn gravel. Marsh and waste land also occupy much space around Nad-Megyer.

From Altenburg, where there is much good land, towards Œdenburg, the soil gradually becomes worse, until at last it ceases to be cultivated, and finally becomes low and marshy as the road approaches the flat districts of the Neuseidler See. Past Esterhaz the land gradually improves until Zinkendorf is reached. Here the country is beautiful, rich, and undulating, and a fine view is obtained over the plains. From Zinkendorf (Giesing Station) to Steinamanger there is, first, good land bearing good crops, then various, sometimes clay and sometimes light land, and finally a tract of very first-rate black deep soil is entered upon. There is here a fine view of the Gratz and Simmering mountains upon the right.

From Steinamanger to Kanisa the railroad ascends, and the country becomes beautiful. From Kanisa to Keszthelyi, on the Pesth line, the country is hilly and woody, but somewhat desolate, and not well cultivated. After leaving Steinamanger the country improves in scenery, and declines in cultivation. Cornfields, often scandalously foul, are surrounded by natural forest; and often the stumps of trees are still to be seen scattered over the arable land. From Kanisa the land gradually becomes flatter and of better quality towards Fünfkirchen, where both crops and cultivation are exceedingly poor. After Fünfkirchen, towards Villany, bad agriculture upon good land is the rule. From the railway stations of Monostor and Tarda I noticed good land, which rests upon a high table-land. Here I visited Mr. Elvers, and subsequently descended by a terribly shaky road, through vineyards, down to the plain of the Alföld, where the celebrated Hungarian tiefland becomes the rule. This I crossed to the Archduke's estate Bellye, and here I observed that the splendid soil composing this tract is a few feet higher than a very poor soil which lies in close proximity. The estate was, as usual, surrounded by trees, and was beautifully cultivated. On leaving it and entering the peasant land the scene was most desolate.

A long drive to Essegg took us through a lovely country skirting the Danube on to the pass of the Mohacs, from which we descended into a singularly wild country, described under the head of pasture land (page 353). This district, although wild in the extreme, only requires capital and industry to develop it into a wonderful tract of agricultural land.

From Essegg, *viâ* the Grosswardein-Essegg Railway, I passed through a large extent of flooded land, and crossed the Danube in a boat, which carried the entire train. Between Gombos and Szonta is a splendid tract of land, but it was sad to see the crops

under water. After Szonta Railway Station the country improved and became dryer, and after Piglevitza the railway passes through a magnificent plain, with crops of short-strawed wheat with good ears. After Zombor we continued to run over a plain of perfectly flat and wonderfully rich black soil, extending as far as the eye could reach on every side—the commencement of the Banat. Often the crops were miserable, and the cultivation only two and three inches deep. After Militics to Bajmok we ascended a slight incline on to a fine undulating country, stretching for miles, a safer district for agricultural enterprise, as there is no danger from floods. The soil still continued to be black, deep, and apparently of first quality, but miserably cultivated, and bearing foul, wretched crops. Scarcely a tree or house broke the line of the horizon. Vineyards and orchards succeeded as we approached Maria-Theresiopel. At this station a waggon awaited us, and we drove for two hours over a sandy and barren tract without any definite road to Kis-Szalás, a fine estate of 35,000 acres, which is entirely surrounded by a sandy desert, known as the Szabachka, which extends over many miles, and is only good for grazing a few cows and swine. Onwards to Szegedin, Mezöhegyes, and Arad, the traveller passes through the very richest district of the Banat. There is a splendid expanse of country extending for miles, and often growing nothing but thistle-forests. Near the villages cultivation improves. It was near Arad that the late Count Szeleusky attempted to establish an English farmery, but failed owing to difficulties connected with the climate.

I passed Szolnok at half-past four in the morning, after travelling all night, and looked out upon a tremendous flat expanse without a rise. We had been running through similar country all night, and were now in the district of the Theiss. The land here is strong, and cracks into cubes and prisms under the hot sun. There was a considerable proportion of grazing ground, and the country appeared fresh and green while harvest operations progressed upon the arable land. This land will grow wheat year after year without manure. If manured it must not be for wheat, but for rape or Indian corn, and then wheat stands up well; but if dressed with dung, it lodges.

I found tobacco cultivation carried on upon a large scale here, and learnt that sheep do very well upon tobacco in a green state as a forage crop. It is sown in the middle of March in beds: well watered and weeded, and planted out when 4 or 5 inches high, the plants being set as deep as the heart, or to where the leaves branch off from the stem. The field is ploughed in the autumn, and again in the middle of May. It is then well harrowed, and either rolled or bush-harrowed to smooth the surface. The land is then marked out into 3-feet rows; and the young plants

are placed one foot apart in the rows, and well watered. When the second pair of leaves rise from the heart, it is time to hoe; when the third pair of leaves are expanded, and the fourth and fifth pairs begin to drive, earth up. Immediately the crown of the flower appears, it is broken out to strengthen the tobacco. This is when the tobacco is grown for cigars, but if for smoking in pipes the seed is allowed to ripen. When light flecks appear on the leaves they are broken off.

A section of the deep soils near Szolnok gives the following succession of strata:—

3 feet of black loamy rich earth.
4 to 6 feet of heavy yellow clay.
30 feet of an ash-grey sandy clay.
2 feet black soil.
2 feet clay.
And then sand containing water is continued to a great depth.

Here much inconvenience is caused from the presence of soda-salts.

From Szolnok to Debreczin is a journey of about three hours by rail. The soil is at first heavy, but it soon gives way to extensive wastes of soda soil. Past Kis-uj-Szállás the line passes through a dead level, with stagnant pools of water, and a few reeds and rushes, but often a perfect waste, without sign of life or cultivation—simply frightful to contemplate. This continues to Püspök-Ladány, where a semi-cultivated tract gradually alters with an ascending gradient, until suddenly a rich, highly-cultivated district is entered, with trees and vineyards reaching up to Debreczin. I left Debreczin at midnight, and next saw light in the mountainous region of Tokay.

The scenery around Tokay is very lovely, and much fine land extends from the flanks of the hills, as is well seen on Mr. Harkanyn's property, which I had the pleasure of inspecting. From Tokay, past Miskocz and Erlau, a splendid country for wine and for scenery is traversed. Next Gyöngyös is reached, surrounded on three sides by a fine flat agricultural district, and on the north by hills. Then through rich black land belonging to the Hungarian crown at Gödöllö, after which a light sandy tract extends to Pesth. Before running into Pesth the traveller passes the celebrated Steinbruck breweries and extensive pig-feeding establishments, where immense numbers of pigs are annually fed for the Viennese and German markets. The whole country around stinks of pigs.

Population and Languages.

The mixed character of the population of Hungary is an interesting feature, and must be looked upon as a practical diffi-

culty in the way of settlers. German was in constant requisition wherever I journeyed, and all the agents correspond and converse in that language. The Magyar is, however, no true lover of the rough German speech; nobles, stewards, and peasants, all prefer their own native tongue. Latin is still used as a medium of communication among educated men, and I was informed that a generation ago it was very general indeed to hear Latin spoken. English is a great favourite among the upper classes, all the nobility speaking it very fluently. English sports, English literature, and English ideas, are all very popular; much more so, indeed, than French ideas. The traveller may find himself in positions in which he requires a knowledge of Slavonian, and occasionally of Polish and Croatian. The Hungarian is naturally a linguist, and this aptitude is most probably produced by the circumstances by which he is surrounded. A Hungarian count is usually able to converse in French, German, and English; he has, besides, Hungarian as his mother-tongue, and, in order to act as a master or magistrate, he must know Slavonian. If he, further, has acquired Latin—which is by no means an uncommon accomplishment even now—he is able to express himself in six languages. I met a steward who told me he was obliged to give his orders to his work-people in five different languages. The following table shows the varied character of the population, as well as its number:—

	In Hungary.	In Transylvania.	Together.
Hungarian	5,541,123	666,457	6,207,580
Germans	1,592,043	224,044	1,816,087
Roumanians	1,114,044	1,207,862	2,321,906
Slavonians (Slovaks)	1,825,513	210	1,825,834
Servians (Servs)	286,834	..	286,834
Croatians	207,899	630	208,529
Ruthinians	448,048	..	448,048
Greek Jews, Armenians	102,127	2,524	104,651
	11,117,623	2,101,727	13,219,350

Climate.

When I was advised to procure the heaviest greatcoat I could purchase in preparation for a trip through Hungary during the months of June and July, I was a little surprised. The wisdom of the suggestion was justified by the comfort that this article of clothing proved to be on many occasions.

The climate of Hungary is proverbially uncertain and extreme. Hence I understand that a wise Hungarian never leaves his furs behind him when he is journeying through his own beloved land.

The day is often excessively hot, but half-an-hour after sunset the temperature falls so rapidly as to endanger the health of the traveller. I have frequently been compelled to travel in the lightest clothing possible through the day, and to use an umbrella as a protection from the powerful sun. Shortly after sunset the heavy greatcoat was in requisition to protect me from the consequence of exposure to sudden changes of temperature —Hungarian fever or ague. The extremes of temperature between winter and summer are extraordinary, and range in the mountains of Transylvania from −30° F. to 93° F.*

The winter is usually severe, but is very variable in character. In general it commences towards the end of November with frost and snow. The lowest temperature is ordinarily reached in December. The snow is not often more than two or three inches ("a few centimetres") thick, and does not continue long, although it is often renewed by fresh falls. Spring is ushered in by storms of wind and rain, which are dried up about the middle of March. Although this period is occasionally followed by agreeable weather, the spring is very uncertain, and is often stormy and wet. Even May seldom brings the pleasing weather for which it is celebrated. The temperature often reaches 77° and 95° F., and the heat hinders the growth of grass and the expansion of the leaves of trees. Another year cold rains, and even severe frosts, injure the orchards, vineyards, and field crops. Hail is often injurious in early summer, as I have myself witnessed. I shall never forget the complete destruction of crops over a considerable tract of country in the Schütt district of Upper Hungary. The crops over some 800 acres of land were in this case literally *minced* and completely destroyed. The evil ceased as suddenly as it commenced, and within a few yards there was rye completely cut down and broken, and the rest standing almost untouched. The chief characteristics of the summer are its heat, the temperature in the plains rising as high as 95° and 99° F., and its fluctuations of temperature between night and day. The air in summer contains but little moisture and deposits no dew, but severe rain-storms not unfrequently pass over the face of the country, exerting a most beneficial effect upon the vegetation. The most dependable season is autumn. The beginning of September usually brings fine settled weather, which is continued to the end of October or middle of November, when winter is introduced with cloudy skies, dense mists, and gales from the north-east.

* The above temperatures are furnished by Karl Keleti in his *Skizze der Landeskunde Ungarns*, and translated into degrees Fahrenheit according to Hofman and De la Rue.

It is difficult to give a satisfactory average temperature for the entire year, on account of the great differences of climate between the mountains and plains. The average temperature of the Presburg plain is nearly 40° F., and the variation between summer and winter extends from 95° to −6° F. In the greater Pesth plain or Alföld the average temperature is about 53° F.; and near the surrounding mountains it is as low as 49° F. In the most southern portions of this tract the maximum summer temperature rises as high as 106° F., and in the winter the thermometer registers −8° F. In Transylvania the average temperature varies between 43° and 50° F., and the extraordinary contrast between the heat of summer and the cold of winter has been already mentioned.

The *rainfall* over the whole of Hungary measures 24 inches in one year, and is distributed over 107 days. The smallest share of rain falls upon the plains, which only receive 19½ inches. The largest rainfall occurs among the mountains, and amounts to 33—35½ inches.

It is not, however, the absolute rainfall which gives a character to the Hungarian climate, but the inequality of its distribution through any particular year or month. The consequence of this inequality is that in many years severe droughts not only hinder the growth of grain and fruit, but burn up the grass. The result is a scarcity of fodder; and famine and sickness follow. At other times the rain is so abundant that inundations occur; and as many tracts in Hungary lie on a lower level than the banks of the rivers which flow through them, the water when once out cannot find its way back. Such localties often remain under water for weeks and months. An extent of from 1300 to 2000 square miles of flat land is thus occasionally submerged. I saw large tracts of splendid land covered with water while travelling through Lower Hungary, and the desolate effect is heightened by the incessant croaking of frogs. The noise these creatures make may be compared to that of hounds at a distance in full cry, or to the sound of bells in the air.

Land Drainage.

The flat character of the Hungarian plains, the fact that they frequently lie at a lower level than the banks of the rivers which drain them, and their liability to inundation, all indicate the importance of an efficient system of drainage. These considerations also point out that drainage, to be effective, must be carried out upon a large scale, and with great engineering skill. It is to be feared that, as yet, Hungary is scarcely in a position to sink the requisite amount of capital in order to effect this thorough drainage

of her wet lands. It would involve the deepening and improving of existing watercourses, the formation of canals, the erection of steam-pumps, and other expensive appliances, for which the country is not yet prepared. The subject does not seem to have received much attention as yet; and I was struck with the absence of all models and plans illustrating drainage works when passing through the very excellent museums of the principal Hungarian agricultural colleges.

There is another reason for draining land in Hungary. Immense tracts are rendered worthless by the efflorescence of soda-salts upon the surface. In other localities spots of land so affected are very frequent, and these spots always lie upon a lower level than the neighbouring good land. There is little doubt that the soda is held in solution in the water which underlies the part affected, and that, as it rises by capillarity under the influence of surface-evaporation, the soda is left upon the surface. How far lowering the water-table by an effective system of drainage would free the soil from this injurious substance would be a most important and interesting subject for investigation. For my part, I believe that the lowering of the water-table would be followed by the disappearance of the soda efflorescence.

It is a matter of common observation in Hungary that of late years the Platten See, Neusiedler See, and other less important lakes and swamps, have been drying up. This I was often assured of, although the year 1873, in which my journey was made, was exceedingly wet.

Wearing Action of Water.—In the hill districts forming the flanks of the Carpathians, the agriculturist meets with a serious difficulty in the action of water upon the soft sandy clay composing the soil. The evil commences with a slight wearing of the surface after storms of rain. A watercourse is thus begun, and in a few years a gorge of considerable dimensions is formed, interrupting agricultural operations. I have driven through such a watercourse, near Bösing, where the road itself was interrupted. In this case the chasm was 20 to 24 feet deep. When the evil is first noticed, the surface must be immediately levelled and a few stakes driven into the ground to neutralise the action of the water.

Field-Mice.—Throughout Germany, Austria, and Hungary, the agriculturist is plagued by the depredations of field-mice. These creatures multiply with great rapidity, and in dry seasons literally swarm over the country, destroying the crops over vast areas of land. No one seems able to suggest a cure, for the mice are about as difficult to reduce to reasonable limits as any of those insect plagues which from time to time attack our corn-fields. I first noticed the depredations of mice at Talos, on

Count Esterhazy's estate, where both wheat and lucerne were much injured by them. The ground truly seemed alive with them, and they might be seen darting to and fro by anyone who would walk a few steps into the standing crops. The country from Kanisa to Fünfkirchen and Villány was almost devastated from this cause, the wheat crops being beaten down, and often reduced to a few scattered straws, standing up amid the wreck of a fine wheat crop. M. Elvers, whose farm is noticed on page 328, had suffered much from mice. He had cut trenches 10 inches deep, and 7 to 8 wide, entirely around his corn-fields, to, if possible, keep out the mice. At intervals pots were sunk, so as to form a succession of pit-falls at the bottom of this trench, and then were filled with water. The mice on falling into this trench, as they endeavoured to gain access to the field of grain, ran along the bottom, and fell into these traps in large numbers.

Rural Economy.

The feudal system was abolished in 1848, and "the whole tenure of land throughout the Austro-Hungarian dominions now rests upon the common basis laid down by the Austrian Land Laws of 1848–9." It was by these laws that the serfs became free allodial owners, while the lords of the soil were reimbursed by the Government for the loss of their feudal rights. The valuation of this loss was made by a Commission appointed by the State, but of this valuation * one-third part was disallowed, and one of the remaining two-thirds was raised by a tax which falls upon the great proprietors themselves.

It must be remembered that the bondsmen who were emancipated from feudal obligations were not tenants, but proprietors of their land; so that the reformation of the land laws of the country did not deprive the great landowners of their property, but merely of certain feudal rights over the property of others.

The whole area of Hungary is pretty equally distributed between great proprietors and peasants. According to the latest census there are 2,486,255 owners of land, possessing upon an average 18 acres each of productive land (Keleti). These proprietors have been classified as follows:—

Small peasant proprietors (5—30 jochs)	2,348,110
Larger peasant proprietors (30—300 jochs)	118,981
Properties of from 200 to 1000 jochs	13,748
Estates of from 100 to 10,000 jochs	5,195
Estates over 19,000 acres	221

Further, with respect to the area of available land and

* 'Reports of Her Majesty's Representatives respecting the Tenure of Land in the several Countries of Europe.' Part II. 1869–70, page 2.

proportion to the whole, held by these various classes of proprietors :—

The small peasants possess	15	million jochs or	32 per cent.
The larger peasants possess	6·7	„	14 „
The proprietors of from 200 to 1000 jochs possess	6·6	„	14 „
The proprietors of from 1000 to 10,000 jochs possess	14·2	„	32 „
And the proprietors of over 19,000 jochs* possess	3·9	„	7·5 „

The Edelmen.—Besides the great proprietors, who form the aristocracy, and the peasants, whom we cannot compare to any existing class in this country, there are edelmen or hereditary proprietors of free land. They form a class intermediate between the Count and the peasant, and their importance varies with the wealth and extent of land owned by the individual. I had the opportunity of seeing a village in the comitat of Presburg inhabited by edelmen. There are about eight houses, and each edelman owns from 150 to 200 acres of land. Their farming was somewhat brilliant in the sense of being brightly coloured, for I never remember seeing a finer show of blue corn-flowers and other "flowers" among corn. The village is composed, as all villages are in Hungary, of isolated houses; but in this case they are very superior to peasants' houses, and the interior of one I visited was furnished and fitted as became a man of good position and considerable wealth.

The Large Estates.—The figures already quoted show that about half of Hungary is divided into large estates, and half into small estates and peasant properties. In some districts I found that the former predominated in point of area, and in others the latter; but more usually the two classes of properties were stated to divide the district pretty equally between them. Previous to the reformation of the Land Laws in 1848 the peasant-land and the estates of the nobles were perplexingly intermixed. I saw at Bösing the remains of a system which has now happily almost passed away. The long strips of peasant-land so familiar to any one who has travelled on the continent of Europe—each marked with a stone bearing the initials of its owner—were here to be seen. Every now and then such a land-mark might be noticed bearing the initials of G. P. J.,—Graf Palffy Janos (Count John Palffy). The plots thus defined were bounded on either side by strips belonging to peasants, and hence the Count's estate was composed in this instance of a multitude of strips of land scattered among the lands of the peasantry. These

* The Hungarian joch = 1·0667 English acres. (See note, p. 368.)

fragments of the estate are seventy in number, and are all widely separated, running from four to twelve yards broad, and from one-quarter to three-quarters of a mile long. The estates at Pudmeritz, Szuha, and Boleraz are also in the same state. Such circumstances united all the disadvantages of both large and small ownerships, and presented fearful obstacles in the way of scientific agriculture. Previous to 1848 the landlords allowed their estates to remain in this dissected and divided condition, for their neighbours, on either side, were also their bondsmen, and could the more conveniently cultivate their lord's land when it lay in close proximity to their own. When the feudal rights of the landlords were bought up, and the peasants were made free, the nobles and large proprietors were obliged to go into the labour-market, and the fearful inconvenience of an estate broken into a thousand strips, intermixed with the land of a, too often, plundering, pilfering population, was found to be intolerable. A kind of "Enclosure Commission" was therefore formed for the purpose of concentrating scattered estates by fair exchanges with the peasants. By this means a separation was effected between the great estates of the nobles and the peasant-lands, and a system of organised cultivation became possible. This change is still in progress, but it is by no means uncommon even now to find districts in which the Commission has not yet performed its work of centralisation. The changes in the Land Laws before mentioned obliged the landlords to become cultivators. The peasant was relieved from his duty of ploughing and reaping for his feudal chief, and if the Count's fields were to be reaped at all the Count must reap them himself. Letting the land to farmers was not to be thought of, as a sufficient supply of tenants did not exist. An increase therefore of the duties of the stewards upon the estates became necessary, and a remarkable organisation of labour was constituted, enabling the landlords to cultivate the whole of their vast estates by means of a competent staff. A similar state of things appears to have existed in England in the 13th century, before the letting of land became general. Probably a corresponding change in favour of tenancies will take place in Hungary, but there is no prospect of such a change being brought about rapidly. Some landlords informed me that they would be very glad to let portions of their estates to good English and Scotch tenants upon liberal terms. Others have become attached to their faithful stewards, who have, in some cases, served them for generations, and would hesitate before dismissing them in favour of tenants. A pleasant solution of this difficulty would be the letting of good farms to stewards who had secured the good-will of their patrons.

After inspecting a large number of estates thus directly in the

hands of their owners, I was not favourably impressed with the system. Agriculturally it has many advantages, as, with a spirited landlord at the head, improvements can be carried out on a grand scale. An estate of 100,000 acres, all farmed by the noble lord who owns it, gives great scope to an efficient organisation. There is the central office, with its inspectors and clerks, its printed statements, its legal department, its periodical reports, and its thorough system of books. There is also the out-door system of stewards, sending in their monthly accounts, and receiving their instructions, both for the cultivated fields and for the forests. Threshing-machines are ordered by the half-dozen, and reaping-machines by the dozen. The central depôt presents the appearance of a factory, with its repairing shops, its carpenter's and blacksmith's shops, saw-mills, &c. I have seen five or six pairs of horses drawn up outside the door of such a head office as has been mentioned, each of which belonged to some steward, who had driven over to consult his chief upon some point or to settle his monthly account. Upon a well-managed estate information upon any point you choose to inquire after is quickly forthcoming. If you ask how much milk a certain race of cows give, a clerk is at once sent for the last month's milk account, in which the daily yield of each cow is registered. Should you wish to know what fatting sheep or oxen are receiving as food, a statement is at once placed before you, giving not only the quantity of meal or cake, but the exact weight of the green fodder each animal receives. If still further you should desire to know the increase of the animals, a table will probably be produced, giving particulars of the weight of each animal taken weekly or fortnightly. Such exactness and system are, of course, necessary where stores and granaries are regularly inspected, and a strict account of produce, as well as of cash, is periodically given up from every department. It, however, presents a striking contrast to English practice, for my experience is that the English farmer is deficient in exact knowledge as to the yield of his crops per acre and per field, of the amounts of artificial or natural food his stock are receiving, or of the state of his stores and granaries.

The general cultivation upon these estates is good, although there is room for improvement. Both landlords and stewards are alive to the importance of progress, but they are cautious of introducing methods which may fail through the great variability of their extreme climate. I feel inclined to give them credit for making the best of the difficult circumstances which surround them, and although it is easy for an English agriculturist to suggest changes and improvements to them, I have often found that the suggestions had been made previously,

and, after trial, had been found unsuitable to the exigencies of the country.

The following description of the working of extensive estates in Upper Hungary, owned and cultivated by Count John Palffy, in Presburg Comitat, was furnished from the central office in Presburg, and will give a more exact idea of the actual organisation required in order to carry out the numerous departments :—

1. The entire reclaimed (farmed) land upon these estates consists of 34,000 acres, and this is divided into 17 districts.

2. In each district is a resident steward (*verwalter*), who furnishes a monthly account of all work proposed for the coming month, as well as of all cash he requires, to the central office.

3. The count keeps control over everything, and without his knowledge nothing is bought, sold, built, or done. Thus the count is in this case his own upper director.

4. The central office is arranged as follows :—There are, 1st, a head lawyer (*ober-fiskal*); 2nd, estate inspector; 3rd, two book-keepers; 4th, upper cashier; 5th, expediter; 6th, a book-keeper's assistant; 7th, two clerks.

5. Two, three, or four districts are allotted to each *controller*, and there are altogether five controllers who also manage and inspect the granaries.

6. Nothing is given out from the granaries without an order from the central office.

7. The granaries and cash accounts in the various districts are visited and revised from time to time from the head office without notice.

8. There are 59,360 acres of forests, and these are divided into five districts. Each district has its own head forester, and each district (*waldschaft*) is divided into several sub-districts.

9. There are in all five upper foresters, who have fourteen under foresters, besides five controllers and several assistants under them.

10. The foresters, like the land stewards, send in a monthly prospectus both of what they intend doing and what cash they require.

11. The wood is sold according to a fixed tariff of prices. Large contracts can only be made with the sanction of the Count himself.

Such is a general sketch of the system by which vast estates are managed in Hungary. In other cases you find below the Count, an administrator who relieves him of all trouble. Sometimes, as in the case of the Emperor's and the greatest nobles' estates, this functionary is resident at Vienna. He is often

a man of high position and great power, and it was to this dignity under Prince Esterhazy that the late Mr. Smallbones arrived. Next come the directors or inspectors, taking the entire control over such a system as that just described. The Archduke Albrecht employs several directors upon his estates in various parts of the empire, and one administrator, Herr Jessel, is over them all. The director is supreme in his own domain, and has in each large district of it a hofrichter or principal steward, who is himself a practical agriculturist. The hofrichter has in turn verwalters or lower stewards upon each farm of 1000 acres or more in extent. Under the verwalters are *ispans* or *praktikants*, generally young men fresh from some agricultural college, who commence their career as superior bailiffs. Under the ispans are gangers or working-bailiffs, who directly look after the labourers.

The titles as well as the occupations of the numerous officers upon a large estate vary; but I have frequently met with the above gradation. An actual case may be taken from the estate Bellye in Lower Hungary, which constitutes one of the domains of the Archduke Albrecht, and comprises in all 164,200 acres. A large proportion of this vast area is in forest, mere, marsh, natural pasture, and unproductive waste. Still there remain 21,300 acres of arable and 12,064 acres of pasture to manage, and these are divided into ten districts. One director at Lak is responsible for the whole. There are also at Lak, which is the central office, an actuary (*actuar*) under the director, an inspector, an upper and lower engineer, a lawyer and assistant, a medical man, a rent-master, and a forest verwalter. The book-keeping is all done at Ungarisch-Altenburg. Besides this staff of officials at the central office, each of the ten districts is presided over by either a verwalter or an ispan, and these are assisted by an *adjunckt* or *praktikant* and bailiffs or gangers (*haiducken*), according to the size of the district. There is also a schoolmaster provided in each district where it is necessary.

The forests upon this estate comprise 42,600 acres, and are divided into five districts, each of which has its forester and assistants. Further, in order to realise the rural economy of Hungary, the reader must understand that all the breweries, distilleries, sugar factories, corn, hemp, and flax-mills, coal-mines, &c., on the estate belong to it, and are managed by stewards. Also that the estate Bellye is only one of many such estates which belong to the Archduke Albrecht, over which he and his administrator, Herr Jessel, reign supreme. It is as though all the agriculture and all the manufacturing industry of a vast district were carried on by and for the benefit of one

individual. Hence the system appeared to me to be anti-national in its character, and to be destructive of the very existence of an independent middle class. This seems to me to be thoroughly brought out when we contrast such a system with the hundreds of tenant farmers, millers, smiths, coal-owners, brewers, &c., which would abound over the same area in England.

From all I could hear, in Upper Hungary the estates usually pay their owners, after all expenses are discharged, 14*s.* to 16*s.* per acre. Some say 10*s.*, 12*s.*, or 14*s.*, others say 12*s.*, 14*s.*, or 16*s.* is a fair profit. The capital required to work one acre is about 4*l.* in Upper Hungary.

The Peasantry.

The general characters of Hungarian villages have already been described. I shall now endeavour to give as full an account of these interesting communities as the limited opportunity afforded for their examination will permit. Their freedom from the feudal burdens to which they were subjected previous to 1848 was certainly a wonderful step in the progress of the country. They are now beginning to profit from the independence of their position, and to realise the advantages of education, and of improved methods of cultivation. Much remains to be done in these directions, but abundant signs of progress are visible. Where the neighbouring great estates are well cultivated, the peasants have evidently watched the introduction of new methods, and adopted those suitable for their small holdings; and frequently, where the great properties are well farmed, the peasant-lands also show signs of improvement. The general rule, however, holds good, that the peasant cannot compete with the prince. The crops are almost invariably lighter and fouler, and the land is not so thoroughly ploughed and cultivated.

The peasant continues to wear his own peculiar costume, and holds to his order in spite of the accumulation of considerable wealth, for in many cases he is the owner of more than 300 acres of good land, besides valuable household goods. More ordinarily 30 acres, and even 15 acres or less, represent his holding.

These proprietors inhabit villages, and their land often lies at an inconvenient distance from the homestead. A faithful description of the constitution of these communities will be found in M. Morier's 'Account of Land Tenure in Prussia,' published in 1870 by the Cobden Club, and much light has been thrown upon their rise and history by this indefatigable in-

vestigator. It is an interesting study, and one which might be followed with success in Hungary, where old institutions exist in more than ordinary simplicity.

The peasant-land extends around the village, comprising many thousands of acres of first-rate land, and around the arable portion lies the pasture or common, whither the flocks and herds are daily led. The arable land is, in the most perfect examples of the "gemeinde," divided into three portions, one of which is devoted to bare fallow, a second to winter corn, and the third to summer corn. It is in fact the old three-field course which appears to have obtained over the whole of England in the twelfth century (Rogers). Each peasant proprietor owns land in each of these three divisions, *i.e.*, his little estate is always divided into three parts. The portion which belongs to each individual is defined by land-marks, and each peasant works, sows, and reaps his own plot of land. Still he works in unison with his fellows, so that in the proper season all the land is sown together, and as the crops mature, the whole assumes the appearance of one vast field of wheat or rye. In the same way, although each individual works his own portion of fallow, the fallow portion of the community presents the general appearance of one immense fallow field. Also in the common pasture all the village cattle graze together, and are herded by attendants, and, as already mentioned, the individual cattle find their way at night to their respective homes. In some communes the uniform cropping of the land just described has been discontinued, and each peasant cultivates his own land irrespective of his neighbour. In such cases the long strips of wheat, of hemp, or of bare fallow, so characteristic of peasant farming in other parts of Europe, are to be seen.

The following notes upon the peasantry of Upper Hungary were taken at Talos, in Presburg Comitat, the seat of Count Anton Esterhazy. Here the comparison is in favour of the cultivation upon the Count's estate. The peasant only cultivates 3 inches in depth, while 6 inches is the cultivated depth on the Count's estate. The peasants were ploughing-in dry, strawy-looking dung, and the farming was exceedingly variable. Korkey Egnatz, a very respectable peasant, owns two sessions of 38 acres each. He possesses a live stock of two pairs of oxen, two mares, two two-year-old horses, one foal, three cows, two two-year-old heifers, two calves, twenty-eight geese, besides a good show of fowls, eight good beehives, and a nice kitchen-garden opening into a larger back garden, growing barley and Indian-corn for fodder. There were also poppies for seed, potatoes, and hemp, from which they make their own shirts and light summer trousers. His agricultural land is scattered through the com-

mune, and he employs three men and two girls to assist him in working it.

No. 2 possessed 38 acres of land, and occupied 15 acres as tenant. His stock consisted of two cows, four oxen, two calves, two horses, and about fifty geese. The whole is worked by himself and son, assisted by two men, and his women do not go out to work. At harvest he requires two extra men and two women for three weeks. This man informed me that he could make 160*l.* a year by his corn.

No. 3 owns 76 acres of good land. He told me he could grow nearly 23½ bushels of wheat and 39 bushels of barley per acre.

I called on the *Richter*, or head of the village, a man of considerable power, but a peasant like the rest. He told me that No. 2 is a Jew, who had bought his holding twenty-two years ago, and that his land is worth at the present time 20*l.* the joch, which will be nearly the same amount per acre, including house and homestead. He also told me that while most of the peasants ploughed 3 inches deep he (the Richter) ploughed 5 or 6 inches.

I visited a number of peasants' houses, which are for the most part comfortable and primitive in style. A peasant homestead forms a long strip extending backwards from the village street, and it is bounded on either side by similar strips possessed by the neighbours. Each strip is about 400 yards long. This is merely the homestead and garden, and the main land of the peasant is scattered through the commune as already described.

In the neighbourhood of the Archduke Albrecht's estate at Ungarisch-Altenburg, the peasants drill their corn after the example of the estate, instead of following the ordinary practice of broadcasting. At Kœnigsheiden, the property of Count John Palffy, the peasants are also improving their cultivation in imitation of the good farming on the estate. In other districts the peasant farming is lamentably bad; the beautiful deep soil being merely scratched, and consequently bearing scant crops, intermixed with forests of thistles. I have seen thistles 7 feet high standing like trees among the corn, and it was curious to notice in the neighbourhood of Mezöhegyes these immense thistles left standing after the surrounding corn had been cut, just as though the lazy peasant had not energy enough to strike his scythe through their thick and tough stems.

Tenant Farmers.

Only a small proportion of the land of Hungary is let to tenants. There are, according to a recent census, 2,486,255 owners of land and only 48,000 tenants. The system of letting

land does not up to the present time appear to have thriven, and I frequently heard the farmers spoken of disparagingly as cultivators. They are accused of taking all they can get out of the land and leaving it the worse for their occupation. Many farmers are Jews, and the system of exhaustive cultivation pursued by some of these men was from time to time noticed. On the other hand, Mr. Otocska of Giesing, Mr. Elvers of Rer, and Mr. Fabricius, whose farms I visited, were all good managers, the two former gentlemen having been previously trained as stewards upon large estates. The late Mr. Smallbones also occupied a farm at Deutsch-kreuss, under Prince Esterhazy. Many noblemen would gladly welcome good English farmers, and let them portions of their estates at liberal rents, and upon liberal conditions. English capital and energy would be likely to succeed, if they could cope with the difficulties of language, novel surroundings, and climate. German agriculturists can more easily reconcile themselves to a country from which they are less distant, and where their language is in general use.

Few visits were more interesting than that paid to Mr. Otocska, who farms 1800 acres, 1600 acres of which are under the plough, at Giesing, near Zinkendorf Œdenburg, under Count Emerich Szachenyi. This gentleman enjoys a high reputation as an agriculturist, and for many years had the management of Count Karolyi's estate at Tot-Megyer, in Upper Hungary (see page 364). The regular form of the fields, the good crops they bore, and the superior system carried out over the whole farm, combined to give a most favourable impression. Here, too, was to be seen a large assortment of English implements, among which I noticed Samuelson's and Johnson's reapers, Wood's mowing machine, Bentall's pulper, Richmond and Chandler's chaff-cutters, Turner's, and Clayton and Shuttleworth's mills, Priest and Woolnough's drill, Clayton and Shuttleworth's horse-gear and threshing-machine. Mr. Otocska uses Ransome's, Howard's, and Hohenheim ploughs; but the two former are made on native models, as the English form is too long in the mould-board, and four oxen with them can do no more work than two oxen can with the native-made ploughs. Howard's harrows, weighted with oak blocks of 30 lbs. each, Coleman's cultivators, and other English implements, were also noticed. Mr. Otocska told me he could grow from 30 to 34 bushels of wheat; 50 to 68 bushels of Indian corn; 40 to 50 bushels of oats; 34 to 40 bushels of barley per acre. He has also a contract for growing sugar-beet for the Zinkindorf factory, and can produce from 10 to 12½ tons per acre. Since improved pressing machinery has been introduced into sugar factories, the pulp has become very

inferior, and Mr. Otocska is of opinion that he could make more of his land by manufacturing meat, than by selling beet and receiving back pulp. He has tried experiments with artificial manures every season for the last ten years, but without any result, until the present season, 1873. I saw an experiment on barley, in which one strip was manured with lime, and one with a manure specially prepared by Liebig, with a strip of unmanured between. The result was most evident; but Mr. Otocska had never seen any effect before, although he has applied manures both in spring, autumn, and winter. This good result was no doubt due to the coldness and wetness of the season; for it is observable that, as you advance northward, artificial manures are more and more esteemed. Mr. Vasgarz, steward on the Zinkendorf estate, told me that he obtained good results from the use of the slimy waste from the sugar factory. The sheep clip on an average 2½ lbs. of wool, which was sold this year (1873) for 13*l.* per cwt., and it has sold as high as 16*l.* per cwt. Mr. Otocska considers that there is great scope for capital, and for English or other good farmers in Hungary, and he told me that double the produce might be got out of the land. The farmers are too often Jews, who have no knowledge of agriculture, but aim too much at sucking the goodness out of the land which they occupy. Mr. Otocska pays 2000*l.* a year as rent for 1800 acres, or close up to 22*s.* per acre.

Another excellent farmer, whose acquaintance I made is Mr. Elvers, of Rer, who farms a tract of 1586 acres, all of which is arable, near Karancz, under Prince Schaumberg-Lippe. The estate is on an elevated table-land, and is an hour and-a-half's drive from the Archduke Albrecht's estate at Lak (p. 323). Mr. Elvers served in the German navy from 1849 to 1851, and subsequently studied agriculture in Westphalia and Hungary, where he held the posts of Verwalter and Hofrichter for above twelve years, and then took a farm. He has a lease which is somewhat oppressive in its terms, as the tenant is compelled to keep half his arable land under forage crops. Seventy oxen and twenty-six horses work the farm, and English drills and threshing-machines, with American reapers, are used.

I visited this farm on the 1st of July, and was much pleased with the good management and crops. Much damage had been done to the wheat by mice, and the rye had suffered severely from frosts in May. The rape had been reaped, and was already threshed out; the land which had carried it was already covered with a plant of young maize, to be used partly as fodder and partly as a corn crop, and wheat would then be drilled over the same area in November or December. The whole of the corn is sown

with Garrett's drill, reaped by Wood's and Kirby's reapers, and threshed by Ransome's machines. The average crops are:—

			Per English Acre.
Wheat	10 metzen of 89⅓ lbs.	=	17 bushels of 60·5 lbs.
Rye	15 „ 82 „	=	25⅓ „ 59 „
Barley	18 „ 72 „	=	30½ „ 52½ „
Oats	25 „ 50 „	=	42⅓ „ 37 „
Maize	18 „ „	=	30½ „
Rape	12 „ 75 „	=	20⅓ „ 50½ „
Hay	25 centner	=	25 cwts.
Mangold	250 to 300 do.	=	12½ to 15 tons.
Potatoes	30 to 70 do.	=	1¼ to 3½ tons.

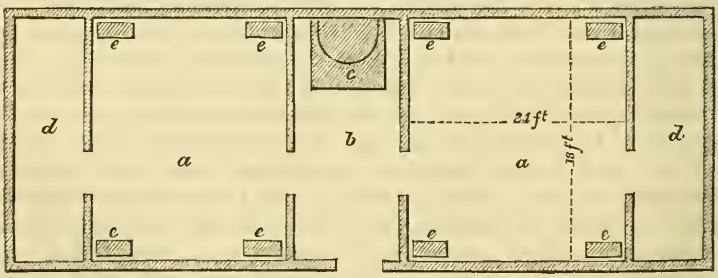
Labourers and Wages.

In every village there are landless peasants who work in the fields of their more fortunate neighbours. Every estate has also a cottage population which supplies it with a sufficient number of hands. The condition of the labourer was the saddest feature of the rural economy of Hungary; and, viewed in the light of recent agitation and legislation in our own country, it is to an English eye simply appalling. Whether these poor creatures feel the sadness of their lot is a question I cannot answer; but certainly there appears to be little idea among the stewards that their workpeople are neglected. I was told that adults seldom live much longer than forty, and that the mortality among the children is terrific. The people are exposed to an extreme climate, and the water of the plains is confessedly bad. They eat raw fruits and vegetables, and many of them fall victims to the cholera annually. During my journey this fearful disease was exceptionally bad, and at Tokay I found myself face to face with it and the doctor. This gentleman had been dispatched from Pesth by the benevolent owner of the estate, to live in the mansion, and look after the stricken population. The population had to a great extent fled; that is, to the number of "ninety pair of shearers," so that the fields waited in vain to be reaped. The upper classes fear the disease but little. They advise good living, avoiding over-fatigue and beer, and the drinking of good, sound, red wine. The labourer can attend but little to these precautions, but works in the hot sun, drinks water in too large quantities, is careless as to cleanliness, and speedily falls a victim. The doctor told me that when attacked by the fell disorder, the poor ignorant labourer seeks the shelter of some tree, and lays himself down. There he is found, but refuses to be disturbed, refuses to take medicine, and commits himself to the mercy of "the good God." "There he lies," said the doctor, "till he either dies or gets better." I was also in-

formed that to persuade them to take medicine they must be stood over whip in hand.

The poor, meek Hungarian labourer uncovers at the sight of the carriage-and-pair, and remains bare-headed till it is out of sight again. He has not yet felt the effects of emancipation. There is no coroner's inquest in Hungary, which is much to be regretted, as it is difficult to estimate the number of violent deaths that occur annually in those remote plains. Certain it is that accidents with threshing-machines are far too common, and I should be sorry to believe the somewhat irresponsible statements I have heard as to their frequency. A poor fellow was cut to pieces with a reaping-machine on a great estate the day I visited it, but no official inquiry would be made as to the cause of this sad mishap. The people are ignorant and curiously indolent. They move carelessly about the humming drum of the threshing-machine, and too often slip their poor bare feet; and then follows a scene which it is fearful to think of. It is for this reason that in my former Report I particularly recommended self-feeders for threshing-machines. The house accommodation for labourers on the estates of the aristocracy cannot be viewed without indignation by an Englishman. We have been arriving slowly at the conclusion that a number of persons of all ages and both sexes should not occupy one and the same sleeping-room. Also that a cottage should possess at least three rooms. Three rooms for one family! What would the philanthropist say to four families and twenty individuals to one room? And yet this is quite a common occurrence in Hungary. The accompanying plan gives a general and correct idea of many a habitation

Fig. 1.—*Ground-plan of Hungarian Dwelling for Labourers.*



on estates which I visited. *a a* represent living-rooms, in each corner of which is a bed, *e*; *b* is a common lobby; and *c* is a hearth; *d d* are small store-rooms for meal and other necessaries, and work tools. Each bed represents a family share of the mansion. Six or seven bare-footed little wives are either

superintending cooking on the large raised hearth, or busying themselves in various kinds of work. The husbands are out at work, the children swarm on all sides. The people sleep out of doors very commonly in the summer, but in winter there must be fearful packing before all the members of this composite household find resting-place. It is very much the custom for the grooms and stock-men to sleep in the stables and byres among their animals, and this of course helps to relieve the houses from the charge of being over-crowded. I saw but little of the dwellers in cellars, but inspected one of those strange habitations at Mezöhegyes. It consisted of a low hovel over an excavation in the ground of some five or six feet in depth, in which human beings found a home.

Wages are paid partly in money and partly in kind. A portion of land is devoted to the labourers under the name of the *convention* field. There is also a peculiar system of paying labourers with a proportion of the produce they have assisted to cultivate or manipulate. In Vienna, Mr. Shuttleworth informed me that the rate of wage was much the same as in England. At Messrs. Sigl's I found that a good fitter would make 2½ fl. (5*s.*) per day by piece-work, and would receive 4*s.* per day by time wages. A turner will have 7*s.* to 8*s.*, a blacksmith 4*s.*; a head blacksmith will make 6*s.* to 7*s.*, and an unskilled labourer 2*s.* to 2*s.* 6*d.* Mr. Topham, an English engineer, who has established works in Berthegasse, Vienna, gave me a similar account of the wages paid in 1873.

Turning to the country, the first case is that of Schwarzwasser, near Presburg, an estate of Count John Palffy's, where I found that payment was made both in money and in kind. Under the former system a man received from 1*s.* 2½*d.* to 1*s.* 10*d.* per day in the field, and 2*s.* 5*d.* to 3*s.* in the vineyards. When paid partly in money and partly in kind, a shepherd received 4*l.* 8*s.* in money, 3·38 bushels of wheat, 33·8 bushels of rye, 3·38 bushels of barley, 1½ klafter (6 ft. × 6 ft. × 3 ft.) of wood, $\frac{7}{10}$ths acre of land, 30 lbs. of salt, and lodging.

This would represent the wages of an ordinary shepherd; but a head shepherd might receive double this amount, or more.

On Tarnok estate, also near Presburg, a man's wage ranges from 1*s.* 0½*d.* to 1*s.* 10*d.*, and a woman's from 7½*d.* to 1*s.* 0½*d.* Shepherds receive 6*l.*, 6¾ bushels of wheat, 33·8 bushels of rye, 6¾ bushels of barley, 3 cord of wood, 36 lbs. of salt, $\frac{7}{10}$ths acre of land, the keep of one cow, run out for two sows, and a cottage. A stock-man receives 4*l.* 12*s.*, 6¾ bushels of wheat, 33·8 bushels of rye, 6¾ bushels of barley, 3 cord of fire-wood, 29 lbs. of salt, $\frac{7}{10}$ths acre of land, run for one sow, and a cottage.

On Nyárosd estate, also near Presburg, the labourers are paid in money alone, and shepherds and teamsmen receive their wages partly in kind. A labourer's wage is 10*d.* in winter, and 1*s.* 8*d.* in summer, and a woman's 7½*d.* to 1*s.* 3*d.* per day. A shepherd's wage is estimated at from 1*s.* 0½*d.* to 1*s.* 3*d.* per day throughout the year, and a herdman's at 1*s.* 3*d.* to 1*s.* 8*d.* These figures are exactly confirmed by the report from the neighbouring farm of Vahnosfaln.

At Kœnigsheiden, Presburg, a labouring man, when paid in money alone, receives 1*s.* 10½*d.* in summer, and 11¼*d.* in winter. A woman receives 11¼*d.* in summer, and 6¼*d.* in winter. A head shepherd has 8*l.* per annum in money, with 6¾ bushels of wheat, 33·8 bushels of rye, 6¾ bushels of barley, 200 faggots of wood, 36 lbs. of salt, $\frac{7}{10}$ths of an acre of land, keep of one cow, and pasture for pigs. Shepherds and cattlemen are paid with trifling variations as at Tarnok. Similar payment is made on the estates of Boleraz, Szuha, Pudmeritz, Szilard, and Bösing. All of these estates are owned by Count John Palffy.

"On Count Esterhazy's estates of Talos and Lanschütz, also in Upper Hungary, a man's average wage is estimated at 1*s.* 2½*d.* per day, and his summer's wage ranges as high as 2*s.* 5*d.* A woman's wage is 10*d.* Shepherds and cattlemen are considered to receive in cash and commodities 20*l.* per annum.

Upon Count Béla Széchenyi's property at Zinkendorf, near Œdenburg, a man's wage is equal to 1*s.* 8*d.* per day, and a woman has 11¼*d.* per day throughout the year. Here also the system of payment in kind obtains, but I did not receive particulars.

Further south, at Wittendorf, half an hour's drive to the east of Steinamanger Railway Station, lie the house and estate of Count Alexander Erdödy. Here a labourer receives 2*s.* per day for mowing, and a woman 1*s.* 2*d.* for light work. Calculating the various perquisites at a money-value, a cattleman was estimated to receive 23*l.* 10*s.*, and a shepherd 27*l.* 10*s.*, besides lodging, per annum.

Count Heinrich Zichy furnished particulars as to his payment of farm-servants at Nikics, in Œdenburg Comitat, on the slopes of the boundary mountains, and three English miles from the South Railway Station of Zinkendorf. Men in summer receive from 1*s.* 8*d.* to 2*s.* 5*d.*, and in winter from 10*d.* to 1*s.* 0½*d.* Women receive 10*d.* to 1*s.* 0½*d.*, and 6*d.* to 7½*d.* respectively in summer and winter. All the harvest work, except what a single reaping-machine cuts, is done by labourers for one-twelfth part of the entire crop: that is, every twelfth stock belongs to the harvesters, and is threshed out, the straw remaining for the benefit of the estate. The male harvesters engage themseves to come for day-work whenever wanted, throughout the year, for 10½*d.* per diem. The shepherd and two assistants on the same estate are paid in the following complicated manner:—

£10 in money.	45 lbs. of bacon.
25⅓ bushels of wheat.	180 ,, of salt.
50·7 ,, of rye.	9½ ,, of candles.
10 ,, of barley.	19 gallons of wine.
1·69 ,, of peas or beans.	1·4223 acres of land.
4 cord of wood.	Keep of one cow.
180 lbs. of meat (paid in money).	

A teamsman on the same estate has

4*l.* 12*s.*	·84 bushels of peas.
17 bushels of wheat.	2 cord of wood.
27 ,, of rye.	$\frac{7}{10}$ths acre of land.

M. Otocska, also near Zinkendorf, estimated his wage as follows, including all perquisites:—

	s.	*d.*	
Men in winter	1	0½	per day.
,, ,, summer	1	8	,, ,,
Women in winter	0	7½	,, ,,
,, ,, summer	1	0½	,, ,,
Shepherds	1	0½	to 1*s.* 3*d.* per day.
Teamsmen	1	3	to 1*s.* 7*d.* ,, ,,

Upon the Imperial stud farm of Barbolna, situated upon the right side of the Danube, about 17 miles west of Komorn, labourers receive 2*s.* 5*d.* per day in summer, and 1*s.* 3*d.* to 1*s.* 5½*d.* in winter. Shepherds are paid partly in money and partly in kind, and their total remuneration is considered equal to 30*l.* 12*s.* per annum. Teamsmen's wages amount to 20*l.* 15*s.* per annum. Upon Kis-Szalás estate on the Bacser, about 14 miles north of Maria-Theresiopel, wages for labourers vary in summer and winter from 10*d.* to 2*s.*, and shepherds and teamsmen receive 18*l.* and 16*l.* per annum respectively, inclusive of perquisites.

In Lower Hungary I obtained information from several sources as to the wages paid to labourers. Mr. Elvers, of Rer, near Karaucs, farms under the Prince Schaumburg-Lippe. Male labourers there receive 2*s.* in summer, 1*s.* 0¼*d.* in winter, and 3*s.* in harvest; females receive 8¾*d.* in summer, 6¼*d.* in winter, and 1*s.* 0½*d.* in harvest. Shepherds and teamsmen are paid in kind, as follows:—3*l.* in money, 39 lbs. of salt, ·35 acre of garden, 6¾ bushels of wheat, 33·8 bushels of mixed wheat and rye (halb-frucht), 1·69 bushel of beans, 4 klafter of wood, 1·42 acre of land, and grazing for pigs.

Another case in Lower Hungary is that of Bellye estate, near Baranyavará-Monoster Railway Station, and not far from Mohacs. Upon this extensive estate of the Archduke Albrecht labourers' wages are high. A shepherd receives 30*l.* per annum, inclusive of everything, and the highest wages quoted is 45*l.* per annum. A teamsman has advantages equal to 1*s.* 7*d.* per day in summer, and 11¼*d.* in winter; and a woman worker has 11¼*d.* in summer, and 8¾*d.* in winter.

Upon the Imperial farm of Mezöhegyes, in the Comitat of Csanad, the shepherds, grooms, and teamsmen, are generally soldiers, and the day-labourers are, for the most part, paid in money only. They receive in

July and August	2*s.* 5*d.* to 3*s.*
September and October	1*s.* 8*d.* to 2*s.*
The remaining months	1*s.* to 1*s.* 5½*d.*

The last case I shall cite is that of Harkányi, in the Tokay district, where day-labourers and monthly servants are employed. In summer men are paid from 1*s.* 8*d.* to 2*s.* 5*d.*, and in winter half these amounts, or less. A teamsman's wage consists of

3*l.* 4*s.* in money.
6¾ bushels of wheat.
40½ ,, of rye.
10 ,, of barley.
48 lbs. of salt.
1¼ acre of land for maize and beans.
One cow kept.
Lodging, firing, medical attendance, and school.
Grazing for a few pigs in summer.

It was in the Schütt district that I first became acquainted with a peculiar system of payment, in which the labourer receives a proportion of the crop which he assists to cultivate.

In the case of Indian corn, the estate undertakes the preparation of the ground and the sowing of the crop. The labourer hoes, harvests, and does everything else connected with the crop, and receives one-third part of the grain as his reward. The

work consists in twice hoeing, earthing up, breaking cob from the straw and kibbling it, cutting the straw and binding it in bundles. For winter and summer grain the labourers receive for the cutting, shocking, loading, and harvesting, one-thirteenth and one-twelfth part respectively of the entire crop, both straw and corn; besides, they receive 1·69 bushel of wheat, 1·69 bushel of rye, and 1·69 of barley, per pair of shearers, and this constitutes their entire harvest wage. For mangold, after preparing the land and sowing the seed, the estate gives the labourer, for all work subsequently required for the crop, 2*d.* per cwt. of crop grown.

Agricultural Colleges.

There are four regularly constituted State-supported agricultural colleges in Hungary, three of which were visited by me:—

	Professors and Teachers.	Students.
Ungarisch-Altenburg	18	148
Keszthely	9	72
Debreczin	8	51
Kolosmonostor	12	74

Liberal grants are allowed for the maintenance of these colleges, and the general management of all is entrusted to the Minister of Agriculture in Pesth.

Each college is furnished with ample apparatus for teaching, in the form of laboratories, museums, botanical gardens, experimental farms, and gardens for the practice of vine and fruit culture. There is a director, an effective staff of professors, and a large body of students at each. An *Ackerbauschul*, or lower grade school for the instruction of young men in practical agriculture, is attached to three out of the four colleges. In the colleges manual labour is not encouraged among the students, as their time is taken up with the study of scientific agriculture in all its branches.

Each student, before entering the higher school, must have been engaged in practical agriculture for two years, so that the practical element is not wanting in the education of the higher grade students.

The complete course of study occupies two years, and each year is divided into a winter and a summer session. These four periods are devoted to the study of the following subjects:—

First Year's Winter Session.

	Hours per week devoted to each subject.
Mathematics	4
Physics	2
Mechanics	2
Geology	2
Chemistry	4
Physiology	4
Botany	1
Agronomy	4
Horticulture	2
Drawing	–
Total	25

Second Year's Winter Session.

	Hours per week devoted to each subject.
Rural Economy	4
Political Economy	2
Technology	4
Cattle- and Sheep-breeding	4
Forestry	3
Building	3
Climatology	2
Statistics	2
Drawing	–
Total	24

First Year's Summer Session.

Engineering	3
Zoology	3
Botany	2
Agricultural Chemistry	4
Agricultural Mechanics	3
Cattle-breeding	3
Wool, study of	1
Vine-culture	1
Plant-culture	3
Total	23

Second Year's Summer Session.

Book-keeping	3
Rural Taxation (valuation)	2
Inventory (?)	1
Technology	3
Forestry	2
Management of Horses and Swine	2
Veterinary	3
Agricultural Law	2
Buildings, Economy of, II.	3
Drawing	–
Total	21

The system in all the colleges is uniform, and is under the immediate control of Herr von Kenessey, secretary to the Minister of Agriculture. I had much conversation with Herr von Kenessey at Pesth, and subsequently in this country during a recent visit which he paid me at Cirencester, to see the working of our own Agricultural College. The students all live in the town, and repair daily to the college for lectures and classes. As seems to be general throughout Germany, little or no control is exercised over their movements when they are outside the walls of the college.

The college at Ungarisch-Altenburg is situated upon the property of the Archduke Albrecht, whose wonderful farm-buildings and advanced agriculture are open to the inspection of the students. This college was founded in 1818, by the then owner of the vast estates of the present Archduke, the Duke Albert von Sachsen-Teschen, and endowed with 700*l.* per annum. His object was the education of stewards and bailiffs for his estates in Hungary, Moravia, and Silesia.

In 1849 the Government further endowed the institution, and placed Dr. Heinrich Wilhelm Pabst at its head in 1850. This

distinguished professor held the position until 1861, when it was filled by Dr. Masch, the present director. Both the Archduke's and the Government's foundations are now combined under the direction of Dr. Masch. From 1818 to 1850, 782 students had passed through the Archduke's private college; and from 1850 to 1873, 1831 students had passed through the enlarged institution.

The college at Keszthely is situated upon the estates of Count Festatecs, on the shores of the Platten See. The railway from Kanisa to Pesth passes within a few miles, and a coach runs to Keszthely daily. The following passage occurs in my notes made during the journey: "The railway station at Keszthely looked very primitive and out-of-the-world; and when we mounted our waggon and drove off to Keszthely, rumbling over a terrible road, with nothing on our right but the boggy commencement of the Platten See, it seemed like the road to Nowhere. Masses of rushes, black stagnant pools, and rank grass were bounded far over by the level line of the Platten See, beyond which was the outline of the mountains. On the left was a tolerably cultivated tract, gradually improving, and contrasting very favourably with the view to the right. The country gradually improved, and at length both sides of our road became cultivated, and the Platten See appeared more definitely as a lake bounded by fine mountains. We passed the handsome white homestead and stables of Count Festatecs on the left, and presently after neared Keszthely, a neat town beautifully situated on the shores of the Platten See. Here is the seat of perhaps the oldest agricultural college in Europe, founded and endowed by the Count Festatecs in the year 1784, and now flourishing as a Government institution with nine professors and seventy-two students. The college is the old '*Stadt*' House, and is rather unfortunately situated one hour's walk from the main portion of its farm of above 300 acres."

There are two schools: one a lower farm school for students who work with the farm-servants, and study two hours per day in the winter, and one hour per day in the summer. The other is a higher school, where the pupils give all their time to study. In the latter case the students pay 3*l.* per annum for tuition, and live in the town. No control is exercised over their private life, and the professors are satisfied with their behaviour and progress. The course of study consists of four half-yearly sessions, and the holidays are August and September, with one fortnight at Easter (see programme already given.) The laboratories, lecture-rooms, and museums are good, and well up to the wants of the present day. There is a capital collection of botanical models, illustrating vegetable

structures. The college is provided with a vineyard, a good nursery for fruit-trees, a botanical garden, an experimental field, in which I noticed plots of English and foreign wheat, English oats and beans, as well as examples of other cultivated plants. The farm is divided into fields, each of which has its own particular rotation. The students must have spent one year upon a farm studying the practice of agriculture, and be above seventeen years old before they are admitted to the college. After they have completed their course, they seek junior positions upon the large landed estates of the country, and work up gradually to the dignity of head stewards and directors. Farmers, in our sense of the word, do not appreciate the institution. The students pass an examination every session, and at the close of their course undergo no final examination, but a combination of all their previous certificates is presented to them properly signed. Professor Engelbrecht drove me round the college-farm and a portion of the beautiful estate of Count Festatecs. The good agriculture and high class of stock and horses upon the Count's estate are open to the inspection of the students, and must be a great advantage to them. The college receives 40,000 fl. (4000*l.*) per annum from the Government.

Debreczin is also a beautifully situated town, and the agricultural college there is a new but thriving institution. Professor Tormay, since removed to Pesth, was, at the time of my visit, director of this college. He is an enthusiastic teacher, and a most able man. Under his care the botanical gardens were developing most successfully, and I was particularly struck with the fine anatomical and physiological collection in the college museum. The farm is divided into fields by means of pleasant grass drives, and the professors are justly proud of the state of their crops and land. Much attention is also evidently given to the improvement of cattle and sheep. I examined, in company with Professor Tormay, his Mestir-Merino, the result of a cross made thirty years since between the pure Merino and the old spiral-horned Hungarian sheep. This old breed was crossed three or four times forward with the Merino, and subsequently it has been bred *inter se*, and improved by selection. These sheep resemble the Merino, but are longer in the fleece, and clip something more than 5 English lbs. per head. They are also prolific, forty-six ewes in 1870 having produced sixty-four lambs.

After visiting the three principal agricultural colleges, I came to the conclusion that they constituted one of the most encouraging features of the agriculture of Hungary, and of the future prosperity of the nation. Most of the stewards have been educated at one or other of these institutions, and their early training no doubt bears fruit in the accuracy and system observable upon the

great estates. I often observed a peculiar expression of wonder when I asked the stewards with whom I came in contact, if their college course had been useful to them. Of course it had, and they evidently could not understand any one doubting it. In England we have still something to learn in this respect.

Government Stud-Farms.

The Government has done much to encourage the breeding of horses by establishing studs at Kis-Bér, Barbolna, and Mezöhegyes. The best blood has been imported from the United Kingdom, Spain, and Arabia; and great pains are being taken to establish a fixed type of saddle-horse which can be relied upon to breed truly. These Government stud-farms are also centres from which stallions are sent to supply the need of all parts of Hungary, with the view of improving the horses of the country. The breeding of horses is one of the most popular branches of rural economy in Hungary. Not only has it been taken up in a most spirited manner by the Government, but also by most of the great landed proprietors, with wonderful results. They still look to England for their supply of thoroughbreds and Norfolk trotters; but they hope within a short time to establish races suitable to their own wants and climate; which may then be bred *inter se* without further recourse to foreign blood. In this opinion they are at issue with many English breeders of horses, who look upon the thorough-bred as essential to the supply of half-bred saddle-horses. We have in fact no distinct race of saddle-horses, but in Hungary they think it quite practicable to raise such a race, possessed of the necessary fixity of character.

Kis-Bér.—A run of eight hours from Vienna over the line which connects Bruck, Raab, and Stuhlweissenburg, takes the traveller to the Imperial stud-farm of Kis-Bér on the Backonyer Wald. I had been travelling for days over the dead level of the Upper Hungarian plains, and it was refreshing to find myself in a gently undulating country. The estate comprises a fine and extensive tract on which the soil varies from a poor blowing sand to a fine black humus loam; altogether a fine neighbourhood, but not particularly healthy, as I heard there was much fever abroad. The entire estate is divided into four districts as follows:—

	Acres.
1. Kis-Bér (home farm)	5,505
2. Bathyan	2,695
3. Vasdinye	4,300
4. Tarcs	3,145
	15,645

Of this, 6450 acres are under arable cultivation. There is a steward on each of the three last divisions, and the estate director with his staff resides at the central portion, Kis-Bér proper. The greater portion of the land is worked by Hungarian oxen, but horses are also employed. The system of drilling corn has been introduced over the whole estate, and Samuelson's, Hornsby's, and Johnson's reapers, with Clayton and Shuttleworth's threshing-machines, are all in general use.

On Kis-Bér proper (the home farm) the stabling is extensive; and for arrangement, commodiousness, and quality, it must be allowed to stand first in the whole Austro-Hungarian dominions. The entire-horses occupy a magnificent line of lofty and liberally constructed loose-boxes with covered ways both before and behind, covered riding school, and every possible contrivance for housing a large number of valuable thorough-breds. The brood mares are accommodated in a long succession of paddocks, each of which is furnished with a hovel. The weaned foals and yearlings are housed in spacious sheds when they are not out on the pasture, and are attended to by soldiers, who seem very fond of their charge. The gentleness of the thorough-bred horses, owing no doubt to kind treatment and constant attention, was very remarkable here, and upon the other Imperial stud-farms. I arrived at four o'clock on June 24th, and was met by Colonel Zoest, and Mr. Hackle the English stud-groom, who showed me through the largest collection of thorough-bred and half-bred horses I had ever seen. The next day, from half-past six in the morning, was devoted to driving round the estate, and inspecting horses both on the pasture and in studs and stables. Fine Allgauer cows and Hungarian oxen were also noticed, and a general glimpse of the agriculture of the estate was obtained. If the term "intensive" may be applied to the agriculture of England, that of "extensive" may be used as applicable to that of Hungary. Good crops of grain and beet were seen, and a remarkably vigorous plant of oats and vetches for fodder. The pastures were also rich and abundant, but rough and lumpy, apparently needing rolling. Rye-grass and clover formed a capital, but somewhat neglected-looking pasture, in which a fine herd of young horses grazed, attended by their *csikosen* or mounted guards, who never leave them. Grass was lying in swathe and wanted turning, as it was bleaching below; but labour is not abundant here. The yearlings and two-year-olds are herded on the pastures, and in the heat of the day stand close together, while the picturesque csikosen watch over them, mounted on small but active little horses. Colonel Zoest informed me that there are two objects in maintaining this extensive stud. First the breeding of thorough-bred horses,

which are sold into the country as yearlings, and so improve the general horse stock of the country, and spread noble blood throughout the land. Secondly, the breeding of both lighter and heavier half-bred stallions for saddle purposes. These young stallions are at 3½ years old drafted off to depôts which are scattered through the country, for the purpose of improving the native races which abound in the hands of the peasants.

The thorough-bred stallions and mares have, without exception, been obtained from England. The stud furnishes annually, on an average, 26 young stallions for the depôts. The inferior horses are castrated and sold by auction, the worst at from 1 to 2 and the better at 3 to 4 years old. Every year, from 14 to 18 young mares are introduced into the stud, and about an equal number are sold by public auction with the geldings.

This year (1873) four-year-old fillies have averaged 90*l.* each, and the stallions sent out to the depôts realized 120*l.* to 150*l.* each.

Considerable difficulty has recently been experienced in the rearing of half-bred foals, owing to the great prevalence of suppuration in the lungs, the cause of which has not yet been discovered. This has carried off a very large proportion of the foals. For four years past it has destroyed, on an average, 35 out of 85 head, and this year 15 out of 83 half-bred foals have succumbed!

The unhealthiness of the stock is a great cause of anxiety to Colonel Zoest and his staff of veterinary surgeons. The disease which attacks both lungs and liver was attributed, partially at least, to the water, and analysis revealed the absence of both iron and sulphur. It was also thought that the fodder contained too small a proportion of bone constituent. I recommended a little sulphate of iron in the water, and dressings of superphosphate to the pastures; but as yet the true cause of the disease is not known with certainty.

Among the horses at Kis-Bér were many ready for use or for sale, and among these were several very superior saddle and carriage horses, and some well adapted to make weight-carrying hunters. There is a yearly sale, but great dissatisfaction was expressed at the spiritless character of the bidding and the amount of collusion which exists even among gentlemen.

The following English thorough-bred sires, once well known in England, were seen in excellent condition in this somewhat remote locality. Buccaneer was in good form, and is most highly esteemed as a sire; also Cambuscan, Diophantus, Ostreger, Polmoodie, and Tarquin. Highflyer, and Pride of England, two very fine horses, represented the best type of Norfolk trotters, and are greatly admired in their new home for their strength and action. A fine assortment of mares by Alert, Stockwell, Pyrrhus the First, Ivan, Flying Dutchman, Saunterer, Orlando, Lord of

the Isles, Kingston, Trumpeter, Rataplan, Chanticleer, Touchstone, and other noted English racers were also seen.

It was indeed with some regret that I witnessed here, as well as in many other places, the transplanted material which becomes year by year rarer in our own country. The Austrian Government buys the best blood in England at any price, which our "individual enterprise" parts with for gold. Might not our own Government enter the market and secure noted sires for the general good of the country?

The horse stock at Kis-Bér consisted in December last of 452 head, comprising 10 stud horses; 32 2-year-old stallions; 26 yearling ditto; 48 weaned foals; 2 suckers; 165 brood mares; 1 4-year-old mare; 20 3-year-old fillies; 22 2-year-old fillies; 29 yearling fillies; 48 weaned fillies; 1 sucking ditto; 2 geldings; 12 work horses; 14 servants' horses, and 17 csikos or mounted herdsmen's horses. The estate of Kis-Bér has furnished an average profit during the last ten years of 2000*l.* or about 4*s.* per acre over the entire domain.

Barbolna.—I was sent on from Kis-Bér behind four fine horses from the Imperial stable, to Barbolna, where I was received by Major Friedrichs, who has charge of this the second Imperial stud visited. Barbolna is situated on the right side of the Danube 10 to 18 miles west of Komorn, and is 10,079 acres in extent, all being in a ring fence, and divided by means of acacia drives. The soil varies from clay to sand and gravel, and good black soil, and is from 1 to 3 feet in depth; 8023 acres are in arable cultivation. Here also oxen and horses are employed in tillage, and the same implements, with the addition of Priest and Woolnough's drill, were to be seen. Major Friedrichs treated me to a rare show of Arabian stallions and brood mares. The stud on the Barbolna estate was established in 1790, and consists of thorough and half-bred Arabians. They appeared small after the fine English thorough-breds of Kis-Bér, but are exceedingly beautiful and very docile. The head is characteristic, and the colour varies from chestnut to dark-brown, iron-grey, and white. I also saw three pure-bred black Arabians, which are considered rarities. The 2-year-olds bred under the management of Major Friedrichs were larger than the 3-year-olds previously bred, and his yearlings and foals were very promising. The fine lofty, wide, and long sheds, both here and at Kis-Bér, for housing young horses, are quite worth inspection. Standing in the centre of a spacious court I had a good opportunity of noticing the fine action and fiery pride of the true Arab horse, as numbers of them were passed around in review. It was a sight which I shall never forget. As at Kis-Bér so here, the young stallions are sent out

at four years old to the depôts, and from the depôts they are distributed to the different parts of the country, where the small Hungarian horses of mixed Arabian and Turkish origin, and therefore of allied blood, are to be found. The four or five years old mares are, when good enough, brought into the stud, or sold for breeding purposes to private purchasers. The inferior fillies are disposed of in the market. The Barbolna estate is superintended by a director, 2 stewards, 1 assistant for outdoor work, 2 assistants for the office, and 1 book-keeper. The stud is under Major Friedrichs and his own staff of grooms, csikosen, and military servants.

Mezöhegyes.—This is the last great stud estate of the Crown of Austria. I had taken the train from Zombor to Maria-Theresiopel, over the dead level of the Alföld to Szegedin, crossed the Theiss, and continued over an uninterrupted dead level of rich black soil, known as the Banat, to Oroshaza, where a waggon and pair of good horses awaited to take me forward to Mezöhegyes. I had left Maria-Theresiopel at 10.30 P.M., so that a considerable portion of this country was passed through in darkness; but from early dawn to six o'clock I had watched the uniform continuation of flat rich country, half tilled, and languishing for want of labour and capital. My road now lay through the usual type of a small Hungarian town—unpaved, dirty, and yet picturesque, with its detached peasants' houses and primitive stores. Then through an exceedingly rich district, owned by peasants, and cultivated in slovenly style. The crops, which were now being harvested, often presented the appearance of a mass of thistles, and some of these consequences of the primeval curse raised their heads, as I myself measured, 4 and 5 feet above the level of the standing corn. Often the peasant, in cutting his crop, had gone round the larger thistles rather than undertake the work of knocking them down, and now they stood like little trees among the stubble. The road next led through an estate of Count G. Karolyi, where were some heavy-strawed wheat crops, with only badly filled ears. Again we passed through a tract of peasant-land, and a fox, apparently charmed with the novelty of a carriage and pair, ran parallel with us for a considerable distance. At last we entered the domain of Mezöhegyes, on which the land is all equal and rich, like that which has already been noticed, and which indeed constitutes the true *Tiefland* of the great Alföld or plain of Lower Hungary. Harvest was commencing, but I was not favourably impressed with the agriculture. Labour is scarce, but this seemed hardly enough to account for the slovenly state of the fields, the banks of thistles through which I should have liked to drive a reaping-machine, and the pastures choked with tall weeds of various

kinds. I was disappointed to find the agriculture on this vast Imperial estate apparently not superior to that of the surrounding peasants, and in this it offered a contrast to the neatly cultivated estates of Upper Hungary. I was now far south, and the oriental laziness, which has often been observed as belonging to this part of Europe, seemed to be exerting its sway. The domain comprises 39,618 acres, and is managed by 1 director, 6 stewards, 8 assistants, 1 builder, 1 forester, and 1 head-machinist. There is a stock of 800 work-oxen, 330 cows, 26 bulls, above 1000 swine, and young stock in proportion.

Fig. 2.—*Plan of the Imperial Stud Estate at Mezöhegyes.*

1. Schagy stud.
2. Cows.
3. 1-year-old stud.
4. Work oxen.
5. Gidran stud.
6. Almásy cattle herd.
7. Pigs.
8. 2-year-old oxen.
9. Work oxen.
10. 3-year-old stud.
11. 2-year-old stud.
12. First English mare stud.
13. Work oxen.
14. 2-year-old pigs.
15. 1-year-old bulls.
16. Second Nonius stud.
17. Young pigs.
18. Cattle.
19. First Nonius stud.
20. Work oxen.
21. 2-year-old bulls.
22. Lipicza stud.
23. Second English stud.
24. 1-year-old pigs.
25. 3-year-old oxen.
26. Majesto stud.
27. 3-year-old pigs.
28. 1-year-old oxen.
29. Probably barn for corn in sheaves, and hay.
30. 1 and 2-year-old oxen.
31. Csaky (Hungarian improved herd, for which this estate is famous) breed of cattle.
32. Work oxen.
33. Machine and implement depôts.

It is, however, with the stud that we have at present to do, and when I add that there are 650 brood-mares, some idea will be realised of the magnificence and extent of this undertaking. I am glad to be able to assist the reader by the accompanying plan (Fig. 2), which also gives a good idea of the manner in which an Hungarian estate is traversed by roads lined with acacias. The stud is managed by a separate staff of officials, all of whom are soldiers dressed in uniform. Mezöhegyes gives the idea of a military station of some importance, and the grand ranges of stables, offices, and residences is most imposing. At the head of the stud is Colonel Horváth de Szalaber, who received us most hospitably, and took great pains to explain his system of breeding horses, which he has reduced to a science.

I will first quote from a letter, in which Colonel Horváth gives his own account of the origin and present state of his stud, and then narrate what I myself saw at this wonderful place :—

"Dear Mr. Wrightson,— "Mezöhegyes, Nov. 16, 1873.

"You will be very kind in excusing my late answer, but the auction, the Exhibition at Vienna, where I have been with so many horses, and the guests visiting Mezöhegyes, kept me from writing to you sooner. My answers shall follow your inquiries in the same order.

"1st. The stud was constituted in 1785.

"2nd. The race of horses is throughout half-bred. We have had two studs of half-blood Arabian mares (Schagya and Gidran) since the years 1825 and 1827. Two studs of English mares (Furiosa and Abugress) since the years 1841-42. Also the family of Nonius, obtained from France in 1815. Two studs of the ancient blood of Lippicza, which is a mixture of Spanish and Arabian blood, since the year 1807 ; and lately, within the last ten years, we have begun to form a stud of Norfolk blood with stallions of that race and mares of different indigenous families.

"3rd. We have 650 mares, or thereabouts, namely, 69 Schagya, 67 Gidran, 72 Furiosa, 76 Abugress, 38 Majestosa (Lippicza blood), 75 Conversano, and other imported mares from Lippicza, 220 Nonius mares, and the rest are of Norfolk blood, bred here.

"4th. The sires used in bringing out the Mezöhegyes stud are either thorough-bred English and Arabian stallions, or half-bred stallions belonging to the families already mentioned, and for long established at Mezöhegyes, as explained in paragraph 7.

"In families where there is no possibility of using English or Arabian full-blood horses with advantage, I employ stallions of the same blood, taking care not to breed too closely.

"5th. The original character of the mares which at first composed the stud was a mixture of Arabian and Hungarian blood, but for the last 30 or 40 years it has been gradually transformed by imported sires.

"6th. The object of the stud is to produce stallions of various size and blood for the use of the different parts of the kingdom.

"7th. The principle kept in view in breeding is very simple. It is the gradual improvement of a family by the introduction of nobler and higher blood, while at the same time the type of the family is retained. Where I want more blood I apply full-blood horses according to the previous breeding of the particular family. The produce, when strong enough, is served once more by a thorough-bred, and then I return back to a sire of the original

strain of the family. Take, for instance, the Schagya, a half-bred Arabian family. A Schagya mare, for example, is allied to a full-blood imported Arabian horse, and the female produce is then served by a Schagya stallion; or a Furiosa stallion serves the produce of an English thorough-bred stallion and a Furiosa mare. If the produce is strong, she receives the full-blood English or Arabian according to her family. If she is sufficiently noble and elegant, she is mated with a half-bred of her own particular type.

"It is, in fact, a system of breeding from a half-bred stock with the occasional use of thorough-breds when there is a tendency towards coarseness.

"8th. In answer to the question whether English blood is still likely to be required, the foregoing remark shows that there is still a use for English blood.

"9th. In answer to the question, 'Do you hope to establish fixed or permanent half-bred races which may be bred truly *inter se?*' the answer is, The families of Nonius, Majestosa, Gidran, and Schagya are already constant; Furiosa, Abugress and Norfolk breeds will require 10 or 12 years more of careful breeding."

There is great difficulty in obtaining first-rate Arab stallions, as the Arabs will not sell their best blood. Colonel Horváth is now trying to breed a stallion at Mezöhegyes for the Schagya family, and showed me three exceedingly beautiful foals, the result of crossing a Schagya mare with a Gidran horse.

Constant illustrations of the above system of breeding were seen during a long drive. We first examined 160 yearling fillies of all families mixed, and subsequently came upon the following groups grazing in spacious pastures, attended by their csikosen: 36 Nonius mares, with their foals, nearly all bay, with black points; 4 farm-horses, bred between a Norfolk stallion and half-bred Nonius mares; 46 fine two-year-olds, all, with the exception of 7, fine greys, bred between Arab and Spanish parents; 23 mares with foals, and 6 fine hunting-horses, among which was a wonderfully fine mare by Chieftain, a son of Chief Justice, and from a Gidran mare.

Various lots of horses, of fine type, were also visited, and we also examined the celebrated Mezöhegyes herd of Hungarian cattle, and the fine Mangolicza swine.

The love of horses has taken deep root among the landed proprietors of Hungary, and the improvement of the horses of the country is enthusiastically carried on in private studs, as well as in those under the immediate control of the Government.

On Count John Palffy's estates Mr. Robinson has the management of 17 to 20 capital half-bred brood mares, and one thorough-bred—Cygnet. These have been allied with Actor, by Leamington out of Actress; North Countryman by Cotswold, the property of Count Esterhazy; a son of the celebrated horse Gladiateur; and other good horses, both of English and Arabian descent.

Count Antal Esterhazy, of Lanschütz Castle, near Presburg, has two excellent studs of English horses, managed by one

English stud-groom. The Count believes that in time they will be able to establish a race of saddle-horses which can be relied upon to breed truly without further importation of English blood. The average realised at Count Esterhazy's sale of young horses in the spring (1873) was 2800 fl. over 9 head, or about 31*l.* each. He also had sold a colt by Carnival for 5600 fl., or 560*l.*

Count Waldstein maintains a capital stock of English thorough- and half-breds at Csicso, near Komorn, on the Danube. There I saw the old mare Gambia, and the sire Flying Cloud. Albert, North Countryman, and Pride of England were also all represented in this stud.

The result of much observation was to show me that the best horses in Hungary are descended from English stock. The cart-horses also are often the result of crosses with English horses. They are not of the heavy character of English draught-horses, but light, spirited, active animals, standing 15 to 16 hands high.

The Archduke Albrecht has imported Clydesdale horses into his estates in Lower Hungary; but, with this exception, no other horses but thorough-breds and Norfolk trotters were to be seen from Britain. I also saw on the estate Bellye, some half-breds between Clydesdale horses and Styrian mares. The mothers were red bay and light bay, inclining to chestnut, with black points. They were high in the rump, and on the whole well formed.

Agriculture.

Hungarian Agriculture labours under many disadvantages; among which may especially be mentioned an extreme climate and a scarcity of labour. It is, in a general sense, exceedingly simple and uniform, so that a run through Upper and Lower Hungary gives the traveller a good general impression as to the mode of cultivation pursued. I was sometimes disagreeably aware of this uniformity, when travelling for several days in succession over level tracts, cultivated by peasants or by large proprietors, in which the same objects and methods repeated themselves to a tedious extent. Some of the general peculiarities of the country have already been pointed out. The frequency of bare fallows, and the entire absence of turnip culture throughout Hungary, owing to the heat of the summers, is very noticeable. Sugar- and fodder-beet (mangold), especially the latter, are grown in large quantities, and take the place of our root crops. Folding sheep on the land is never practised, either in summer or winter, but the whole of the beet and fodder crops are carried to the buildings, there to be cut up for cattle and horses. Clover and lucern are very largely cultivated,

forming pastures for sheep, and furnishing a supply of hay. Vetches and oats mixed are very generally used as fodder crops throughout summer, and the damp and rather cold season of 1873 particularly favoured their growth. There appeared usually to be only one sort of wheat, one sort of rye, and one sort of barley cultivated, and these crops covered a large proportion of the country. A good deal of corn is cut green, especially upon peasant-land, to supply fodder during the hot months. Artificial manures are never used, and only once did I see oilcake, or any artificial and extraneous sort of cattle or sheep food. Rape is also a favourite, and magnificent crops of it were to be seen. Oxen are almost universally employed for working the land, and ploughing is generally shallow and imperfect. There is as yet no steam ploughing or cultivating. Turning to live stock, we find the Hungarian ox, the merino sheep, and the woolly Hungarian swine, almost in complete possession of the field. Drilling is extending, and is becoming general on the large estates, as also is reaping by machinery and threshing by steam. Broad-casting, hand-reaping, and treading grain out by horses, are, however, still practised in many districts.

Agriculture without artificial manures and foods, robbed of steam cultivation, and having no great diversity of animals and cultivated plants, loses many of its most interesting points as a study, and hence, after English farming with its multitudinous and important problems, that of Hungary falls somewhat flat.

Rotations.—Rotations of crops are very strictly adhered to in Hungary, and often are made out prospectively for 20 years, and then rigidly kept. In this particular Hungarian agriculture differs from our own, for it is not too much to say that in England the tendency is to slacken the cropping restrictions imposed on tenants. It would be wearisome, and perhaps unprofitable, to give a large number of these rotations, varying as they do in every conceivable manner, from a 3 to an 11 years' course. At Ungarisch-Altenburg, upon the Archduke's estate, no fewer than 36 different rotations are in use, and from the elaborate manner in which this and other subjects connected with scientific agriculture are studied, probably some principle lies at the foundation of each.

Sometimes green crops predominate, and in other cases the rotations are very scourging or severe, indicating very rich land. The following are examples :—

1. Barley.
2. Rye.
3. Millet (*Panicum italicum*).
4. Maize.

1. Peas, mixed Fodder.
2. Wheat.
3. Maize.
4. Barley.

1. Maize, Sugar-Beet.
2. Fodder, Peas.
3. Wheat.
4. Maize.
5. Wheat.

1. Maize.
2. Wheat.
3. Beet (Fodder).
4. Barley or Oats.

1. Millet.
2. Barley or Oats.
3. Peas.
4. Rye with Lucern.
5. Lucern.
6. Lucern.
7. Wheat.

1. Maize.
2. Barley.
3. Rye.

1. Peas.
2. Wheat.
3. Maize.
4. Oats.

1. Sugar-Beet.
2. Barley.
3. Peas.
4. Rye with Lucern.
5. Lucern.
6. Lucern.
7. Wheat.

1. Maize. 2. Oats. 3. Peas. 4. Rye, with Lucern. 5. Lucern. 6. Lucern. 7. Oats. 8. Mixed Vetches and Oats. 9. Wheat. 10. Maize and Oats. 11. Oats and Wheat.

Rotations upon Count John Palffy's estates in Upper Hungary were as follow:—

1. Fallow, dunged.
2. Rape.
3. Wheat.
4. Maize.
5. Barley.

1. Fallow, dunged.
2. Wheat.
3. Maize, Fodder.
4. Barley.

1. Fallow, undunged.
2. Rye.
3. Potatoes and Maugold.
4. Barley or Oats.

One or two fields will also be sown with lucern after the last-named crop of barley.

Mr. Butter, Verwalter at Kœnigsheiden, near Presburg, gave me the following two rotations, as in use upon the estate under his charge:

1. Fallow, dunged.
2. Wheat.
3. Barley.

1. Fallow, dunged.
2. Wheat.
3. Barley.
4. Clover, cut twice.
5. Clover.
6. Maize (Fodder).
7. Barley.

In Lower Hungary, upon the estate Bellye, a common rotation is,—

1. Clean or cropped Fallow.
2. Wheat (Winter Corn).
3. Green Fodder.
4. Barley or Oats (Summer Corn).

Again a 10 years' course is in use,—

1. Fodder.
2. Wheat.
3. Fodder.
4. Oats, with Clover.
5. Clover.
6. Clover.
7. Clover cut and then fallowed.
8. Wheat.
9. Fodder.
10. Oats.

Upon Schwarzwasser estate the rotation followed is,—1st year,

Fallow. 2nd, Rye or Wheat. 3rd, Mangolds or Potatoes after the Rye, and Indian Corn after the Wheat. 4th year, Barley. About 2 fields of lucern are kept down. The fallows are seldom dunged for rye, but generally for wheat. The mangolds and potatoes are also dunged.

Lastly, upon Mezöhegyes estate the rotation given me was,—1st year, Fallow, or Fodder Mohar (*Panicum italicum*), Vetches and Rape. 2nd year, Winter Grain. 3rd year, Summer Grain. 4th year, Indian Corn. 5th year, Winter Grain. 6th year, Summer Grain.

Cultivation and Manure.—The richness and depth of the soils over a vast extent of the Hungarian plains points at once to the importance of cultivation. *Deeper and more efficient cultivation* is, in fact, the chief direction in which improvement can be at present pushed, and this shows the immense importance of recent improvements in cultivating implements introduced through the establishment of English firms (see last Report).

The wretched shallow ploughing so constantly seen, especially on peasant properties, shows how much remains to be done; but the advantages of a better system are thoroughly appreciated by the agricultural leaders. On many large estates ploughing 6, 7, and 8 inches in depth is now practised, and the improvement in the crops is in consequence very great.

On the Archduke Albrecht's estate an exceptionally good cultivation exists, owing in a great measure to the introduction of Fowler's steam-plough. On the estate Bellye, in South Hungary (Sátoristye farm), the fields, or rather sections, each of which is 40 acres in extent and square in form, have all been done over twice with steam, and the effect showed itself in the fine and level crops of Indian corn and mangold. The improvement is valued at one-fourth increase over ox-cultivation.

The ordinary cultivation of a bare fallow in Upper Hungary is as follows:—

1st. Plough in spring.
2nd. Plough again later.
3rd. About harvest cart out manure, spread it, and plough it in.
4th. Plough a little less deeply for the seed-furrow.

An old but nearly abandoned system of working fallows was—

1st. To cart out the dung on the stubble (in spring), after finishing barley and oat sowing.
2nd. To plough it in immediately, or to leave it unploughed for some time.
3rd. To plough before harvest.
4th. To plough the seed-furrow.
5th. To sow wheat in September.

The improved system which is now being followed on many farms is—

1st. To plough in autumn 8 to 10 inches deep.
2nd. Plough in the spring to bury weeds.
3rd. Plough again in June or July.
4th. Plough in the manure for seed-furrow.

Manuring.—Mountains of two and three-year-old straw and great heaps of unused dung were formerly commonly seen in Lower Hungary. This wasteful system is, however, fast disappearing; and much care is now taken in order to manufacture manure of good quality. Well-squared-up manure heaps and provision at the best buildings for the proper making of this important product I frequently met with both in Upper and Lower Hungary.

Dung is as yet the only manure valued, and there seems to be no prospect of artificial manures coming into vogue, unless it be in the more northern portions of the kingdom. This is apparently owing to the droughty character of the summers, and the native richness of the land; also the absence of turnip husbandry, which deprives the cultivators of the best opportunity for the application of artificials. The dung is often applied in a dry and strawy condition, and this is especially to be seen upon the peasant land, as I noticed at Talos and other places.

On the other hand, the manure is excellently managed upon many estates, as upon Count John Palffy's farms, where dung-pits are provided at every steading. The squared-up and well-kept manure heaps upon the Archduke Albrecht's estates were most worthy of commendation, as was almost everything else to be seen upon them. The general management upon these estates must not, however, be used as an illustration of the agriculture of the country, as they are decidedly superior. In the matter of dung-management, I met many examples, among which may be mentioned that of Count Alexander Erdödy, near Steinamanger, and of Count Széchenyi, at Zinkendorf, where the steward makes his manure heaps with alternate layers of dung and earth, to which a little gypsum is added. The heaps are well squared up and watered with liquid manure from tanks beneath the heaps. Gypsum is also sprinkled in the cattle-stalls.

H. Benke, steward at Vamosfaln, on the Schütt district, told me that he could only manure his poor land once in ten years; and when a field bearing a light crop was passed, the explanation was that no dung had been applied.

Fodder-Crops.—I was particularly requested to notice "any novelty in the use of green crops used by the farmers where grass is scarce, which might be applicable to British agriculture."

So far as growing forage-crops is concerned, we have not much to learn from Hungarian practice. Attention has already been directed to the cultivation of maize in England, but so far without much success. Its great prevalence not only over Hungary, but also in Silesia and Saxony, even in high-lying districts, indicates considerable hardihood, while the large number of varieties which cultivation has produced encourages the hope that still hardier sorts might be propagated. If maize or Indian corn could be established as a fodder-crop in England, it would, no doubt, be a great assistance to the stockkeeper.

Professor Tormay, of Pesth, writes to the 'Agricultural Gazette,' 1874:—"The number of pastoral herbs that thrive well in the great Hungarian plain is very small. Lucern is the only one on which we can rely in those parts of the plain where the subsoil water lies deep. Red clover and sainfoin do not thrive well. The principal safe and early green forage crop is rye sown early in autumn. When this begins to turn old, the first cut of lucern is ready. After this comes millet or 'Mohar' (*P. italicum*), which gives an excellent fodder for oxen and cows in its fresh green state if not too old; for sheep and horses it makes a capital hay. For pigs we have plenty of provender in the shape of maize and pumpkins."

In the management and preservation of fodder-crops, the Austrians and Hungarians are in advance of English agriculturists. Almost all green food is cut with chaff-cutters and used in the house. On no occasion did I observe sheep or cattle "folded" on fodder-crops. The heat is too great and the green food is too valuable to allow of such a system, and consequently all is brought home, and the greater part is consumed by cattle. It was strange to observe the care with which fodder was treated, and to hear the exact weight per head per day required by a stable of cows or work-oxen.

The system of making "sour-hay" is also well worth the attention of English agriculturists. It is done by digging long graves or trenches, 4 feet by 6 or 8 feet, in depth and breadth, and cramming the green grass or green Indian corn tightly down into them, covering the whole up with a foot of earth. The preservation is complete, and the wetter the fodder goes together the better. No salt is used, and the operation is as simple as it appears in the description. (See Fig. 5, p. 377.)

This sour-hay affords a capital winter fodder, and when cut out with hay-spades, it is found to be rich brown in colour and very palatable to stock. The making of sour-hay is very similar to the process of preserving "pressling," or sugar-beet pulp, which also is stored in long graves until wanted for winter's use.

All fodder and hay for sheep, cattle, and horses are placed at

once in their respective stables, and it is seldom that a rick of hay or other fodder is to be seen out of doors. As may be imagined, the lofts over the stock-stables are very commodious (see *Buildings*). Clover, lucern, millet, Mohar and Hirse (millet), are all in very general use as forage-crops.

Sugar-Beet.—The cultivation and manufacture of sugar is not carried on so generally in Hungary as in other parts of the empire. The soil often contains too many salts, and especially soda-salts, to favour the production of the best quality of sugar. At Zinkendorf, near Œdenburg, there is a large sugar factory upon Count Szechenyi's estate, where from 17,000 to 20,000 tons of beet are annually used, and yield 9 to 10 per cent. of their weight of sugar. The quantity to which they are liable for excise duty is 943 cwt. daily, and the work of sugar-making is continued from the beginning of September to the end of February. They grow a large quantity of sugar-beet, and purchase it at the rate of 1*s.* 1*d.* to 1*s.* 2*d.* per cwt., delivered at the factory, and the pulp, which amounts to 17 per cent. of the beet, is given back. There are at the present time only twenty-six sugar-factories in Hungary.

Pasture Land.—Pasture land is fast diminishing in Hungary. According to statistics collected in 1853, the following proportions of the productive land of the country were found to exist:—

Arable land	40·43 per Cent.
Vineyard	1·61 ,,
Meadow and garden	13·87 ,,
Pasture	17·19 ,,
Wood	26·19 ,,

These relations have been much altered of late years. Since the river courses have been regulated, hundreds of thousands of acres, which were formerly lying as pasture or reeds, have been laid dry and converted into the richest arable land. Also thousands of acres of sound pasture lands have been broken up by the plough. I was constantly meeting with instances in which pastures had been broken up, and there is good reason for supposing that more and more land will be devoted to corn-growing. The system of managing these pastures is bad, and consequently they become poorer yearly. Although 1873 was a good year for pastures, I was frequently struck by their poverty, especially at Bösing and near Presburg. They are unenclosed, and constantly grazed by sheep and cattle, which, being invariably driven home at night, carry the food-constituents to the manure heap, and from thence it passes to the arable land. In Upper Hungary much of the pastures ought to be broken up, as the soil and climate are not suitable for grass, and they would evidently be more profitable as arable land. The Hungarian agriculturists value their pastures as being well adapted for the

growth of fine wool; but as this commodity is likely to give way to longer and coarser wools, there will be less inducement to preserve these poor grazing grounds.

In other localities natural pastures of better quality were observed, and I must especially notice a fine tract of 1600 acres in extent, situated at Tarnok, in the midst of a singularly rich district of the Presburg Comitat. It is divided into two parts by a fine avenue of poplars, and further, into square portions, of from 8 to 16 acres, by rows of trees. One or more of these portions of meadow is allotted to each district of the Palffy property.

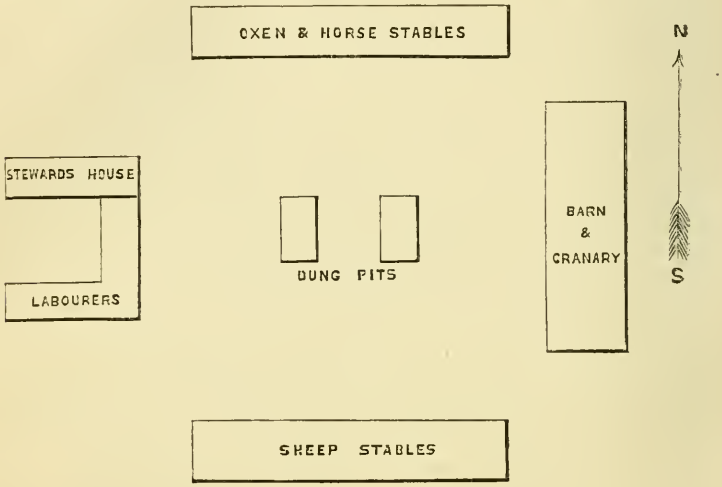
Again, in Lower Hungary, I shall never forget the wooded pastures on the sides of the Danube, between Lak and Essegg. They may generally be described as wild in the extreme, traversed by almost impassable roads, and grazed by fine herds of cattle. In my notes upon the Bellye estate I find the following passage :—"Drove down to a large rough pasture encircled with woods, where we saw the 'Menes' or stud of horses attended by the csikos and his boy. The attendants are careful to keep the horses quiet, as when they once begin galloping they are very unmanageable. Then on to inspect a fine herd of young bulls, and leaving them we jolted over very rough ground, requiring careful driving, to the Danube side and along the top of the embankment for some time. Afterwards drove into the wooded pastures through morasses overhung by trees, the air resounding with the croaking of frogs resembling hounds in full cry. The steward who accompanied me shouted in vain for the herdsman, but after an hour's driving we came upon him suddenly with his gulya or herd of cows." Also, "in the middle of the woods came upon a pig colony attended by herds," who constantly remain with them day and night, summer and winter. The swine are sheltered in summer in rough sheds, and in winter remove to a more permanent steading. The land was in a natural state, and the grass was frequently in tussacs or hassocks, but evidently capable of great improvement. No backwoods of America could be more desolate, and for four hours I saw no trace of human habitation.

Farm Buildings.—The general scheme of the farm-buildings of Hungary is pretty uniform. They form a spacious quadrangle, and are generally arranged as shown in the accompanying figure (next page), illustrating the Maholány buildings on Count John Palffy's estate.

At Tarnok on the same estate there is a fine granary with spacious cart-sheds and store-houses beneath. The granary is furnished with two floors and a seed floor in the roof. An ingenious sack-lift is used for taking up the grain to the highest floors. A bullock-shed occupies three sides of a square, and is fitted

for the accommodation of 120 cows in a double row, with side space for calves. The building is 44 feet wide and 240 feet long.

Fig. 3.—*General Plan of Farm-Buildings at Maholány in Upper Hungary.*



The Hungarian bullock-stables are often worth inspection. They are spacious, and roofed by stone arches springing from fine pillars which extend along the centre of the building. These handsome, whitewashed, vaulted buildings reminded me of the crypt of some cathedral, and appeared equally permanent. When filled with a double row of handsome Hungarian oxen standing head to head, their fine horns forming a central avenue, the effect is very imposing. Such is the bullock-stable at Kœnigsheiden.

The sheep-stable is a long rectangular building divided by hurdles for the different sections of the flock, and furnished with pens for rams. Some of these stables are L shaped, and are of great size. One visited at Harkányi estate (Tokay district) housed easily 780 lambs, and was 100 feet long by 22½ feet wide; 638 ewes were seen resting at mid-day in another shed on the same farm.

The farm-buildings upon the Archduke Albrecht's estates, both in Upper and Lower Hungary, rival anything of the sort in England for the grandeur of their general plan, the excellence of their construction, and the elaboration of their internal fittings. Guide-ways and turn-tables carry trucks of both food and manure to their destination, and every contrivance of modern

agriculture is adopted. Such buildings must not, however, be thought to represent Hungarian homesteads in general, which are, in the majority of cases, arranged as in the above given figure.

Live Stock.

Cattle.—The cattle of Hungary have been already described (p. 31). Statistics obtained in 1870 showed that there were 15,077,000 cattle in the kingdom, and this was a diminution of 6 per cent. upon the number reported in 1857. That cattle are diminishing in Hungary is undoubted, and the cause is easily found in the breaking up of the natural pastures of the country, as already noticed. Another cause assigned, is that of the frequent occurrence of rinderpest, which has not only destroyed many cattle, but, especially among the peasants, caused oxen in many cases to be given up for horses. Thus, while cattle have diminished in the above-named ratio, horses have increased (1857–70) 3 per cent. I often inquired if many oxen were sold off the estates visited, and the universal answer was that they could scarcely breed a sufficient number to supply themselves with draught animals. There is a considerable interchange of stock between the various provinces of the Austro-Hungarian empire; and Hungary, no doubt, supplies the countries of Bohemia, Moravia, and Silesia, with many superior draught animals. Also the Vienna market is supplied to the extent of one-half by Hungarian fat cattle. It does not, however, follow from this that Hungary can be looked to for a supply of cattle for the English market, and I think we must come to the conclusion that, for the present at least, we must look elsewhere.

Herr von Kenessey, secretary to the Minister of Agriculture, in Pesth, sent me the following tables of the comparative value of Hungarian exports and imports of cattle during three recent years.

Imports.

	Florins.
1868	6,140,540
1869	4,425,570
1870	4,014,310

Exports.

1868	3,410,034
1869	6,258,694
1870	3,468,260

He had no later statistics.

Baron Max Kübeck, *Conseiller de Legation*, Vienna, obtained some information from Professor Wagner, of the Hungarian

Ministry, which he forwarded to me. Hungary during late years has exported 50,000 head of cattle per annum, and about 250,000 cwts. of meat and grease (probably lard and fat). About half the supply of fat cattle for the Vienna market comes from Hungary. The markets for Hungarian draught-oxen are principally found in the Austrian provinces of Bohemia, Silesia, Moravia, and Lower Austria.

Baron Kübeck also supplied information on another point of interest, namely, the cattle plague. He wrote as follows:—"The cattle plague (rinderpest) shows itself every year in Hungary, but generally only in a sporadic manner, without claiming many victims. The quarantine has lately been most excellently organised between Podolia, Russia, and Hungary, so as to cause us to expect with all certainty the entire removal of the evil, the more so as the cradle of this disease is in more eastern countries than our own. The cattle plague is, however, also acclimatized in the more western countries of Europe. It does not now appear with its former virulence, and is not so fatal in its attacks. The western races of cattle, as well as such eastern ones as the Hungarian and Podolian, have become hardened against and less liable to this plague." Further, with respect to the method employed for effecting the arrest of the disease, the Baron writes:—

"A continuous quarantine against the east; prohibition of any export of cattle during the existence of the plague; quarantine in each individual district (comitat) of the country in which the plague appears. The strictest and most energetic measures are also used by the official executive officers in keeping the quarantine."

Working Oxen.—One of the pleasantest sights in Hungary is the long teams of majestic oxen either ploughing or drawing the Hungarian waggon over the rough roads.

I have seen twenty-three teams, of four oxen each, ploughing in one field. One ploughman guides both plough and oxen without the assistance of reins or a driver, and all is done with the voice and whip. In Upper Hungary I saw oxen engaged in carting hay home from a distance which would only allow one journey to be made in the day.

Sheep.—A description of the Merino sheep will be found, together with remarks upon merino wool, in my Report upon the Vienna Exhibition. The Merino sheep may be said to occupy all the sheep-stables of Hungary, if we except a few Southdown crosses, seen upon the estates of the Archduke Albrecht and Count A. Erdödy. They are housed in sheep-stables every night in summer, and day and night in winter. In summer they are also housed during the hot hours of the day. They graze on the natural pastures, and are never folded on forage crops as

in England. Neither must they ever be out in the rain, and on the approach of a shower the shepherds hurry them home. They follow the shepherds like dogs, both in and out of their stables, and he leads them to the pastures in true oriental style.

In April the flocks are classed according to the quality of their wool, and the examination is conducted upon the principle already explained (p. 41). There are two lambing seasons; the first in April and May, the second in August and September. Lambing takes place under cover, and the ewes are good mothers, but middling milkers. Shearing takes place in May, and is done by women, who shear in a shearing-house with strong scissors. Washing is very carefully attended to, and is done in cold or in hot water. In cold washing they are dipped two or three times, and then allowed to stand and sweat to soften the dirt. They are then washed with the hand and swum through clean water. In hot washing they are first dipped two or three times in cold water to soften the dirt, then they are washed in a large tub in warm water with soap, and lastly douched in cold water. Some flock-masters are now clipping their sheep dirty, and selling the wool to the factory washers, who wash the wool and preserve the potash contained in it. The lambs falling in the spring are washed and clipped in August, and yield about ¾ lb. of wool.

As wool is the principal object in keeping sheep, the wethers are kept on to ten and even thirteen years old. The old-fashioned practice, fifteen to twenty years ago, was to feed in winter upon coarse hay and straw. Mangold-wurzel is now generally used for breeding-ewes, and this is pulped and given mixed with hay and straw-chaff. The stock or store sheep at the present day only receive mangold upon the most advanced estates. Corn or cake is never given unless to rams, and occasionally to lambs and culls which are fatting.

The cull sheep are run on the stubbles, and are then sold to the butchers at low prices, being only culled on account of extreme old age. This is the course upon less advanced estates. Where a more enterprising management exists, and especially where there is a distillery, the culls are fed through the winter upon wash and mixed meals, and are sold fat in the spring either rough or shorn. Examples will be presently given of sheep-feeding under the best circumstances.

Upon large estates the sheep flock is divided into sections, according to quality. Thus, for example, on Count John Palffy's estates the fourth-class flock is always kept on two particular districts; the third, second, and first classes also have their localities, as also the Pepenier or highest quality of flock. In April, when the sheep are thoroughly inspected, any bad or

worn-out sheep are culled, and any excellent sheep are promoted into the flock above them.

Meat Manufacture.—Oxen are worked up to 13, 14, and even 17 years of age, and are then fattened and sold. Sheep are shorn until they are 8, 10, and even 13 years old, and are then turned into inferior mutton. The oxen are essentially workers, and the sheep wool-producers, so that superior beef and mutton can scarcely be looked for under such conditions.

The cattle are highly esteemed, and are not likely to be supplanted by imported breeds for many years to come. Sheep, on the other hand, are declared to be unprofitable (see last Report), and require to be crossed with English races.

Although the quality of the animals to be fatted is not usually high, I found great attention was given to the subject of fattening stock, and the utmost precision observed in mixing the foods and apportioning them to the various animals.

The following instances of what I saw will best illustrate the scientific accuracy with which cattle and sheep are fattened on a Hungarian estate.

At Talos I found 259 sheep put up to feed. In winter they had daily received 5 lbs. of potatoes and mangolds mixed, about $3\frac{1}{2}$ lbs. of hay, and summer and winter straw besides. In March and April this food was continued, with the addition of one pint of oats, and in May one pint of Indian corn was substituted for the oats. After May 20th they had received a pint of Indian corn with clover-hay in the morning and barley- or oat-straw at night. After June 10th they received the same food with the addition of one and a quarter pint of oats. A complete list of the weights of all the sheep during various periods of the fattening process was handed to me. The general result was that the sheep weighed, alive, from $86\frac{1}{2}$ to 150 lbs., or, on an average of 259 head, 105 lbs. each. Of this 105 lbs. one-third is said to be offal. These sheep were sold fat at 27*s.* each.

Thirty-seven oxen, of from 13 to 17 years of age, were fat and ready for sale. They had been receiving, per head per day, from the commencement of the fatting period the following foods :—

In January—
37 lbs. of mangolds and potatoes in equal proportions,
$2\frac{1}{2}$ lbs. of rape-cake and chaff,
8 pints of tail barley-meal.

In February the same food was continued.

In March they received—
30 lbs. of mangolds and potatoes,
$2\frac{1}{2}$ lbs. of rape cake and chaff,
12 pints of barley-meal.

In April and May the meal was reduced to 10 pints, and Indian corn took the place of barley-meal; also 6 lbs. of hay was given at mid-day. In June, clover-hay and 12 lbs. of Indian corn, 2½ lbs. of rape-cake, and chaff were allowed.

The total weight of these 37 Hungarian cattle was 489 cwts., or 13 cwts. 22 lbs. each, and the heaviest ox weighed 15 cwts. Of this, 40 per cent. was supposed to be offal. The cattle are fed three times in the day, and all food is weighed out of the store. Even the working oxen and all the other cattle have their portions weighed and bound up separately.

Salt at the rate of 1 oz. per head per week for sheep, and 2 ozs. per head per week for cattle, is allowed.

At Ungarisch-Altenburg fatting cattle were noticed upon a liberal diet, of which the following are examples:—

12½ lbs. of oats,	3¾ lbs. pea-meal,
1½ lb. of pea-meal,	3¾ lbs. oats,
1½ lb. of mixed meal,	3¾ lbs. mixed meals,
1½ lb. of oil-cake,	1½ lb. oil-cake,
1½ lb. malt-combs,	1½ lb. malt-combs,
With cut hay-chaff.	With green food.

Calves of from 6 to 12 months old were receiving—

2½ lbs. of pea-meal,
5 lbs. oats,
1½ lb. malt-combs,
With green fodder.

The oxen were increasing about 2½ lbs. per day upon an average. I was also informed that half-bred Southdown and Merino wethers had been sold fat at one year old for 33*s.* each.

Such cases might be multiplied with profit, for they are in themselves instructive. Since my object in introducing them is merely to give an idea of the system pursued, they seem sufficient for their purpose.

Milk Production.—In a well managed cow-stable a little blackboard hangs behind each cow, upon which her name is inscribed, and underneath the amount of milk she last yielded. A large blackboard, ruled for each day in the week, and for each cow in the byre, gives the aggregate daily yield of milk.

The beautifully arranged cow-byres on the Archduke Albrecht's estates were enlivened by the presence of a multitude of swallows, which are encouraged in order to destroy insects.

Allgau cows at Altenburg were receiving—

2½ lbs. rape-cake,
1½ lb. Indian corn,
1½ lb. wheat bran,
60 to 74 lbs. green fodder.

And this yielded rather more than 7 quarts (6 mass) per day of

TABLE I.—Showing the AVERAGE PRODUCE per ENGLISH ACRE in BUSHELS, TONS,

NAME OF ESTATE.	POSITION OF ESTATE.	BUSHELS PER ACRE.						
		Wheat.	Barley.	Oats.	Rye.	Maize.	Rape.	Other Crops.
Tarnok	Near Presburg	30	37	50	30	17	27	13½ H.* 13½ M.†
Acs	8 to 10 miles W. of Komorn ..	18 to 42	23 to 46	..	16½ to 30	21 to 46	..	..
Kœnigsheiden ..	Near Presburg	28	39	44	30½	20	..	..
Lower Pudmeritz	N.W. Hungary	12 to 20	12 to 22	12 to 20	..	17 to 30	..	..
Boleraz	N.W. Hungary	17	34	25	20	..	..	..
Maholány	Near Presburg	28¾	39	44	30½	20	..	..
Szillard	N.W. Carpathians	22	23	25	..	40 to 50	..	..
Szuha	N.W. Carpathians	30½	13½	10	24	..	..	..
Talos	Near Presburg	30½	44	60	27	34	..	..
Csicso	Komorn	13½	25	34	..	..	20	..
Zinkindorf ..	Œdenburg ..	30½	40½	45½	23½	50¾	..	..
Babolna	Komorn	19 to 26	24 to 31	26 to 33	..	..	..	..
Wittendorf ..	Steinamanger	25⅓	35½	51	23½	34	..	..
Tot-Megyer ..	Pesth Plain ..	23	33	50	25	28½	26	..

LOWER

Ötvönös	Arad	..	..	..	..	..	..	..
Mezöhegyes ..	Csanad	18	28½	26	19	..	26	17¾ H.* 17¾ M.†
Harkányi	Tokay	18 to 20	23 to 25	23 to 30½	18 to 20	20 to 30	13½ to 30½	..

* Hirse, *Panicum italicum.*

and Cwts. upon various Estates visited in Upper and Lower Hungary.

Tons and Cwts. per Acre.						Quality of Soil.
Mangolds.	Sugar-beet.	Hay.	Lucern Hay.	Potatoes.	Other Crops.	
Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	
11	..	3	2½	1	..	Pesth Plain, rich.
7 to 9	..	¾ to 2	..	2⅘ to 5	..	Schütt District, various.
7½ to 10	..	1¼	..	..	..	
10 to 12½	..	½ to 1	..	..	..	Hill Farm.
6¼	..	..	..	..	1 Maize dry	Hill Farm.
7½ to 10	..	..	..	4⅘	1¼ Sainfoin	Schütt, various.
5 to 7½	..	..	10 to 20 cut green	..	..	High mountain.
..	..	¾	..	..	..	High mountain.
15	..	1½	2	7½	..	High lying, but rich.
..	10	..	1½	..	..	Sandy.
..	13	..	..	..	..	Rich.
..	..	..	..	..	..	See page .
15	..	1½ (in two cuts)	..	4⅘	8 tons of green clover	Very rich.
13	10½	21 cwt.	28 cwts.	..	17½ Sainfoin hay	Very rich.

HUNGARY.

..	..	..	..	..	..	
..	..	1½	2½ to 3	..	..	Very rich.
10 to 17½	..	..	1½ to 1¾	..	..	Rich, but hilly,

† Millet, *P. miliaceum.*

milk, on an average for 203 cows in milk, exclusive of 13 dry cows.

Dutch, Bernese, and crossed cows at Casamir were receiving—

$1\frac{4}{5}$ lb. oil-cake,
$1\frac{1}{5}$ lb. mixed Indian corn and barley-meal,
$1\frac{4}{5}$ lb. bran,
44 to 50 lbs. green food,

and were giving 6 quarts per day per milking cow.

Pinzgau cows at Zinkendorf were giving an average of $8\frac{1}{2}$ quarts per day on ten head, and a good Pinzgau cow was said to yield 10 to 11 quarts per day throughout the year except three or four weeks when dry. They were receiving $3\frac{3}{4}$ lbs. of tail barley-flour mixed with wheat and barley-chaff, and 5 or 6 lbs. of hay with sugar-beet pulp. I also heard of one Swiss cow at Zinkendorf that gave 17 to 20 quarts per day for a short time.

At Bellye I found 64 Dutch cows giving an average of 8 quarts per day. Some cows had yielded (June 28th) 17 quarts in the day, others 4 to 6 quarts. The crossed Shorthorns and Dutch cows on the same day had in no instance exceeded $8\frac{1}{2}$ to 9 quarts, and were said to be worse milkers than the pure Dutch. As a set-off, they require less food in the proportion of 6 to 4.

All the cows are fed from a mixture which is composed of oil-cake, bean-meal, millet, and bran, mixed and ground together, and from the resulting heap, food is supplied to each cow-stable.

The Dutch cows consume from $7\frac{1}{2}$ to 10 lbs. of this mixture, and 60 lbs. of green fodder; the half-bred Shorthorns and Dutch only consume 5 lbs. of the mixture and 100 lbs., or even 120 lbs., of green food.

Productive Power of the Soil.

Limited space obliges me to confine myself to a tabular statement regarding this important point. The preceding Table (I., pp. 360, 361) is constructed from answers made to a printed schedule of questions left at every estate visited. An idea has already been given of the crops usually grown in Hungary, which will, with the help of a few more statistics, be rendered more distinct. It will be noticed that upon some of the richest land, such as that at Tarnok, Wittendorf, Tot-Megyer, and Mezö-hegyes, the produce is far below what the soil is capable of growing.

Head of Live Stock.—Details as to the number of cattle, sheep, and horses are given in the case of several large estates. The accompanying Table (II.) further illustrates this point, and also shows the large proportion of arable land which generally exists in Hungary. The figures relating to the area under cultivation, wood, reeds, pasture, &c., as well as those relating to the live stock maintained were all contributed by the

TABLE II.—Showing the ACREAGE and HEAD of LIVE STOCK maintained upon HUNGARIAN ESTATES.

NAME.	Total Area.	Arable.	Meadow and Pasture.	Wood.	Waste.	Vineyard.	Reeds.	Pond-, Buildings, Roads, &c.	Horses.	CATTLE.					SHEEP.				Swine.
										Bulls.	Cows.	Fatting.	Working Oxen.	Stores.	Rams.	Ewes.	Lambs.	Wethers.	
	Acres.	Acres.	Acres.	Acres.	Acres.														
Tarnok	3,430	1,390	1983	..	58	..	..	..	10	6	60	12	60	139	..	..	1050	1060	..
Kœnigsheiden ..	2,500	1,700	620	127	..	..	..	..	19	3	21	16	72	62	165	1,652	702	360	..
Lower Pudmeritz	1,409	1,329	70	..	10	..	..	..	12	..	..	8 to 10*	44	..	..	600	400	300	..
Boleraz	2,170	2,044	240	320	50	..	..	..	12	..	..	10 to 12*	64	..	107	1,050	500	..	..
Maholány	2,295	1,440	480	365	..	..	..	..	10	..	..	9*	56	..	130	1,180	921	612	..
Szillard	4,900	2,114	1100	1580	75	1	..	..	22	..	..	..	70	..	309	1,776	789	509	..
Szuha	2,000	1,256	208	534	..	2	..	..	12	..	..	Culls	44	..	..	1,095	387	548	..
Talos	8,038½	4,931	1010	1235	186	..	8	660	50	4	40	48	200	125	100	2,600	2000	2200	..
Zinkendorf ..	3,014	2,814	170	..	..	..	..	..	16	2	20	..	88	100	150	1,500	1000	1400	..
Wittendorf ..	1,418	1,080	112	140	86	..	..	..	12	2	20	48	44	28	40	750	200†	..	..

LOWER HUNGARY.

Ötvönös	8,532	7,110	1137	55	..	..	..	..	28	2	150‖	160	200	..	40	1,627	1142	1277	1060‖
Harkányi	10,812	7,420	2756	530	106	27	5	..	70 to 80	5	240 to 260	..	340	2 to 300	4500 to 6000				600 to 700
Magoes	34,492‡	20,953	6483	785	1771§	0	113	..	226	..	..	120	600	..	110	11,800	7100	5460	1013

* Culled working oxen.
‡ 5264 acres are let to tenants.
† The surplus ewes and all the wether lambs are sold as fat at good prices.
§ Including roads and buildings.
‖ Servants' stock.

resident stewards. There are no doubt discrepancies, and probably occasional omissions, but the Table may be trusted to give a fair idea of the stock kept upon ordinary Hungarian estates. In all the cases cited, Merino sheep and Hungarian cattle were kept.

Implements.

Throughout Hungary there is a great and increasing demand for English implements. In my Report upon the Vienna Exhibition, I pointed out the superiority of English workmanship over that of Continental makers in general. The impression conveyed by the collection of exhibits in Vienna was fully borne out by subsequent travel, and there is abundant evidence in the present Report that English and American implements are thoroughly appreciated in Hungary. The introduction of English ploughs, through Messrs. Clayton and Shuttleworth, took place in the year 1861; and the use of reaping-machines, as has already been mentioned (see Kis-Szalás), dates from the International Exhibition in London, 1851. Messrs. Clayton and Shuttleworth were the pioneers in both ploughs and heavier implements, such as steam threshing-machines; and Garrett, and Priest and Woolnough, are as well known in Hungary as in England.

The Hungarian peasant is certainly less enlightened, and, for the most part, still uses the old-fashioned native implements. He sows his corn broadcast, although an exception to this rule was observed at Ungarisch-Altenburg; and threshes out his corn with horses. Since one-half of Hungary is possessed by peasants this is important; but enlightenment is gradually spreading from the great estates downwards to the smaller ones, and every year brings changes for the better. The subject of implements is so connected with the general agriculture of the country that it scarcely seems advisable to collect all the observations made upon them under one head. I must therefore refer the reader to the entire Report as containing information upon the subject, as also to the Report on the Vienna Exhibition in the earlier pages of this volume.

Tot-Megyer.

This fine estate, the property of Count Alois Karolyi, lies on the left bank of the Waag, which divides it from the Schütt Island. It is most conveniently reached from Vienna by booking to Tot-Megyer Station, on the Vienna and Pesth Railway. The estate comprises 22,770 acres (16,035$\frac{317}{1600}$ jochs), divided into seven districts, the chief of which is Tot-Megyer proper, with its handsome mansion, clean, pretty village, and com-

modious houses and offices for the officials of the estate. The staff comprises a hofrichter or head-steward, rent-meister, engineer, book-keeper, cashier, and sheep-flock verwalter at Tot-Megyer; and in the seven districts there are 7 verwalters, 8 adjunckten, 1 doctor of medicine, and 1 veterinary surgeon. There are also a pretty church and parsonage, a good school, and a casino, where the stewards meet and enjoy themselves in the evening.

The stewards live apparently very comfortably, having good commodious houses, with out-buildings for their cows and pigs, as well as for a pair of good horses and carriage, for taking them over their wide-lying farms.

The farm-buildings at Tot-Megyer are very fine, and comprise stables for oxen, horses, stud-horses, and foals; feeding-byres and servants' lodgings. These form a large square; and there is also a spacious implement-shed behind the cottages.

The sheep stables are on a large scale, and form a separate square, appropriated to ewes, lambs, and rams.

The workshop comprises accommodation for blacksmiths and wheelwrights on the ground-floor, and for fitters, turners, carpenters, and saddlers above. Thus all the repairs of the estate are done at home, and many new implements and machines are also constructed on the estate.

After inspecting the buildings we drove over the home-farm, passing through a fine alley of trees, on either side of which extended regularly laid out fields of black, free-working soil, which became heavier as the Waag was approached. Next the river are very extensive pastures and meadows, separated from the arable land by a dyke or bank, to prevent the water from flooding the crops when the snow melts upon the Carpathians.

Herds of fine Hungarian cattle, and flocks of 400 and 500 ewes, were noticed; and also good crops of cereals, and espepecially of barley. Sugar-beet was also seen for the first time since I had entered Hungary. It is sown in rows 16 inches apart, and singled to 5 and 6 inches between the plants. After singling and horse-hoeing, the plants are earthed up over the tops of the roots with 2 inches deep of soil. On this estate the beet is sold to the sugar factory at Surany, which is the largest in Hungary. The pulp, which weighs 20 per cent. of the entire sugar-beet, is returned as fodder. On driving to Ondroho, one of the districts of Tot-Megyer, I had the opportunity of contrasting the farming of the estate with that of the adjoining peasants; and, as was usually the case, the comparison was much in favour of the former. The same flat character of country was still preserved, and the acacia-bounded drives continued to form a feature as we passed the district of Logoshalma.

Here we found a spacious farmyard, enclosed by the usual offices of a Hungarian farmery: the ox and horse stables, sheep stables, servants' houses, and granary. In an old distillery, forming a portion of these buildings, I witnessed the style in which the Slavonians, who come to assist in harvest, are housed. A large room was littered with straw, and around the margin reclined many fine-looking slovaks, both men and women, dressed in their peculiar and picturesque garb. Again, driving forward, I once more found myself amid regularly laid out square fields, bearing splendid crops, or pastures in which fine merino lambs grazed up to their eyes in sainfoin, but with no hurdles. There is not a hurdle to be seen in Hungary, not a fence nor a gate. It is impossible to convey a correct impression of such an estate as Tot-Megyer. Its flatness, richness, and vast extent, bounded by no hedge, gives it a character difficult to realise in England, except upon the marsh-land of the Eastern Counties. The following facts regarding it were supplied by the head steward, who was exceedingly hospitable and courteous.

The entire estate contains,—

Acres.		Jochs.	
11,777	=	$8,293\frac{800}{1600}$	arable land.
$3,296\frac{1}{2}$	=	$2,392\frac{317}{1600}$	pasture ,,
$4,646\frac{1}{4}$	=	$3,271\frac{1322}{1600}$	meadow ,,
$30\frac{1}{3}$	=	$21\frac{536}{1600}$	vineyard ,,
$917\frac{1}{2}$	=	$645\frac{152}{1600}$	waste land, comprising roads.
1,550	=	$1,093\frac{465}{1600}$	wood.
49	=	$34\frac{1008}{1600}$	reeds.
$304\frac{1}{2}$	=	$213\frac{1505}{1600}$	park, gardens, &c.
$99\frac{1}{2}$	=	$70\frac{142}{1600}$	let to tenants.
$22,669\frac{7}{12}$	=	$16,035\frac{317}{1600}$	Total estate.

The rotations followed upon the arable portion are of two kinds—a five and a ten years' course. They are as follow:—

I.

1. Fodder Vetches, dunged.
2. Winter Wheat.
3. Sugar-Beet.
4. Barley.
5. Oats.

II.

1. Rape, dunged.
2. Winter Wheat.
3. Sugar-Beet and Mangold.
4. Barley.
5. Winter Rye.
6. Indian Corn, dunged.
7. Lucern or Sainfoin.
8. Ditto.
9. Ditto.
10. Ditto.

In some parts of the estate, according to circumstances, a freer system of cropping is adopted.

The whole of the estate is cultivated by means of 186 horses and 400 working oxen. The crops are sown entirely with Garrett's drills. English reapers, Clayton and Shuttleworth's threshing-machines, and English implements, are in general use.

Three ploughings are usually given for rape and for sugar-beet, and two ploughings are given for wheat, rye, and maize.

The average crops are stated to be as follow:—

	Austrian Metzen.		English Bushels per Acre.
Rape	22	per joch	26
Wheat	20	,,	24
Rye	21	,,	25
Barley	28	,,	33
Oats	42	,,	50
Maize	24	,,	28½
			Cwt.
Hay	21	Vienna centner	21
Sugar-beet	300	,, ,,	300
Mangold	380	,, ,,	380
Maize, cut green			60 cwts. of dry produce.
Lucern			41 ,, ,,
Sainfoin			25 ,, ,,
Red clover			32 ,, ,,

The entire live stock upon this vast area was as follows:—

	Horses.
Stallions	5
Mares	96
Foals	150
Other horses	95
Total	346

	Cattle.
Bulls	5
Cows	77
Work oxen	400
Calves	60
Yearlings	64
2-year-olds	47
3-year-olds	61
Fatting	73
Total	787

	Sheep.
Rams	569
Ewes	7,790
Lambs	4,594
Yearlings	2,630
Wethers	5,890
Total	21,473

	Swine.
Boars	51
Sows	117
Suckers	657
Stores	644
Total	1469

Kis-Szalás.

The estate of Kis-Szalás offers, from its isolated character, a noteworthy example of a Hungarian *puszta*. It lies 14 miles north of Maria-Theresiopel, and occupies a position midway between the Danube and the Theiss. It is the property of the Countess San Martino and the Baroness Puthon, and is at present

under the management of Herr Samuel Nagy, to whom I am greatly indebted for his hospitality and information. The estate comprises nearly 38,000 English acres (35,800 H. jochs),* and consists of black and grey sandy soil of 9 to 18 inches in depth, and varying in tenacity, with a subsoil of sand and gravel. The entire tract is divided as follows:—

	Acres.
Arable	18,550.
Pasture	7,420.
Meadow	1,166.
Unproductive	3,180.
Woods	7,420.
Reeds	212.

The quality of the arable land is further indicated by the yield of crops. Wheat yields 20 bushels, barley 27 bushels, and oats 30 bushels per acre, on an average; and they produce 24 cwts. of hay, 5 tons of potatoes, and 12½ tons of mangold, per acre.

The entire stock maintained upon this large extent of land was, at the time of my visit, as follows:—

200	Horses.
15	Bulls.
140	Cows.
500	Working oxen.
120	Calves.
70	Yearlings.
70	2-year-olds.
60	3-year-olds.
300	Fatting oxen.
1215	

500	Rams.
12,500	Ewes.
4,500	Lambs.
8,900	Wethers.
26,400	

Reckoning five sheep as equivalent to one cow or bullock, 1215 cattle are equal to 6075 sheep. If this number is added to the 26,400 sheep, there is a stock equivalent to 32,475 sheep upon 25,600 acres of productive land—an amount which may compare favourably with the stock upon many an English farm.

An offer of 3000 acres of this land was made to a tenant a few years since at 8*s.* per acre, and it would now be worth 14*s.* to 16*s.* per acre. To the owners it returned a revenue in 1870 of 18,000*l.*, or just about 10*s.* an acre all round; and in 1872 it returned 9000*l.*, or 5*s.* per acre. This estate is surrounded entirely by a belt of sandy desert, averaging about six English miles across. It may, therefore, be viewed as an isolated district,

* 1 Austrian joch = 1·4223 English acre.
1 Hungarian „ = 1·0667 „
1 Metze = 1·6918 English bushel.

the entire population and industry of which is under the control of the stewards of the estate. I ascertained that the population, all of whom are employed on the estate and its breweries, distilleries, &c., amount to 1900 persons, or 5·25 to the 100 acres.

At the time of my visit (July 3rd and 4th) harvest was commencing. Splendid fields of wheat, of 150 acres and upwards in extent, were inspected, and a field is cut without difficulty in two days. They had at that time 310 pairs of reapers engaged, and most of the corn was being cut by hand.

I saw 140 fatting oxen in one byre, which were receiving 4, 5, or 6 lbs. of Indian corn each, according to their size and condition, 5 to 6 lbs. of hay, and as much draff from the distillery as they could drink. The head steward estimated the cost of the food at 1*s.* 7½*d.* per day, and the value of the meat produced at 1*s.* 5*d.* Therefore the dung cost him 2½*d.*, and this was thought satisfactory. These cattle were increasing at the rate of 2 lbs. per day. There were in all, at the time of my visit, 246 fatting oxen, and 150 more will be fatted in winter.

At the central homestead is a distillery, where 340 gallons of spirit are made daily; and a mill, with four pairs of stones, worked by a 60-horse power engine.

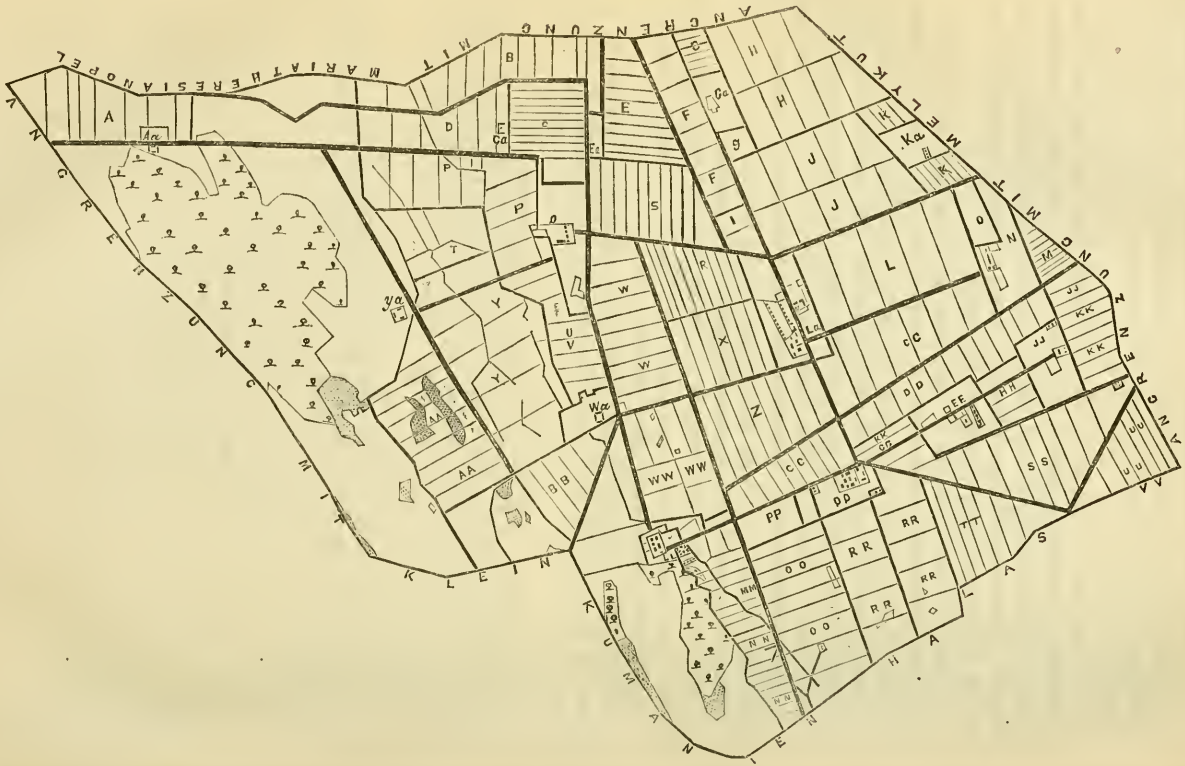
The following is the substance of a note communicated to me by Mr. G. T. Yull, who has known Kis-Szalás for many years:—

No great reform took place in Hungarian agriculture before 1851. At the Exhibition of 1851, in London, the show of agricultural implements attracted the attention of Hungarian visitors, and by the year 1852 English threshing-machines, reapers, ploughs, harrows, and cultivators, were at work on the extensive plains of the Danube, Theiss, and Drave. I was employed as steward on this estate in the years 1855–9.

Szegadin, thirty miles distant, was at that time the nearest railway station, and the roads were (and are to this day) exceedingly bad, being very dusty and sandy in summer, and mud up to the axles of carriages during the winter. There is no material for road-making over the entire plain, and this made—and still makes—communication very difficult, except in frost and snow, when sledges are used. At that time the stock of implements was very poor, and especially of those used in the cultivation of the land, and all were made of wood. Drills were quite unknown. Reform commenced by the introduction of English and other improved cultivating implements, such as Garrett's drills. The automaton reaper, from Garrett's, was indeed on the estate, but was not used. The slovenly system of harvesting led to the purchase of twenty of Baron Ward's reapers, made upon Hussey's principle, in 1857. Each machine cut with a 7-foot knife, and was worked by four oxen, two men, and one boy, and cut, on an average, ten acres per day.

Garrett's drill, horse-hoe, and the ridging-plough, were all found exceedingly useful in the cultivation of Indian corn, and reduced the cost of production very considerably. The difficulty of marketing the produce of such an isolated estate led to the erection of a distillery, and as the land was also well adapted for rape, an oil-mill was added, as was also a corn-mill.

Fig. 4.—*Plan of the Kis Szalás Estate.*



References to Plan of the Kis Szalás Estate.

A. Heinrichs Hof. 8-field shift.
B. Eduardshofer. 10-field shift.
C. Eduardshofer. 10-field shift, with Lucern.
D. Eduardshofer. 5-field shift.
E. Sindelyeser. 10-field shift, with Lucern.
F. Tompaer, now in Lucern.
G. Tompaer. 10-field shift, with Lucern.
H. Tompaer. 9-field shift.
I. Convention-field.
J. Lower Kovacser. 10-field shift.
K. Lower Kovacsgyeper. 10-field shift, with Lucern.
L. Middle Kovacsgyeper. 10-field shift.
M. Kovacsgyep. 10 fields.
N. Middle Kovacsgyep.
O. Convention-field.
P. Unterhofer. 10-field-shift, with Lucern.
Q. Unterhof.
R. Unterhofer. 10-field shift, with Lucern.
S. Friedhofs. 10-field shift.
T. Johanneshofer. 5-field shift.
U. Kapolnacz. 10 Lucern fields.
V. Out-farm.
W. Kapolnacz. 10-field shift.
X. Kapolnacz. 7-field shift.
Y. Hutmacher. 10-field shift.
Z. Jvankacz. 9-field shift.

AA. Thormacher. 10-field shift.
BB. Halaser. 5-field shift.
CC. Middle Kovacsgyeper. 7-field shift.
DD. Dongohuter. 10-field shift, with Lucern.
EE. Dongohut.
FF. Grenzweger. 10 fields.
GG. Lucern rotation.
II. Dongohut.
JJ. Upper Kovacsgyeper.
KK. Out-farm.
LL. Tuskos.
MM. Tuskoser. 12-field shift.
NN. Boundary fields. 10-field shift, with Lucern.
OO. Tuskos Grenznegar. 9-field shift.
PP. Convention-field.
QQ. Jvanka.
RR. Somleher. 10-field shift.
SS. Dongohuter. 8-field shift.
TT. Jankovaczer. 7-field shift.
UU. Boundary fields. 7-field shift.
VV. Jankovaczer boundary.
WW. Tuskoser. 9-field shift.

A *a*. Heinrichs Hof.
C *a*. Eduards Hof.
E *a*. Sindely.
G *a*. Tampa.
K *a*. Lower Kovacsgyep.
L *a*. Upper Hof.
W *a*. Kapolna.
Y *a*. Johannes Hof.

In 1855 there were thirteen to fourteen horse threshing-machines, with closed drums, 15 inches in diameter and 18 inches wide, furnished with flat, iron beaters: 250 horses were also engaged for treading out the grain. The bad quality of the work, the dirt and waste owing to the treading process, and the pilfering on the part of the peasants and labourers employed, led to the introduction of the first steam threshing-machine in 1856, two more in 1857, and three more in 1858. This enabled us to thresh all the grain by November, did away with the necessity of thatching, and was estimated to save one-fourth.

There being no stone, and bricks being very expensive, the cottages and buildings were constructed of stamped earth, and roofed with wooden tiles.

The accompanying Plan shows the various sections, each of which is subjected to a special rotation, and the positions of the main buildings and roads.

Lessons to the English Agriculturist.

It seems only reasonable to ask if there are any agricultural practices followed in Hungary which might be adopted in our own country with advantage ; and also if we have any processes or products which might still further develope the agriculture of Hungary.

With reference to the first point, there is little for the Englishman to learn from Hungarian farming. It is so simple, and so trammelled by difficulties of climate, that, as has already been pointed out, English farming is far before it, both in intensity and in the variety of its objects and methods. Nevertheless, it is a valuable lesson to see hundreds of thousands of acres all under a central management, since it demonstrates the practicability of what might at first sight appear impracticable. The system surrounding and controlling everything upon a Hungarian estate, and enabling the stewards to supply precise information upon any point required, astonished me. The area of the estate under arable, pasture, or wood was always given exactly, to the smallest fraction of an acre, and the amounts of food consumed by stock, and the increase in weight for food consumed were accurately known.

The esteem in which systematic agricultural education is held is also very worthy of attention.

The pains taken to increase and improve the horse-stock of the country is a point which is likely to create interest at the present time. The hope, which appears, indeed, to have been realised in Mezöhegyes, of producing a fixed or constant race of high blood-horses capable of breeding *inter se*, without the further introduction of thorough-bred blood, is worthy of the attention of English breeders.

In rural practice, the making of sour-hay (see page 351) might be introduced with success into England.

In other parts of the Austro-Hungarian Empire it was interesting to notice the pains taken in breeding live stock. Take, for instance, the record of successful sheep breeding at Keltschan,

given in the Report on the Vienna Exhibition. Foreign breeds are introduced and experimented upon in order to find the best possible races, or crossed races, for producing milk and beef. Probably we have good reason to be satisfied with our own stock, and certainly the best results obtained by these painstaking experimenters fall short of what English farmers very ordinarily attain.

In the next place we have to consider, if English agricultural practices may be further imported into Hungary. I visited an estate near Arad—Otvönös, the property of Countess Zelinski. The late Count was deeply impressed with the beauty of English farming, and determined to introduce it wholesale on to Otvönös. A Scotch bailiff and English labourers were engaged, English stock was purchased, and English cultivation commenced. All that now remains of this enterprise is a portion of the buildings, and some engineering work contributed by Messrs. Ransome and Sims of Ipswich. The whole scheme broke down, owing, I am informed, to difficulties of climate, and, still more sad, both the bailiff and many of the labourers died from cholera, fever, ague, and other causes.

The graves of these poor men, sadly overgrown and neglected, supplied food for reflection upon the folly of fighting against natural circumstances, and the return to Hungarian oxen, merino sheep, and ordinary Hungarian management upon the estate also supplied its lesson. This sad result was of course due to too rash an attempt to introduce a foreign system without regard to altered conditions. There are no doubt directions in which English practice might be advantageously followed. Among them, I think road-making and drainage should be pushed, and steam cultivation introduced. English swine and sheep might also effect as great an improvement, if used for crossing with the native breeds, as English horses have already done. Afterwards, it might be found advisable to introduce the English plan of folding such crossed sheep upon vetches, clover, and other summer forage crops, taking care at the same time to protect them from the mid-day heat. These are the chief points in which England may still be useful to Hungarian agriculture, but it is quite absurd to think of introducing turnips and winter feeding on the land when the summers are too hot for the turnips, and the winters too cold for the sheep.

AUSTRIA PROPER.

The line from Vienna to Linz passes through a lovely mountainous country. It is almost all owned by peasants, and presents the usual patchwork appearance of land so held. Higher

on the hill-sides pasture prevails, which again gives place to abundance of wood. I did not see a beast, sheep, or pig all the way between Vienna and Linz. The rye was cut and neatly stooked into what are there called "mandels," of ten sheaves each. Nine sheaves, arranged in a conical form, with all their heads together, and the tenth forming a protecting hood over the rest, is a common and safe method of stooking. Clover and hay are cocked around posts with cross arms of wood to keep the hay from blowing over, and to promote quick drying. Sheaves were also noticed spitted on long upright sticks to the number of 15 and 20, and thatched on the top.

Rye-stubbles were already broken up, and in some cases even sown with buckwheat and turnips (July 14th). Potatoes also had been harvested, and the land was already sown with another crop. The margins of the fields were kept clean, and neat farming with good crops was the rule. Often the land was trenched up, and was usually in narrow ridges or stetches. The background of mountain was always picturesque; the air cool and refreshing after the heat of the Hungarian plains, and a pleasant air of prosperity prevailed.

I visited a thriving peasant at Eikhof, near Kleinmunchen, in the neighbourhood of Linz, who owns about 80 acres of land. This man appeared to he singularly happily placed, and was doing his best to put in practice what he had learnt at an agricultural college. I was surprised to find a peasant living in such comfort and even style. His homestead, like all those to be seen here, formed a square with an inside court; and, in this case, possessed an outside enclosure with pretty garden and orchard. The dwelling-house formed one side of the square; and servants' rooms, a horse-stable and cow-byre constituted a second. The two remaining sides were used as barns. There was a nice stock of white English swine and Pinzgau and crossed cows. I also noticed some good working horses, Richmond and Chandler's chaff-cutter, and an improved plough.

The cow-byre was extremely well fitted with handsome cement troughs and good level pavement, reminding me on a small scale of the fittings at Ungarisch-Altenburg. Behind each cow was the little black-board, already noticed in earlier pages, with the daily register of the yield of milk inscribed upon it.

A short run from Vienna, on the Raab Railway, through a somewhat poor and sandy tract, brought me to Velm, a property purchased seven years ago by the late Mr. Smallbones, and now enjoyed by his son. The soil on the flat portions is poor, light, black, and alluvial in character, and is underlain by a white gravel. Higher up the hills it becomes stiff and of fair quality. Mr. Smallbones told me that his late father

began his career in Hungary and Austria, full of English ideas, but that he relinquished most of them, as unsuitable to the climate. The present owner believes highly in town manure carted from Vienna, but not in "artificial" manures, or even in cake fed upon the land. He adopts a suburban system of farming, sending as much as possible into Vienna, and bringing back manure. He also applies refuse from glue works, and dissolved bones prepared at home. A neighbouring proprietor, Baron Hopfen, had been trying experiments with various artificial manures upon mangold, but without much effect. The water lies near the surface, and can be easily reached by open cuttings. This is taken advantage of by the peasants, who grow cabbages on square panes, and water them from intersecting trenches. Rye-stubbles were, at the time of my visit, already broken up and sown with buck-wheat.

MORAVIA, AUSTRIAN-SILESIA, AND BOHEMIA.

Ten days were devoted to a rapid tour through these three rich provinces of the Austrian Empire. The contrast between them and Hungary is very marked, and is exhibited in the undulating and picturesque character of the landscape, the greater prosperity of the peasants, and the more thorough cultivation of the land both upon large and small properties. The same system of proprietor-farming is followed, but the estates are not so extensive as in Hungary. The land is often exceedingly rich, and commands a high rent when it is let. English implements are in constant use, both among the peasants and upon the large estates. Hungarian oxen are largely used for purposes of draught, and merino sheep are kept, unless in rare cases, or where sheep have been given up altogether as unprofitable.

The first estate visited was that of Göding, the property of the Emperor; a fine tract of excellent land, partly in Hungary and partly in Moravia. Nothing can exceed the beauty of the landscape here. There are no trees or hedges, but the long strips of peasant-land, under various crops, running straight over the hills, and hanging as it were on the horizon, are very effective. The poplar alleys traversing the estate, the white villages, and rich cultivation, all contribute to the exquisite beauty of the scene.

I was informed that 35*s.* per acre would be the letting value of this land, and in some cases even 70*s.* is given for the purpose of growing sugar-beet. The average return or profit to the proprietor is 42*s.* per acre, while it occasionally amounts to as much as 90*s.* The capital required to stock and farm it

is estimated at 7*l.* per English acre. The whole of this estate is under the control of his Excellency Count Wrbna, Administrator of the Imperial Estates, and is under the management of Herr Fostik, the resident inspector. It comprises a tract of 19,485½ acres, 6750 of which are arable, while nearly 9000 acres are underwood. The remainder is mostly in pasture; and there are also some 400 acres of waste land. The key to the management is the cultivation of sugar-beet. The estate supports a sugar factory, and all cultivation seems subservient to the chief product.

The land and its management can scarcely be too highly spoken of. Twenty tons per acre of sugar-beet are produced, which yield 9 per cent. of sugar; and a clear profit of 60 fl., or 6*l.*, per acre is derived from the farm of Egballer.

140 head of the ordinary cattle of Moravia were up feeding in spacious byres. They were receiving—

36 lbs. hay { 18 lbs. cut into chaff.
18 lbs. long.
4¾ to 5 lbs. of barley and maize meal.

The average increase per head on 120 days was 265 lbs., or 2·2 lbs. per day. Another byre contained 56 of the ordinary cows of the country. They were giving, on an average of the whole, 6 of them being dry, 1⅘ gallon per head; and a cow will yield from 373 to 435 gallons per annum. There were a few Hungarian oxen, but for the most part they were Moravian cattle, purchased from peasants for 2*l.* 16*s.* to 4*l.* 2*s.*, at one year old.

We were now within two hours of the celebrated Keltschan sugar factory and estate, so frequently referred to in my Report on the Vienna Exhibition; but I was unfortunately unable to visit it. As in Hungary, so here, the peasant-farming could not bear comparison with that upon the large estate.

Cigar-making here absorbs much female labour: 2400 women are employed, and paid 10*s.* per week. They make 104,000,000 cigars a year, and sometimes 2,250,000 per week.

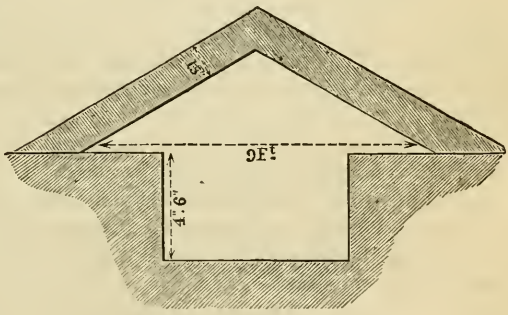
From the Imperial estate of Göding I went, *viâ* the Prerau and Olmutz Railway, to Kwassitz, the property of the Countess Thun-Hohenstein, but let on lease to the Ritter von Proskowetz, who was unfortunately from home. I was received by the steward, and saw all that was necessary, and especially inquired as to the cultivation of sugar-beet. The estate is 1423 acres in extent, and the whole is under arable cultivation. It is of various quality, and undulating in character. The rotation is as follows:—1st year, wheat or rye, dunged; 2nd year, sugar-beet, grown with ashes and superphosphate; 3rd year, barley; 4th

year, sugar-beet, grown with wood-ashes and superphosphate; 5th year, peas and horse-beans, dunged; 6th, sugar-beet, with wood-ashes and superphosphate; 7th year, barley or other spring corn; 8th, sugar-beet, with "lime-slime" from sugar-factory; 9th year, barley, sown down with clover or lucern; 10th year, clover or lucern; 11th year, clover or lucern. The farm is worked by 20 horses and 140 to 180 bullocks of the German race. (See last Report.)

The sugar-beet is grown in rows 12 to 14 inches wide, and the plants are left 8 inches apart. They expect at least 12 tons per acre, and consider 14 tons to be an average. They purchase from three-fourths to four-fifths of all the beet they manipulate, at an average price of 1*s.* 3*d.* per cwt. delivered, and the pulp is sold back at 5*d.* (20 kr.) per cwt. fresh, or 8*d.* to 9*d.* stale. The peasants receive from 1*s.* to 1*s.* 6*d.* per cwt. for their beet, and are allowed back pulp at 7*d.* to 8*d.* per cwt.

The greater part of the pulp is consumed upon the estate, and two lots of 70 bullocks each are annually fatted. The working oxen were being fed three times a day. In the morning they received 60 to 70 lbs. of pulp with 2 lbs. per head of barley or bean-meal and chaff, and 1 oz. of salt; and at mid-day green food, when not hard at work; but in busy times they receive pulp three times a day. They also have a handful of long hay after each feed, and a little salt. The pulp is stored in trenches, and will keep fresh for five or six years. No salt is used, but the mass is firmly trodden and well covered with earth. This practice also prevails in Hungary, and has been previously mentioned. The pit is of any length, about 4 feet 6 inches deep, and 6 feet wide. The pulp is raised above the level, and the whole is covered with 15 inches deep of earth.

Fig. 5.—*Section of Trench for storing Beet-root Pulp.*

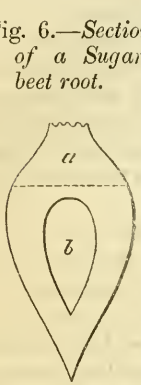


Fatting cattle receive 60 to 70 lbs. of pulp, and 6 to 8½ lbs. of meal, and increase at the rate of rather over 2 lbs. per day. The steward did not recommend pulp or distillery wash for breeding stock, as he considered it injurious to the lungs. Cows are therefore kept until they have had two calves, and are then fatted

off. The buildings, stock, and general farming upon the estate are worth inspection. Sheep are only kept to supply the house with mutton, as they are not considered profitable.

The next station was Holleschau, in Moravia (35-36° E. lat., and 49-50° N. long.), where is an extensive estate of 6670 Eng. acres, the property of the Emperor's Estate-Administrator, Count Wrbna, and under the management of Herr Fitz. The soil is throughout very productive, and if let would command a rent of 45*s.* per acre. It is capable of growing 6 quarters of barley, and they expect 12 to 14 tons of sugar-beet. Sugar manufacture is here all-important, as it is over the whole of Moravia, Bohemia, and Silesia. There is also a brewery on the estate. Again I was informed that distillery-wash and sugar-beet pulp are unsuitable for breeding stock. Here 12, 13, and 14 per cent. of sugar is obtained from beet, and the roots are preferred under 1 lb. weight each. This higher percentage of sugar is in a great measure accounted for by cutting off the tops of the root and putting it aside as fodder. The central portion, see *b*, Fig. 6, is said to be richest in sugar, and the portion *a* is cut off as explained.

Fig. 6.—*Section of a Sugar-beet root.*



The rotation followed here is as nearly as possible the Norfolk four-course. It commences with sugar-beet, which is followed with barley, clover, and wheat or rye. The sugar-beet is here grown 16 inches between the rows and 6 inches in the rows. Here I saw, for the first time on my journey, cylindrical draining tiles, and I was told they had made such tiles for 20 years. Two of Whitehead and Preston's machines, one for cleaning the clay, and one for tile-making, were also noticed. Cattle feeding is very systematically and extensively carried on in Holleschau. 300 bullocks are annually fatted, and all are regularly weighed during the process. I examined the tables, and found that 120 days were considered sufficient for fattening an ox, and that he increased during this time on an average 265 lbs. (2 centner 15 pf.) or 2·21 lbs. per day. The first six weeks they receive

48 lbs. of pulp,
7 lbs. of hay,
10 lbs. of straw-chaff,
and a little distillery-wash.

They are also allowed 4 lbs. of salt per month ; one-third in fodder, one-third in liquid, and one-third to lick.

The next four weeks they receive the same as above, with the

addition of 4 lbs. of barley and lentil-meal. The remainder of the period they receive 6 lbs. of meal with pulp, hay, and chaff, as above. The meal is all given in the shape of a thin gruel with a little salt in it. Here, as at Kwassitz, it was known that old or sour pulp is a more valuable food than when fresh. It is said to have less woody fibre, and to be richer in alcohol and soluble matter. The fermented and soured pulp must, however, be given cool, and not on any account warm from fermentation.

The contracts regarding fattening cattle were very curious. One system consists in the estate taking in cattle as boarders upon the above food, charging $8\frac{3}{4}d.$ (35 kr.) per day, and keeping the manure. The fodder is computed to cost $10d.$ (40 kr.), and the difference is charged to the manure. This is tantamount to a confession that cattle feeding must be carried on at a loss, since they are willing to pay for the manure. Another plan is to buy cattle by live weight—say at 16 fl. the centner. At the end of the fatting period, they are sold again at 17 fl. 50 kr. per centner upon their original weight, and the additional weight is allowed for at 18 fl. per centner. The animal in this case is fasted before the final weighing for 12 hours, and 5 per cent. is also deducted from the total live weight.

Hop cultivation was another feature at Holleschau. In ten years they look for two good crops, four average, and four under average.

The beauty of the landscape, the good quality of the land, and the excellent cultivation, all assisted to convey a very favourable impression regarding the whole district.

I was driven to Hullein Station, on the Cracow and Vienna Railway, and travelled, *viâ* Prerau and Oderberg, into Austrian Silesia, where I had an introduction to Count Larisch, of Karwin, near Oderberg.

Austrian Silesia.

Northward from Prerau the country still continued fine, but the crops became lighter, and grass-land became more prevalent. Harvest had scarcely commenced (July 21st). Passing the pretty town of Weisskirchen and the collieries of Ostrau, we entered a very fine mountainous country, resembling that between Vienna and Linz. The crops were here less abundant, and the same system of supporting clover upon crossed stakes, as in Austria, was noticed. I was told that when so cocked, and thatched over with a little straight grass, rain can do no injury.

Karwin is a colliery district, and is likely to become a great centre of industry. The estate inspector, Herr Staniek, gave

me a splendid drive round the estate. We passed through much peasant-land; but, as in almost all places visited, the management of the peasant could not compare with that of the prince. Peasants here own 85 to 140 acres of land, and the district is pretty equally divided between them and the large proprietors. At Holleschau 50 acres is the area usually owned by a peasant, and the larger share of the land is held by the aristocracy. In this part of the empire the peasants live in homesteads built upon their own little properties, and are not congregated in villages as in Hungary. The estate of Karwin is one hour's drive from Oderberg, and extends from the Carpathians to the river Oder, a distance of about 9 English miles. It comprises 17,582 acres. Of this, close upon 13,000 acres are in arable cultivation; 3800 are in wood, and the remainder in pasture and waste. The estate is under the management of the central director, Herr Staniek, and there are besides two estate directors, a steward, and assistant steward for each district, and a "rent meister." The rotation followed varies with the character of the soil. On the light land potatoes, dunged, are followed with rye or barley; 3rd year, clover; 4th year, clover; 5th year, rye, limed, or half-dunged; 6th year, oats. On the heavy land potatoes, or sugar-beets, are followed by barley or wheat; 3rd year, clover; 4th year, clover; 5th year, rape, limed; 6th year, wheat. A mixture of vetches and oats for fodder is also often sown upon the heavier land. The tillage is effected by 280 horses and 290 bullocks, and English implements are very much used for drilling, reaping, and threshing. Two to three hundred cattle are annually fatted, and upwards of 9000 sheep are kept; but for further particulars as to stock and crop, I must refer the reader to the Table given on pp. 388-89, in which several estates are compared in these respects.

Count Larisch possesses a remarkably fine stud of English horses, under the management of English grooms, as is usually the case both here and in Hungary. The thoroughbred stallion *Richmond* is there, and has been of much service. I also saw *Caroline*, a fine chestnut mare, purchased in England for 350*l*; also *Dauntless*, *Favourite*, and a number of fine young horses then preparing for the great Vienna Horse Show (1873). The Count breeds 160 foals a-year, and the stables at the Castle are well stocked with home-bred and imported horses.

I would fain have stayed longer at Karwin, as the young Count was at home, and disposed to show me everything in his power. There is in fact much to see, as there are extensive collieries, a sugar factory, distillery and brewery, all managed from the central office. Iron-stone also occurs on the estate, and it is the intention to develope a great centre of industry at Karwin. The

young Count keeps a pack of harriers, and is fond of England, English people, English horses, and English dogs. The country is rich, and the scenery varied and pleasantly cool and fresh after the parched plains of Hungary.

One district of this estate, known as Neorad, 320 acres in extent, was all reclaimed from a lake. This is not uncommon in Moravia and Bohemia. The lakes were often artificially formed in the first place for fishing, and were subsequently laid dry and again brought under the plough.

Count Larisch employs Hungarian working cattle, but does not confine himself to this race. The young Count showed me his own beautiful herd of Bernese cows, all similar to those described in my first Report. The average yield of these cows was stated to be 1400 to 1500 mass per annum, or 436 to 467 gallons. The ordinary cattle of the country are crossed with Bernese bulls. A shorthorn bull is also kept here, and Dutch and Oldenburg cows. All the work in the cow-byres is done by women.

Merino sheep are kept, and appear to be managed much in accordance with the practice described as obtaining in Hungary. The sheep stock, although large, is being gradually reduced, as it is not found remunerative. This can scarcely be wondered at when the merino yields but little mutton, and in this, as well as many other cases, only 3 English lbs. of wool.

There is a great scarcity of agricultural labourers, owing to the inducement of high wages at the pits. The miners work 8 hours and make 3*s.* per day, while farm labourers make 2*s.* to 3*s.* in summer and less in the winter.

With regard to sugar-beet, I saw little that was new. Eleven per cent. is the estimated yield of sugar from the beet, and the pulp is largely used for feeding purposes. Herr Staniek supported what I had already heard by saying, that "lung diseases were not known before the introduction of distillery wash and sugar-beet pulp as foods."

Bohemia.

A four hours' run brought me back to Prerau, and from thence I journeyed to Olmutz through a beautiful country, mostly in peasant occupation—undulating and fertile. Olmutz is situated in the Hanau. The hills on the right are wooded to the summits, and industriously cultivated up to the woods, while a fine flat tract stretches away to the left. Journeying towards Pardubitz, the hills gradually approach both sides of the line, which then passes through a highly picturesque defile of steep wooded mountains. Peasant-proprietors appear to hold all this beautiful district, and their square homesteads are built upon a similar

model to those seen in Austria proper and Karwin in Silesia. In the Hanau, and wherever the nature of the country allows of cultivation, the farming appeared neat and painstaking, and the crops were good. Nearer Pardubitz (the centre of the great stag-hunting district of the Imperial Court) the country again becomes open. I visited the Imperial stud at Kladrub on the line between Pardubitz and Prague. Kladrub is a small estate of 710 English acres in extent, and is of poor sandy quality. It is entirely devoted to horse breeding, and is under the superintendence of Major Löffler and his stud groom, Mr. Jackson. The Major forwarded me an interesting account of the stud, which is composed of English thorough-breds, Spanish, Neapolitan-black and Anglo-Norman horses. There were at the time of my visit (July 24th, 1873) 391 horses of all ages at Kladrub, and of these 50 were in training. Mules are also bred here for the Emperor's use: 95 brood-mares are kept, of which 24 are English, 45 half breds, 12 Spanish and 14 Neapolitan.

Among the horses in training were noticed—

A 6-year-old gelding (*Oracle*), from *Buccaneer*, out of *Mosquito*.
A 4-year-old stallion (*Drum Major*), from *Kettledrum* out of *Redpole*.
A 3-year-old stallion (*Pirate Chief*), from *Buccaneer* out of *Lady Tatton*.
A 3-year-old stallion (*Corsair*), from *Buccaneer*, out of *Zeta*, by *Melbourn*.
A 3-year-old stallion (*Springy Jonathan*), by *Stark*, and from *Elastic* by *Ugly Buck*.
A 3-year-old mare (*Red Wing*), by *Ostregor* from *Red-pole*, by *Orlando*.
A 3-year-old mare (*Flora*), by *Ostregor* from *Niobe*, by *Orlando*.
A 3-year-old mare (*Black Flag*), by *Buccaneer* from *Violet*, by *Voltigeur*.
A 2-year-old stallion (*Oro*), by *Thunderbolt* from *Golden Hair*, by *Orlando*.
A 2-year-old stallion (*Cress Bower*), by *Cambuscan* from *Golden Drop*, by *Stockwell*.
A 2-year-old stallion (*Verulam*), by *St. Albans*, from *Aunt Hannah*, by *Westminster*.
A 2-year-old stallion (*St. Audes*), by *Virginius* from *Naïveté*, by *Stockwell*.
A 2-year-old stallion (*Muleiber*), by *Challenge* from *Ugly Doe*, by *Ugly Buck*.
A 2-year-old stallion (*Gauntlet*), by *Challenge* from *Elastic*, by *Ugly Buck*.
A 2-year-old mare (*Silvertail*), by *Ostregor* from *Fairy*, by *Warlock*.
A 2-year-old mare (*Phrygia*), by *Marsyas* from *Guinea*, by *F.D.*

There appeared to be too many horses on this small estate; and I was told that an immense amount of fodder was annually purchased, and that expenses were enormously heavy. Kladrub is not a Government station, but is the private property of the Emperor.

Few estates have attained a greater notoriety than that of Horskyfeld, the property of the Ritter von Horsky, situated at

Kolin, on the line between Pardubitz and Prague. The Ritter von Horsky has been the architect of his own fortunes, and has published a book giving an account of his life, and of the cultivation of his estate.* A large party of agriculturists was entertained by him at Horskyfeld during the Vienna Exhibition. Here I saw Fowler's steam plough at work, with sub-soilers stirring 7 inches beneath the plough-sole—the total depth being 14 inches. The work was progressing at the rate of 11 to 12 acres per day, upon a black sandy bottom. Hudson's overhead railway was also in use. Oxen are extensively used, and when four are yoked to a plough, a cultivation of 10, 12, and even 14 inches is attained. The system of subsoiling and ploughing by means of a deep following tine, after and attached to each plough, is preferred to a deep furrow, and is usually adopted. A double number of oxen are maintained from harvest to winter, and half of them are fatted when work becomes slack. Sugar-beet is one of the most important crops cultivated. A barley stubble was being ploughed and subsoiled 14 inches deep by oxen (July 25th). It was the intention to plough it again in late autumn by steam, and to work it down with grubbers for sugar-beet in the spring. There is in use a special machine for drilling beet. The manure is dropped on the flat and immediately mixed with the soil by two chisel-shaped shares; the enriched soil is at once ridged up by two double mould-boards, and the seed falls at the same instant through coulters into the middle of the ridge—just before it is closed. The drilling is narrow, and it is considered desirable to keep the roots small. The process of diffusion is now adopted in extracting the sugar; and it is thought that the quality of the fodder is higher than when pressure is used. This is because only sugar is extracted, and the cells are not ruptured; there is less alcohol (?) in the pulp, and it is, therefore, more wholesome. In the pressing process, 20 per cent. of pulp is obtained, while by diffusion 80 per cent. is left; 50 per cent. of which is water and 30 per cent. fodder. I saw working-oxen receiving beet pulp, meal and oilcake, cut straw and hay. There is a great amount of ingenuity, of novelty, and of good arrangement displayed, but my numerous queries were answered with a present of the volume already referred to, to which I, again, must refer the curious reader.

A day spent upon the Emperor Ferdinand's estate at Jenc, and another upon Prince Schwarzenberg's estates at Postelberg and Lobositz, completed my tour, and brought me, *viâ* Bodenbach

* 'Mein Streben, Wirken, meine Resultate, &c.; von Franz, Ritter Horsky von Horskyfeld,' &c. Published by Fr. Sudek: Kolin, 1873.

and through the Saxon Switzerland to Dresden. The same lovely country, good land, and capital farming were again and again repeated, and I left Bohemia with a strong admiration for its agriculture.

I conclude this very imperfect sketch of Bohemian farming by giving the result of a conversation with Herr Watzl, the steward at Postelberg. Sugar is extensively made on Prince Schwarzenberg's estate. Most of the beet used is grown on the estate, as its price has lately risen so high—to 1*s.* 8*d.* and 1*s.* 10½*d.*, 2*s.* 1*d.* and 2*s.* 6*d.* per centner of 123½ lbs.

9½ to 10 tons of beet per acre can be grown, and this yields 6, 7, and 8 per cent. of sugar.

So long as sugar-beet can command 60 kr. per centner, *i.e.* about 1*s.* 2*d.* per cwt., with the pulp given back, it is considered to pay better than growing roots for fodder. Tenants growing beet for the factory receive all the pulp back, and from 1*s.* 2*d.* to 1*s.* 6½*d.* per centner for their beet.

Pulp is a wholesome food for all kinds of stock, so long as it is given sour and cool, but is not to be trusted when given warm from fermentation. The pulp is given mixed with meal from tail-corn.

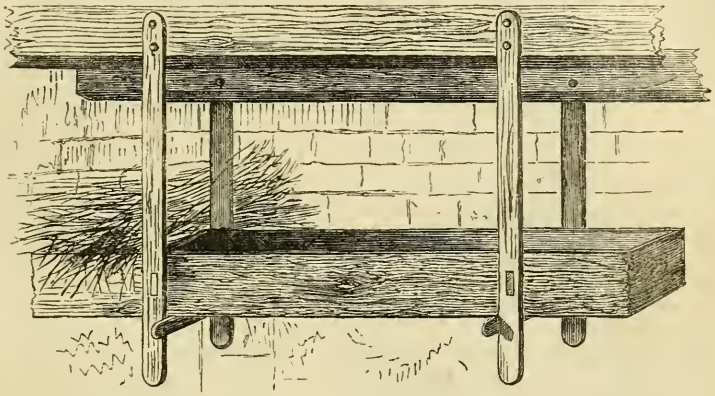
They commence to feed oxen by giving them as much pulp as they can eat. Oxen of 12 cwts. are found to consume 36 to 48 lbs. of pulp, and 4⅘ of meal. To cows they give 14 to 18 lbs. of pulp, 4½ to 7 lbs. of hay, and 4 to 4⅘ lbs. of meal with straw. The straw and green fodder is cut into chaff and mixed with pulp. Fatting oxen of 12 cwts. live weight will, on the above food, gain from 1·235 to 2½ and 3 lbs. per day, but there are, of course, great differences.

The best manure for sugar-beet is superphosphate manufactured from the refuse at the sugar factories. Eight cwts. per acre (10 centners per joch) is sufficient when no other manure is used. Farmyard manure is never applied with superphosphate. As a rule they dung previous crops for sugar-beet, and manure directly as above. Guano is known, but is considered too dear. There is no steam cultivation on these estates. A sufficient number of oxen are purchased in summer to work the land, then are afterwards fatted off. The intermixture of peasant-land with the estates of the proprietors (see page 320) is one great difficulty in the way of steam cultivation.

Labourers and Wages.—At Göding in Moravia, close to the Hungarian frontier, labourers are paid both in money and kind. A man in summer earns 1*s.* 8*d.* to 2*s.*, and a woman 10*d.* to 1*s.* 3*d.* A shepherd has 13*l.* with doctor's bill paid, and 6¾ bushels of wheat; 27 bushels of rye; 2 klafters of wood; and about one-fifth part an acre of land. Cottage rents were 42*s.*,

and six days' work, in a village passed through on the estate. The labourers are usually Slavonians, and do not look for the comforts considered necessary by English labourers. They generally live in the stables of the cattle they tend, and this is very customary over all the countries which I visited. The accompanying sketch of a labourer's bed and pillow of straw, suspended

Fig. 7.—*Labourer's Bed and Straw-pillow in an Austrian Cow-byre.*



from the rafters, was taken in a cow-byre upon the Imperial estate at Göding. At Kwassitz, in Moravia, labourers are paid in money, and teamsmen both in money and kind; 1*s.* 0½*d.* to 1*s.* 7½*d.* for men, and 10*d.* to 1*s.* 0½*d.* for women is considered fair, but as much piecework is contrived as is possible.

At Holleschau, payment is only made in money; 1*s.* 10½*d.* per day is the average wage of a labourer; 1*s.* 3*d.* of a woman; and 1*s.* 3*d.* to 1*s.* 8*d.* of a teamsman.

At Leihwitz, the property of Baron Kübeck, in south-west Moravia, wages are usually paid in money. Men are paid 2*s.* in summer, and 1*s.* 3*d.* in winter; and women have 1*s.* 3*d.* in summer, and 8¾*d.* in winter. Teamsmen are paid 22*l.* to 25*l.* per annum. Upon the Archduke Albrecht's estate of Seelowitz, let on lease to Mr. Julius Roberts, in South Moravia (9000 acres), where Fowler's steam plough, 278 horses and 543 oxen are employed, labouring men have from 1*s.* 0½*d.* to 1*s.* 2*d.* per day, and women 10*d.* to 11*d.* When paid partly in kind, a man has in money 5*l.*, and 6¾ bushels of wheat, 27 bushels of rye, 13½ bushels of barley, 4 cord of wood, or ½ a cord of wood and 18 cwts. of coal; 16 bushels of potatoes; and one-tenth acre of land. At Karwin in Silesia, 2*s.* to 3*s.* per day is considered a good wage for a man, and 6*d.* to 10*d.* for a woman. This is in

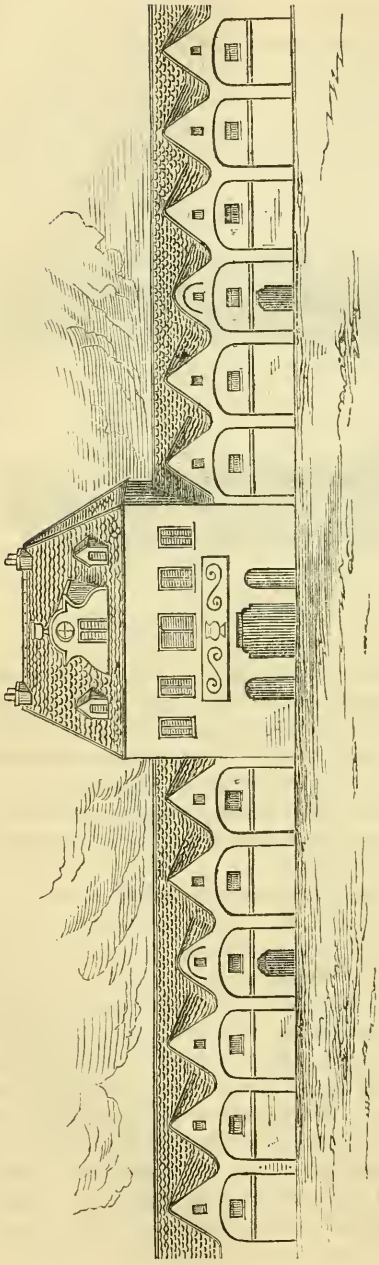


Fig. 8.—*View of one side of the Quadrangle of Farm Buildings at Copschau.*

the neighbourhood of collieries. Teamsmen are estimated to receive in money and kind 29*l.* 12*s.*, and shepherds 32*l.* per annum.

At Postelberg, in Bohemia, labourers receive 1*s.* 8*d.* to 2*s.*, and women 1*s.* 0½*d.*, to 1*s.* 3*d.* per day; and the payment to shepherds and teamsmen is in kind and very complicated. At Lobositz, in Bohemia, the general wages for a day of ten hours for a man is 1*s.* 1¾*d.* to 1*s.* 7½*d.*, and for a woman 11¼*d.* to 1*s.* 3*d.* As much work is done by piece as possible, and thereby the wage actually paid to men is very much increased.

Farm Buildings.—The farm buildings upon the large estates of Hungary and the provinces of the empire must be surprising to an English agriculturist. Reference has already been made to the noble, vaulted, crypt-like bullock-stables of Hungary, and the same grand buildings were seen upon almost every estate visited in Moravia and Bohemia. The finest met with are situated at Copschau, upon the Imperial estate of Göding and Hollitsch. Here is a remarkably spacious and grand homestead, originally built by that great patroness of agriculture, the Empress Maria Theresa, for the accommodation of a stud.

There is a magnificent square court, one side of which I hurriedly sketched (see Fig. 8). The remaining three sides are the same, with the exception of the central and higher portion. Each of the remaining three sides is composed of 15 gables of 8 yards wide each. The court is therefore 120 yards square. There is not a fragment of wood in this homestead, every part being brick or stone. The stables are arched, and the roofs are all supported upon brick pointed arches. One stable was roofed by arches, springing from a double row of pillars and the side walls. Another wonderful ox-stable was spanned by a single arch of 30 feet.

Crops grown and Live Stock maintained.

The yielding power of the soil and the kind of stock maintained will be best given in tables (see pp. 388, 389), and it may be found useful to compare the figures with those previously given in the portion of this Report devoted to Hungary (see pp. 360-61).

Conclusion.

When the Council of the Royal Agricultural Society entrusted me with a mission to Vienna, and to report upon the agriculture of the Austro-Hungarian Empire, they drew up some general instructions as to certain points upon which inquiry was to be made. They at the same time left me to a great extent to form and follow my own plan. In the instructions forwarded to me by the Society's Secretary, I was requested to report upon the Live Stock exhibited at Vienna, and to keep in view certain important questions regarding their relation to English stock, and their possible relations to England. Secondly, to visit and report upon the agriculture of the Austro-Hungarian Empire, noticing especially facts having reference to the following questions:—

(*a.*) To what extent the primitive practice of a quarter of a century back has been modified or superseded generally or locally by the introduction of English stock and English implements.

(*b.*) The contrast afforded by the large farms of that country to English agriculture.

(*c.*) The question of the supply of cattle from Austria and Hungary to England, and the danger incurred from the presence of cattle-plague on the frontier of that country.

(*d.*) The use made by the farmers of that country of the sugar-beet as an article of cattle-food.

(*e.*) Any novelty in the use of green crops used by the farmers where grass is scarce, which might be applicable to British agriculture. (*f.*) Organization

TABLE III.—Showing the AVERAGE PRODUCE PER ACRE upon various ESTATES visited in MORAVIA, SILESIA, and BOHEMIA, 1873.

NAME OF ESTATE.	POSITION.	Wheat.	Barley.	Rye.	Oats.	Indian Corn.	Rape.		Clover Hay.	Sainfoin Hay.	Sugar Beet.	Fodder Beet.	Green Fodder.	Potatoes.	Hay.
		Bush.	Bush.	Bush.	Bush.	Bush.			T. Cwts.	T. Cwts.	Tons.	Tons.			T. Cwts.
Holitsch & Göding	Neutra in Hungary & in Moravia	29¾	42	26	60	30	31	..	1 6½	..	11½	15½	..	..	..
Hollischau	Moravia ..	17¾ to 21⅓	35 to 42	21⅓ to 28½	..	..	21 to 28½	Panicum. 25 to 42	2 to 2½	..	11 to 14	14 to 16	..	.	1 5
Seelowitz	S. Moravia ..	26	35½	28½	35½	12	..	..	..	Lucern. 1 0	7¾	9½	..	..	1 2
Leitwitz	S.W. Moravia	22½	28½	21⅓	33	28½	..	Panicum. 21⅓	..	Lucern. 1 10	11	11½	..	..	..
Kwassitz	Moravia ..	28½ to 33	35 to 42	24 to 27	44½ to 47	47 to 70	24 to 30	Panicum and Millet. 24 to 28½	*2 0 to *2 4	*2 15 to 3 0	10 to 13	11½ to 15½	..	..	..
Karwin ..	E. Silesia ..	14 to 23¾	23 to 35½	12 to 20	30 to 42	..	23¾	..	15 cwt. to 1 ton	*1 2 to 2 4	7¾ to 11½	..	..	..	..
Postelberg	N. Bohemia, near Saal	†21 to 30	30	26	35½	..	..	..	*1 2	Lucern. *1 2	9½	..	..	..	..
Lobositz	N. Bohemia	35½	42	30	55	..	..	..	1 15	1 15	11½	15½	..	..	2 0

* In two and three cuttings. † For spring and autumn sown wheat, and these have respectively 1·5 and 1·16 tons of straw per acre.

TABLE IV.—Showing the HEAD of LIVE STOCK maintained upon various ESTATES visited in MORAVIA, SILESIA, and BOHEMIA, 1873.

NAME OF ESTATE.	Total Area.	Area in Arable.	Pasture.	Wood.	Waste.	Gardens, Roads, Buildings, &c.	Horses.	Bulls.	Cows.	Fatting Cattle.	Working Bullocks.	Young Stock.	Rams.	Ewes.	Lambs.	Wethers.	Swine.
	Acres.	Acres.	Acres.	Acres.		Acres.											
Holitch & Göding	19,845½	6,745	3617	8539	550	264	60	2	100	115	434	447	50	1000	700	600	none
Holleschau	9,507¾	4,173	90	5241	..	3¾	42	..	..	300	136	..	..	..	..	..	..
Seelowitz	16,296	9,443	1255	4590	968	40	293	18	375	..	571	28	84	3697	675	1583	none
Leitwitz ..	1,988	1,065	290	633	..	..	14	3	72	..	26	46	..	..	..	..	..
Kwassitz	1,420	1,420	..	..	..	..	26 and 4 foals	2	40	*70	140 to 180	†46	..	..	..	60	none
Karwin ..	17,582	12,961½	350¾	3834	319½	113¼	‡269	25	405	200 to 300	290	not given	160	9030 Sheep			41
Postelberg	12,557	7,061½	2816	3400	160	119½	120 to 124	14	145	80 to 100	260 to 290	282	200	2000	1000	600	60
Lobositz ..	7,414	2,918	811	3179	422 vineyard 28	56	60	10	80	60	200	160	15	550	690 Sheep		none

* Two lots are annually fed, making 140 in all. † Besides calves. ‡ Including 120 foals and young horses.

(*f*.) Organization of labour on the large farms.

All these subjects for inquiry have been dealt with in the preceding pages. I, however, submit that the vastness of the work of reporting upon the agriculture of the Austro-Hungarian Empire can only be realized by those who attempt it. I have already remarked that many whole provinces were never entered, and the foregoing Report is more precisely an account of Hungarian than of Austro-Hungarian farming. Every one knows that a foreigner is apt to fall into grave, and also into amusing errors, in describing the manners and customs of peoples not his own. I shall not be surprised if some such errors have crept into the foregoing pages. I may, however, state that, owing to the custom of printing reports and tabular statements upon the large estates for the guidance of the managers, also owing to my own printed queries, which were returned to me by the Stewards at their leisure, and lastly by noting various observations and answers to numerous questions then and there, I am able to show satisfactory proof of the correctness of the statements made in this Report.

XIV.—*Agricultural Jottings from the General Report of the Census of England and Wales for the year* 1871. By J. Dent Dent, of Ribston Hall, Wetherby.

It is sometimes said that any result which the student desires may be deduced from the study of statistics, although the investigation of long columns of figures and tables of population at first sight presents a very uninviting aspect. No one, however, who reads the General Report of the Census of England and Wales for 1871, will doubt that it contains a history of which a nation may well be proud, and that the record of progress which is inscribed in its pages attracts the reader like a grand romance. It is the story of a people ever proceeding onwards—increasing in numbers, in industry, and in wealth—whose condition improves year by year; not too numerous for well-paid industries at home, yet ever sending out fresh streams of workers into other lands, where they become at once producers of England's requirements, and consumers of the products of her industry, furnishing supplies to the parent land, and adding to her wealth, while assuring their own. Nearly one hundred years ago Dr. Price wrote in alarm of a decaying population; and Malthus somewhat later uttered warnings against the evils which awaited a people increasing more rapidly than their means of procuring subsistence; but in this English nation there is united such a happy mixture of boldness and confidence in the future, and yet