

INDUSTRY OF THE RHINE.

SERIES I.

AGRICULTURE :

EMBRACING A VIEW OF

THE SOCIAL CONDITION OF THE RURAL
POPULATION OF THAT DISTRICT.

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LONDON:

CHARLES KNIGHT & CO., LUDGATE STREET.

1846.

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AGRICULTURE ON THE RHINE.

CHAPTER I.

AMONGST the many thousands who yearly flock to the banks of the Rhine there are not a few for whom the social activity, the condition, the wants and wishes, of the people they mingle with are as attractive objects as the picturesque scenery and romantic legends of the far-famed river. The figures in the landscape are its prominent feature for the deeper observer. For such travellers the following volume is written, for from such its author does not fear to be rebuked because he reads a moral in

“The noble arch in proud decay,”

where others choose only to enjoy its scenic effect. Nor does he anticipate from them the supposition that because he points to the effects of shady and sunny sites on the productions of the soil, he has no soul for the glowing tints of the sunlit stream, or the majestic gloom with which night invests the precipices that overhang it. Having himself found leisure both to enjoy the beauties with which nature has clothed this enchanting river, and to commune with those who dwell upon its banks, he deems it no superfluous task to invite any who have taste or leisure to study more than scenery as they pass along; to inquire with him respecting the account to which the

people turn the advantages of soil and climate with which they are endowed. In this volume we propose to afford the inquiring traveller, or such as are not less inquiringly disposed because they stay at home, a clue to the varied map of agricultural activity which the banks of the Rhine unfold. A greater variety of objects and modes of cultivation is assuredly presented by no other region of equal space. In no country has the well-being of the people been more intimately interwoven with its agricultural policy and prosperity than in Germany. Few tours present a larger sphere of observation to the landowner, the farmer, and the statesman, than that which, with the aid of Rhenish steamers and railroads, he can accomplish in the space of a few weeks. With these preliminary observations we enter at once upon our task of tracing the peasant to his cottage, the lord to his castle, and both to the great mart of the world, at which all are buyers and sellers, not alone of produce and manufactures, but of consideration, influence, comfort, and independence. He is but a sorry calculator who does not look beyond the money price at which he buys and sells, as we shall have frequent occasion to show in the course of this tour. We shall often have to test the value of the epithets *dear* and *cheap*; and perhaps no other district can so fully illustrate how relative the notions are that attach to those words.

The entrance into Germany by the Rhine presents nothing very attractive to the eye. Long before the traveller reaches the Prussian frontier, the neat farm-houses that in Holland line the carefully walled or fascined banks of the great stream, gay in their shutters and doors of red or green, and grouped with the coppice

or willow so familiar to us from the landscapes of the Dutch masters, give way to continued plantations of osiers and wave-washed banks, that seem to indicate a change of no pleasing kind. The transition is on both banks sudden, from a people whom trade early attracted to the banks of the river and familiarised with its utility, to one almost exclusively agricultural, which long looked wholly to the land for nourishment and power. The face of the country has also changed materially by the time the boat in which you ascend the Rhine reaches the Prussian boundary. The level of the back country has risen considerably above the stream, which may here chafe against the bank without, as in Holland, endangering the lives and property of the inhabitants of whole provinces. This change is not perceptible from the river except to the practised eye of the geographer, who recognises, in the circumstance that the stream is confined within a single bed, the existence of rocky strata in the banks, and suspects that it has eaten its way through the lower offsets of some mountain-chain. On the right bank, *i. e.* on the traveller's left as he ascends the river, the rise is trifling, and a well-cultivated strip of land flanking the river, formerly a portion of the duchy of Cleves, intervenes between the Rhine and the immense heaths which separate Holland from Germany, to whose extent, untraversed for centuries by roads, the Dutch are indebted for their independent nationality.

The want of roads in the inland German states gave an early pre-eminence to those districts that commanded water-navigation, and amongst the navigable rivers of Germany the Rhine was prominent. The Lower Rhine, as that portion of the river lying between the Seven

Hills and the sea is called, and the Middle Rhine from Mayence to the Drachenfels, formed long the virtual northern boundary of the Roman empire, beyond which few or no permanent settlements were made. The Rhine was, however, fully appreciated by the Romans as a grand road for warlike and commercial operations, and its banks teem with relics of that stirring age. The Teutonic tribes that succeeded the Romans as conquerors or immigrants found in the roads, harbours, and other constructions of their predecessors, a foundation of power far more valuable than the chivalrous daring to which they usually ascribed their success. The rise of the second line of Frankish kings has been described by M. Guizot as resulting from the conquests over the Neustrian or Western Franks achieved by the Austrasian or Eastern Frankish tribes. To judge from the acts of Charlemagne and his favourite places of abode, that monarch knew well from what source the Austrasians and his family drew their might. The ruins of his imperial castle are now scarcely to be traced at Ingelheim on the Middle Rhine, and Aix-la-Chapelle contains but his grave and the cathedral which he founded; yet are these relics sufficient to attest the importance attributed by that discerning monarch to the great water-road that connects the Alps with the German Ocean.*

The period that marks the rise of the great vassals of the German empire shows us the Earls of Flanders, the Dukes of Brabant, the Lords of Hainault and Cleves,

* Napoleon is said to have entertained the idea of rebuilding the palace at Ingelheim, and we believe that the Royal Library at Paris contains the plans and elevations of the intended palatium, comprising even the decorations of the interior.

as potentates whose alliance is courted and whose enmity is dreaded by their reigning contemporaries. These districts all belong to the region of the Rhine, or are so contiguous to it as to be influenced by the events of which its basin was the scene. The Counts of Hapsburg, of Nassau, and of Luxemburg successively ascended the Imperial throne. Civic independence reared its banner triumphantly on the banks of the Rhine, and the Rhenish League is a no less interesting historical event than the more famous Confederacy of the Hanse Towns, in which the cities of the Lower Rhine, especially Cologne, played a conspicuous part. That the mechanical and refined arts also flourished at an early period in these cities is well known.

The portion of Prussia by which the traveller on the Rhine enters Germany from Holland was formerly the Duchy of Cleves. The high road from Nymwegen to Cologne follows the heights that recede from the left bank of the Rhine and leave a narrow strip of low land (originally marsh, and afterwards enclosed), which is occasionally inundated, or what is called *Polderland* in the language of the country. This narrow strip formed the county of Mörs. It has been already observed that a tract of land stretching along the right bank of the river from the frontier of Holland to the mouth of the Lippe also belonged formerly to Cleves. The farmer who follows other than political boundaries still distinguishes between the heights and the lowlands of Cleves. In the former tract, which is traversed by the high road from Cologne to Nymwegen, that owed its original construction in all probability to the Romans, trade has had its usual effect upon the farmer's calculations. Estates are

not of puny dimensions, because too small a farm would not pay well: they are not large, because there is considerable demand for dairy produce, rape-seed, flax, tobacco, and other products that remunerate when cultivated on a middling-sized farm. The farms average, for peasants, 30 to 50 acres; for landed proprietors (who are not numerous of this class), from 200 to 400 Prussian morgens, or 125 to 250 acres. A great deal of land in these districts is rented out to farmers, whose houses are well placed in the centre of the grounds belonging to them.

Some readers will be surprised to hear that these three characteristic features of the highlands of Cleves are rare exceptions in Germany. In the greater part, especially in all the populous districts of Southern Germany, the land is tilled by its owners, scarcely any small holdings being farmed out. The possessions of the peasant owners and cultivators are usually very diminutive, and those of the richer lords of the soil, especially in the North, immensely extensive. Lastly, the peasant scarcely anywhere lives upon his land, but in the adjacent village, whatever may be its distance from his fields. Hence the Duchy of Cleves has a pleasingly varied appearance where there is wood enough. Wood is usually found in sufficient quantities to supply the inhabitants with fuel, although coals are extensively used. But the stately forests of the midland and northern Prussian provinces cannot be sought in a part of the country where, for the reasons already assigned, the land has a high value. The subdivision of property in this district is a natural result of the gain derived from good cultivation and a judicious selection of crops. The Code Napoleon, indeed, prescribes the usual division of property amongst the

children of a family; but the facilities for trade which this district enjoys cause the junior members to prefer leaving the land to a brother, who looks to farming, while they seek their livelihood elsewhere. We thus find that a law expressly intended to promote small holdings has as little effect upon the size of farms as the law of entail in England, which might be supposed to favour large holdings. Where activity prevails and is not restrained, the size of estates must be fixed by the kind of cultivation that is found best to answer the farmer's purpose. Were we to select a good model of the style of farming that prevails in the Duchy of Cleves, we should recommend the traveller to leave the city, which preserves few traces of its former dignity beyond its commanding site, and follow the high road leading along the heights parallel with the Rhine to Goch, an ancient and picturesque town twenty miles to the south of Cleves. In a handsome house about half a mile distant from the town resides Herr von Busch, a gentleman farming his estate of about 200 acres in the fashion of the best school of German agriculture. The house is in the Italian style of architecture, larger than is usual amongst country gentlemen in general, and in the rear, together with the offices, is a very spacious farm-yard. To the offices of farms of this description there belongs a distillery on a small scale, and occasionally, as at Goch, a brewery. The low price of corn on the Continent makes it worth the grower's while to manufacture from it some article that is more in demand than the grain. Stabling for horses, cows, and oxen, here used for draught, all airy and roomy, with barns that for the extent of the grounds would appear enormous to an English

farmer, enclose the side of the yard opposite to the dwelling-house, at a distance sufficiently great to form a distinct establishment. The size of the offices is a remarkable feature in all German farm-houses, from the cot of the peasant to the largest castle. All the hay, and usually all the grain, is housed; and the stacks to be seen in the Duchy of Cleves, sometimes on the field, and occasionally near the houses, belong also to the exceptions which distinguish this district, and evince the improved economy of the inhabitants.

In the stables of such a house there is of course little to distinguish them from the ordinary stables of France and England. Stall-feeding is the rule for the horned cattle, but in the autumn the cows are indulged with an occasional day's run on the barley-stubbles near the house. The breed is chiefly Dutch, with one or two Durham heifers intermixed. The milk finds a sale in the town of Goch, and neither butter nor cheese are made for market.

How different the position of a country gentleman living upon the revenue derived from an estate of 200 or 300 acres is from that of the owner of a similar property in England will be evident from a few details. In Germany such an estate is looked upon as something considerable; and if the low price of provisions, together with the simple and inexpensive manners of the Germans, be taken into account with the higher return drawn from the land by the judicious selection of the crops, the advantage is certainly on the side of the German. From a farm of 200 acres the revenue drawn in this part of Germany is not less than 600*l.* per annum. Rye-bread at 4*d.*, wheaten bread at 5*d.* for the 11-lb. loaf, and meat

at 3*d.* to 3½*d.* per lb., with wine at 1*s.* per bottle, are the chief articles of consumption of indigenous growth. Until recently tea and coffee were much less taxed than in England, and only in manufactured wares could the balance incline in favour of the English consumer. In cloth and dress generally, in harness, furniture, plate, and the ornaments of a gentleman's establishment, a German cannot indulge on a moderate fortune; and he is wise enough not to pretend to do so. His position in society does not depend upon such adventitious circumstances, but is fixed by his birth, and still more by his education. Besides, if any supercilious traveller were to remind a proprietor on the Rhine of deficiencies in the conventional arrangements or decorations of his "intérieur," his best retort would be to lead the fastidious guest to the nearest window, and desire him to produce elsewhere the clear sky and sunshine that for seven months in the year can be enjoyed upon the Rhine. In the castles of the nobility there is no want of comfort and of elegance, as may be seen by a visit to the villas of Prince Salm-Reiferscheid, at Dyk, near Neuss; or of Heldorp, the seat of Count Spee, near Düsseldorf.

In the Prussian Rhenish provinces the trial by jury, a valuable relic of the French sway, and almost the only one the people care for, offers opportunities to the country gentlemen to meet at assizes, as with us. They indeed are shorn of the aristocratic element of the grand jury. Elections have only recently inspired interest, and the exercise of this right is too indirect to be very attractive. The "noblesse," or gentry, called in German "adel" (the reader may think of Sir Walter Scott's "Udaller," in the 'Pirate'), have no longer personal

right to a share in the representation of the people. Estates that in olden times were endowed with the privileges of a lordship, still confer the right of a representation upon the owners, whatever may be their birth. The owners of these "Rittergüter," or knights' estates, form a distinct body between the "hoher adel," or nobility, and the burghers and peasants. The knights of the Rhenish provinces elect a deputation from their number to the provincial diet that sits at Dusseldorf. The inhabitants of the towns, as well as those of the rural districts, who pay a certain amount of taxes, choose electors, to whom the selection of their deputies for the provincial parliament is intrusted. The political rights of the diet, or "Landtag," as this assembly is called in German, are too circumscribed to inspire that stirring sympathy which the publication of the debates of a powerful and concentrated national assembly awakens. The magisterial functions are universally performed in Germany by salaried official personages, so that neither the burthen nor the dignity of public life is there attached to the station of a country gentleman, and he is apt to waste his leisure hours in trifling or in slothful occupations, unless, which is often the case, he has cultivated some refined taste. On the other hand, these very circumstances favour that side of German life which has only lately attracted the attention that it deserves in England. The local and family ties are subject to less violent shocks than constant separations of relatives occasion with us, and age advances surrounded by the natural play of the affections amongst friends and relatives. The aged totter to the grave amongst the "old familiar faces" with whom the man lived in friendship or in strife, and with whom the child shared his

hours of pleasure or of study. The idea of home in a country where the brilliancy of the summer sky and the clear frosty atmosphere of winter alike invite to the open air, is less attached to the chimney corner and the peculiar furniture of certain rooms, than to the periodical assemblies of the members of a family at birthday and other anniversaries, and to the sympathy that is sought amongst friends on the most trifling occasion of sorrow or of joy. Society is indispensable to the German. Even the peasant and the labourer must have their talk, if not with their equals in wealth, with those whose fortune is more or less brilliant; and the observer will not fail to remark that a far greater equality of manner prevails in the mode of addressing people of all classes in Germany than in England, where the relations of servant and master pass into the very highest grades of society. The simplest conditions are here attached to the indulgence of the sociable propensities. A country gentleman therefore, of the standing that we have supposed, drawing fully 600*l.* per annum from an estate of about 200 acres, can assume no magisterial airs, nor is he called upon to give electioneering or fox-hunting dinners. His hours are early, his meals light, and he passes his life more as a spectator than an actor in the busy world of industry or politics. Such a man it will at least be acknowledged is more likely to rejoice at and to aid in the gradual and orderly growth of knowledge and of civilization, than such as speculate upon unexpected changes, and great and dazzling opportunities of success. We suspect, however, that the mode in which a gentleman farmer in Germany contrives to draw 600*l.* per annum from 200 acres of land, will quite as much interest our readers as the ex-

planatory observations into which our desire to point out the position which he occupies in society has seduced us. We return therefore to the farm at Goch as a good illustration of our problem.

The first study of every good farmer in Germany is the local part of his task, the influence of soil and climate. In the uplands of Cleves the climate is dry, and the sun hot in summer; the soil is strongly charged with limestone; cow-dung is found to answer better for winter crops, or at least cow-dung mixed with horse-dung, than the latter alone: for this reason oxen are kept as draught cattle all along the Rhine. The dung-heap in the centre of the farm-yard is the point on which the greatest care is concentrated for good farming establishments. It usually lies in a deep sloped pit enclosed by stone walls on three sides, the bottom rising gradually to the level of the yard on the fourth side, to allow of the approach of the dung-cart: into this pit the drains from all the offices are led, and waste of all kinds is thrown upon it. The plan of stall-feeding, but especially the care taken to keep the beasts clean (they are rubbed down every day like horses), prevents their being allowed to tread the heap down. Straw is likewise much economised, as it is used to mix with the oats during the winter. The mixture of cow and horse dung, with the flow of cold moistening matter, prevents the fermentation that would otherwise arise in the heap, and cause much of its value to evaporate. After the fallow ploughing the manure is only just ploughed in sufficiently deep to cover it; top-dressings are a good deal in use amongst good farmers for grain crops.

At Goch, as well as in other well-managed farms in

this district, compost heaps are to be seen in all yards; the substances used for one resembled a mixture we have seen in some parts of Ireland. A heap of quicklime is covered all over with turf-ashes, or with wood-ashes from the house-stoves. Water is thrown over the heap, and after a few days the lime, in fermenting, shows itself through the ashes; the heap is then turned over, again covered with ashes and watered, and this process is repeated until the lime is thoroughly slaked; the mass is then mixed with sand or earth, or other compost heaps, and forms an excellent top-dressing. The use of turf and wood ashes for manure, especially to prepare the land for flax, has spread into this district from Flanders.

The advantage of keeping horned cattle for draught is increased for the farmer who has his own distillery and brewery, by feeding them on the grains. The number of stock kept is large, even on those uplands where there is little grazing; one horse for twenty acres is the proportion of the best farmers, but then fifteen to twenty-five oxen and cows would be the smallest number of horned cattle on one hundred acres, with one to two hundred sheep. On a peasant's farm of fifty acres, we have found four horses, fifteen head of horned cattle, and seventy to eighty sheep.

In following the use to which the farmer puts this manure, we come to the distinguishing feature in Rhenish agriculture. No peculiar crop is here prescribed by legislative enactment, and the climate admits of a sufficient variety to allow the landowner to draw all the help he can from the nature of his soil. The uplands of Cleves are particularly well suited to grow barley. In the autumn the land of this description is well ploughed

and manured, and in the following spring barley and clover are sown; the grain obtains the highest price in the Dutch markets. It is not unusual to turn the cows on the stubbles, but each is fastened by the stable chain to an iron stake driven into the ground to prevent straying, as the lots are small in these parts, and no fences are to be found. A number of cows thus staked at grass look at a distance like the regular files of cavalry in skirmish.

The second year gives a rich clover crop, partly for stall-feeding, in part to be saved as hay, and the third (sometimes the second) cutting gives the seed known in England as Dutch clover-seed, from the circumstance of its passing through Holland on its way to London and Hull. When the seed has ripened and been housed,* the clover is broken up, and after several ploughings wheat is sown, which is followed by rye. Turnips are sown in the rye-stubbles, and the fifth year begins the rotation again with potatoes, followed by barley and clover in the highly manured soil. In soils less peculiarly suited to barley (which recommends itself as a profitable article of exportation) wheat and rye follow potatoes or flax, and are followed by oats. Cabbages and carrots often alternate with potatoes as fallow crops, and are richly manured, and in most large farms the two rotations go on side by side on lands of differing qualities. Perhaps the absence of expensive fencing favours the study of the peculiar nature of the soil, which is evidently severely tried by the rotations we have described. Where composts with marl or lime are used as top dress-

* The yield of seed is, according to Lobbes, 1000 lbs. to the Dutch bonnier, or about 5 cwt. per English acre.

ings, the rotation is usually prolonged, and the rye crop is repeated and followed by oats. It is common to top-dress the barley, after it has germinated, with compost or with liquids.

We now take the cost of cultivation and the produce from a writer whose authority we found readily acknowledged to be such as might be relied upon. The land is ploughed twice, three times, and even five times on some soils, for the winter crop. After beans, peas, and clover, one ploughing is usually sufficient. Corn-stubbles are first turned over with a scarificator, which is formed by simply adjusting the plough of the country to a higher level, and causing it to cut more flatly under the surface than usual. The object in this process is, of course, by cutting through the roots of the weeds, to cause them to decay the more rapidly. The seed labour is performed by the farm-servants, and goes to the yearly account. The harvesting requires extra hands. It is usual to mow corn of all kinds with a cradle-scythe. One woman binds as much as two men can mow. The mowers as well as binders contract for their work, the former at about 3*s.* to 3*s.* 6*d.* per English acre; binders get about 2*s.* 6*d.* per acre. Threshing is now commonly performed by horse-machines, on large farms, which finish 100 sheaves in a day of ten hours. The yearly wages are—for men, 5*l.* to 7*l.*; for women, 4*l.* to 5*l.*

It is not easy to conceive a simpler farming process than has been described. The land is made to bear the utmost that nature without forcing permits. Horned cattle are used in abundance, but are not forced in fattening, and the average weight of an ox does not exceed forty stone. With the annual yield a farmer differently

circumstanced might not be contented. The following estimate of the crop in the upland is from high authority, and has been confirmed by our inquiries :—

Wheat, 8 to 12 fold	Peas, 20 fold
Rye, 8 to 20 fold	Tares, 16 to 24 fold
Oats, 12 to 20 fold	Beans, 12 to 16 fold
Barley, 12 to 16 fold	Clover, 3 tons and 5 cwt. seed
Buck-Wheat, 40 to 60 fold	per acre.

The farmer's speculation turns, in this district, not upon forcing corn crops, for which he has but a limited average sale. If he can extract more than usual from the soil, he would in the uplands increase or repeat his growth of flax. In the lowlands he would grow more rape-seed, clover-seed, and tobacco than he now does. The change recently made in the English import duties on seeds has laid the foundation for a great influx of wealth into the Rhenish district.

We may venture to assume that the above statement represents the average return of fair soils in the whole of the region of the Rhine for a careful farmer. More than thirty bushels of wheat per acre is nowhere obtained, and with the prevailing meat and corn prices it would evidently not pay to force a greater corn production at the cost of a greater consumption of manure. On the other hand, the repetition of saleable crops is limited by the necessity of changing frequently the products raised.

A German farm usually supports itself, care being taken to want as little as possible that is not supplied by the ground. The bread is baked at home, and the oven, if possible, heated by faggots from the copse or hedges, where they exist. The meat is also usually slaughtered at home, and provisions of beef and pork sausages, of lard, butter, bacon, hams, and smoked meat, are periodi-

cally laid in, together with the potatoes, sour cabbage, beans, and beet-root, and the dried apple and pear cuttings, which form the staple articles of food.

The land may therefore be imagined as divided into two lots, one of which furnishes the food for household use and fodder for the cattle, while the other yields the market crops that are to be turned into money. In the present style of farming, an estate of 200 acres in the Duchy of Cleves needs ten men, and ten women or boys, as farm servants. We may assume that four horses, six oxen, fifteen cows, ten pigs, and one hundred sheep are kept. This stock will require, on a close calculation, 90 acres, together with the stubble-turnips off thirty acres of wheat or rye. Thirty acres of wood will give a scanty supply of firing, which will need to be eked out with coals. Ten acres, yielding 300 bushels of rye, or of equivalents in potatoes and culinary vegetables, are devoted to grow food for the inmates. We have then seventy acres for market crops, with (at Goch) the profit on the sale of milk, fat cattle, wool, clover-seed, linseed, the gain on the brewery and distillery, as the revenue of the landowner; from which, however, wages, wear and tear of house, offices, and implements, together with building alterations, must be deducted.

The land producing the market crops may therefore be estimated to yield as follows :—

	Yield.	Price.	Amount.
20 acres of potatoes .	5000 bushels, at 1s. 6d.		£375 0
20 ,, barley .	650 ,,	2 0	65 0
20 ,, wheat .	600 ,,	3 6	105 0
10 ,, flax or rape	..	..	150 0
20 ,, clover-seed	80 cwt. at 45 0		180 0
10 ,, linseed .	25 ,,	30 0	37 10

	Yield.	Price.	Amount.
100 sheep, wool, at 5 lbs.	500 lbs.	at 1s. 8d.	£42 13
			<hr/>
			£955 3
Deduct interest on 2000 <i>l.</i> stock .		£100	
Wages		105	
Repairs of utensils, &c.		50	
Fuel (coals), veterinary bill, &c.		60	
		<hr/>	310 0
			<hr/>
			£645 3

The profit on milk and cattle sold may be set off against the butcher's bill for extraordinaries, and if 45*l.* be estimated to meet the general and local taxes falling on the ground, we see that 600*l.* per annum may be cleared by a farmer who would live with his servants off 200 acres in the Duchy of Cleves. If the farmer keeps a gentleman's establishment united with his farm, he must deduct the expense of it from his gross profit; in doing which it will probably appear that as much comfort and luxury may be purchased for that sum in Germany as 1200*l.* per annum would command in England.

We shall shortly review the items that we have given for the sake of elucidation. The sale of an equal quantity of potatoes to that consumed on the farm is found in the greater part of Germany to be impossible. As every one grows his own crop, it is only by changing the shape in which the superabundance is sold that it can be disposed of. Hence the necessity for the distillery and brewery which are found on all large farms. The extra wheat and barley raised would also find no sale at home in ordinary years, without this subsidiary help, the profit on which, however, allows a good price to be reckoned in the farm books. Those who are disposed to be criti-

cal on the score of continental farming, should first carefully weigh the circumstances of the country and the state of the market, before they venture an opinion as to what the cultivation ought to produce. Mr. Jacobs, and all travellers who have taken pains on this point, have found the production of Germany very small. Our inquiries confirm this fact. We find it, however, natural, and do not believe that with the present population, and the restrictions on exportation, it could well be otherwise. Barley and seeds are here exportable products, their value is fixed by the Dutch and London prices, as the value of flax, since the successful exertions of Messrs. Marshall, is now fixed at Leeds. In the same manner we find tobacco and wool sold at the rates current in the general market of Europe. The advantage accruing to the Rhenish farmer from the recent improved means of travelling, consists in the bringing these markets nearer to him. Had no restrictions been anywhere imposed on the sale of grain, the agriculture of the Rhenish provinces which lie contiguous to the sterile part of Champagne in France, to Belgium, and to Holland, all corn-importing countries, would doubtless have early taken a direction that would have afforded grain for exportation. Even then, however, as competition with the fertile districts of the East of Europe would have remained, grain would in all probability not have been forced at the cost of underdraining, as in England. A greater share of general prosperity would have pervaded these districts than now prevails under the fashion of corn prohibitions; and butcher's meat being more generally saleable, would have favoured the holding of large stocks of cattle, and would have thus encouraged high manuring.

The commencement made by the French in improving the roads wherever they came as conquerors, has been followed up perseveringly by the Prussian government, which has met with full support, often at fearful sacrifices, on the part of the people. Not only good, but luxurious roads now traverse these districts in all directions. A still greater change was effected by the steam-navigation as soon as the competition of the various companies reduced the freight to their present moderate rates. The connection of the Belgian railroads with the Rhine by the opening of the line from Cologne to Verviers had the double effect of creating a new outlet for Rhenish produce, and of stimulating both the Dutch and the Belgian governments to favour the transit trade to and from Germany by a reduction of duties, and a diminution of the annoyances that have long been considered inseparable from custom-houses. By degrees a maritime traffic sprang up between the agricultural provinces of Prussia on the Baltic and the populous districts on the Rhine, which, although advantageous to the consumers in the manufacturing towns and villages, has materially altered the position of the Rhenish farmer. His distillery has long left him but a doubtful result, and the small stills will probably in a few years be altogether given up, and distilling will become a separate occupation, to be carried on by capitalists, who, on their part, will purchase the materials they require of the farmer. That neither party is ultimately likely to lose by this change of course our readers will premise. That it is at present accompanied by the usual lamentations of those who are obliged to suit their farming operations to the new system is also natural. The complainants, however, overlook the improved state

of their general market, which the new means of communication have created, the influx of manufacturing prosperity, and the increase of population, which never fail to accompany good means of transport. From official documents it appears that the consumption of meat in the Prussian towns, where a slaughtering tax is levied, rose from 78½ lbs. per head of the population in the period 1827—1839, to 83½ lbs. between 1840—1842. The population of the fifteen towns of the Rhenish province paying the slaughtering tax increased in the last-named three years from 245,635 to 256,274, or 4½ per cent., although, from the low rates of English prices, the Rhenish manufacturers were badly off in that interval. The period is rapidly approaching when the German farmer will no longer dread that any of the crops raised in the proportions we have described, will, in good years, be left as a drug upon his hands. Instead of calculating upon his distillery to carry off the superabundant produce, he will be induced to study the effect of improved utensils and of careful stock-husbandry to supply the demand of his accumulating neighbours. That he has a large field before him, and that the resources of these fine countries are far from being strained, our readers have already perceived. They would unquestionably have long since furnished a large supply for exportation, if the duties imposed by corn-importing countries on foreign grain had not confined the production of wheat on a large scale to more distant lands with exuberantly rich soils. The Rhenish farmers, and especially the landowners, may however be congratulated on the circumstance that no unnatural system of cultivation has been fostered by partial legislation.

They retain the privilege of following the natural demand that infallibly follows the growth of population, and they turn their position to good account. The high prices paid for land are in some degree to be ascribed to the want of good investments in other occupations. The manufactures that are so sedulously protected by the high import duties, do not furnish enough in quantity to satisfy the consumer, nor do their profits attract capital from the land. On the other hand, the only article of agriculture that is protected by a high duty, cheese, does not need this help, which perhaps in many places operates to the disadvantage of whole districts by inducing the farmers to neglect the growth of flax. Foreign cheese pays an import duty of 12s. per cwt. Flax is only taxed at 6*d.* per cwt., and although perhaps not more profitable for the grower than cheese, yet affords more employment to the labouring class.

CHAPTER II.

WE now invite our readers to accompany us (in their carriages or on the map) in an excursion into the lowlands of Cleves. For this purpose we leave the high road on the heights, and cross over to Pfalzdorf, a colony established in 1741, on a heath, by Protestant emigrants from the Palatinate. Near this settlement, which industry and skill have rendered flourishing, the house and grounds of Herr Lobbes are situated, whose father is known as an esteemed author on agriculture, in the practice of which art he was (as his estate testifies) eminently successful. The grounds were enclosed from the heath, and are now in perfect heart and full cultivation. This farm (Vasenhof), like that of Herr von Busch, serves still as a model farm for the neighbourhood, and the opinion of the present proprietor on all subjects connected with rural economy is not less respected. The house has less of architectural ornament than that of Herr von Busch, and is laid out more upon the plan of the larger farming establishments of the neighbourhood. The ground floor is occupied by spacious kitchens and washhouses, and when we visited it the contents of the former apartments were displayed at the windows, and on boards and stools in the yard, where countless pots and stewpans, tin plates and dishes, cullenders and braziers, announced by their brilliancy that the periodical cleansing time for the autumn, "the kirmess," was at hand. This locked-up

capital, which, when added to the linen in the housewife's clothes-press, is often worth a large sum, forms a stock as intangible amongst the middle classes and peasantry in Germany as the jewels of noble families. The division of the treasure amongst heirs male and female occasions no less anxiety and bickering than that of the rosettes, necklaces, and bracelets of people of fashion. The yard of this establishment is equally spacious with that before described. The offices run in a long line parallel to the house, which looks into a thriving orchard. The kitchen and flower gardens close the yard, being interposed at the end opposite to the entrance between the offices and the house. Between groups of trees on each side, the compost-heaps indicate the foresight and skill of the master. There is more planting on this estate than is common in the uplands, the small value of the heath originally having induced the purchaser to plant extensively. The houses of Pfalzdorf are neat cottages on a large scale, mostly built in wooden framework filled in with bricks, or with strong wicker-work plastered on the outside and inside, eight inches thick, which makes a warm and durable wall. They all stand in a line facing the road, with small gardens in front, and the land belonging to it at the back of each cottage. The holdings are from fifteen to twenty acres, and are well tilled, although the occupiers have other sources of industry, such as carriers' work, flax, and sometimes, in spite of the Jews, who monopolize this branch of trade, cattle-dealing. A proof of their skill as farmers is afforded by their flax, which is the principal market-crop at Pfalzdorf, and which is there raised upon the lightest conceivable sandy soil.

Flax is sown here after clover, carrots, oats, and buck-wheat. "At Neukirchen, near Geldern," says Schwertz, "the rotation—barley, clover, flax, wheat, is held to be good. Flax must not come on the same land more than once in six years. The clover-stubbles after seeding are ploughed deeply before the winter, and ten one-horse carts of dung are laid upon an acre of land and remain there. In spring the straw is harrowed off, the ground once more harrowed, sown, harrowed again, and rolled. About five bushels of seed are sown per acre; Riga seed is found to last good longest, but the seed from the Palatinate, which must be brought fresh for each sowing, gives the best flax." It has been observed that when the dung has been allowed to lie on the land through the winter, the flax yields most, but the rye after it requires manure. Where the dung is ploughed in before winter, the flax is less luxuriant, but the land remains after it in better heart. The flax is steeped for some time in water, and then is spread out on clover-land for six or eight weeks to finish the rotting of the husk. It is broken and hackled by hand in the Belgian manner, and is said to yield 8 cwt. of fine flax per acre (16 cwt. per Dutch morgen). From 8 cwt. of dried flax, about 2 cwt. is obtained by the Belgian dressers, and this proportion we have adopted in our calculation given above.

A few miles to the north of Pfalzdorf, the cross road drops into the lowlands, which is raised but little above the valley of the Rhine, and there the more luxuriant vegetation indicates a change both of soil and climate.

In these lowlands, which extend from near the frontier of Holland up the Rhine for thirty miles along the river's bank, the farms are large and the land

usually laid out with regard to abundant and rich pastures. Cattle are here fattened on the grass and clover. A farm near Wesel has a stock of seven horses, eight cows, thirty oxen, besides calves, and sixteen to twenty pigs, on about twenty-eight acres. These farms are half pasture land, flooded in the spring by the Rhine, and yet the number of hands employed is from seven to ten men, and three to four women, servants. The wages of the former are from 5*l.* to 6*l.* per annum, with hearty meals, at which meat appears every day, especially on the low left bank of the river, where the estates mostly belong to rich owners. On the right bank the road we have followed joins the second high road from Cleves to Neuss, that runs parallel with the upland road, at Appeldorn, a flourishing village, the houses of which are widely scattered, to place them as much as possible on the lands belonging to the owners. Adjoining Appeldorn is the hamlet of Marienbaum, which the inquiring traveller will find the best station for a halt in this neighbourhood. He will be surprised at the accommodation which the inn affords, and will obtain much useful information from the people of the house. From the inn to the bank of the river is a pleasing walk of about three miles. The small farm-houses have a very neat appearance, and have a kitchen and flower-garden as a never-failing appendage. Here too we have found the labourers' cottages on small allotments very neat, containing a great deal of room in combination with great economy of construction. The cottage is built of brick, with a high roof which serves as barn and hayloft. The entrance is into the kitchen, adjoining which is a bedroom, both roomy. Two other rooms open from these, and the stable, if there be one, is in continuation under the same

roof. Small patches of land opposite the houses were, when we saw them, filled with potatoes, cabbages, and other vegetables, between which and the road the people had constructed a temporary fence with sticks, up which was trained the large bean, that ought to be better known in England than it is, and which we shall take the liberty of calling the *German* bean, in contradistinction to the small French bean. These beans are delicious when fresh, and are preserved in various ways for winter use. The road from Marienbaum to the Rhine lies through a polder, which is protected from the river, whose level is higher than parts of the land, by a high dam. The keeping up of this embankment is an expensive matter, and its cost is defrayed by a rate levied on the landholders of the polder. A few years ago it gave way, and the water caused great devastation, for the polder is occupied by a numerous body of small farmers and landowners. The banks of the river on both sides are formed of similar dams, and this part of the broad and mighty stream presents little of the picturesque. We may, therefore, return to Marienbaum, noticing a little to the right of the road another pretty country-house belonging to a retired officer, reputed one of the best farmers in these parts. Several enclosures round his house are devoted to the growth of tobacco, in which he is very successful.

It has been noticed that rape-seed and tobacco are frequently substituted in the rich lowlands as market crops, for the flax and potatoes of the uplands. The growth of tobacco is discouraged in Prussia by a tax varying from 3 dollars to 6 dollars per morgen, according to the quality

of the land. This is equivalent to 14s. and 16s. per acre. Some details respecting this crop, which one of those laws that are intended to puzzle posterity has excluded from English rotations, may be acceptable to our readers.

The plants are raised in a hotbed and transplanted. The hotbed consists of a pit a foot deep filled with cow-dung, and covered five inches with earth, on which a light frame is placed that is covered with oiled paper instead of glass, and sufficiently sloped to throw off the rain. Horse-dung is found to be too hot for the plants, and it throws up fungi, near which the tobacco does not thrive. A bed of 320 square feet will hold plants enough for two acres of land. The seed is sown in March, and must be strewed equally over the bed, that the plants may be of like size. The measure here used for 300 square feet is fifteen Dutch pipes-full, a measure more amusing to read of than difficult to use. When the seed is sown, the frame is shut up, and the crevices everywhere closed with moist clay or cow-dung. The covers are lifted in dry weather every three days, in rainy periods every six days; the bed is watered sufficiently to keep it a little moist.

The ground which is to be planted with tobacco must be ploughed five or six times. With the last ploughing but two the dung is worked in. The last ploughing but one brings the dung up to the surface, and it is again covered with the last ploughing. The soil is thus thoroughly mixed with the dung. The land, if large enough, is divided into beds, and the plants are dibbled in along a line, the dibble, of two feet and a half in length, serving to measure the space between the plants. The planting out takes place in April: one hoeing in the sum-

mer suffices where the land is perfectly clean. The leaves sprout until the stem has twelve to fourteen upon it, when the top is plucked off. The lowest leaves are here called the sand-leaves, "Sandgut;" above these are the earth-leaves, "Erdgut," which are larger and thicker; the uppermost are the best leaves, "Bestgut." The plucking commences with the lowest, or sand leaves, which are bound on the field in bundles by themselves; the earth-leaves are next picked, and kept apart from the others; the best leaves are taken off last. When the leaves are carted home, on which occasion care is taken to keep the bundles as clean as possible, a slit is made in the stalk at the thick end of the leaf, and the leaves are piled up until they begin to wither. They are then strung on poles, to be hung up in the drying-shed. This shed has walls of open wicker-work, and there are openings in the roof to facilitate a thorough draught. The peasants hang up their leaves in the haylofts over their stables; but the moist effluvia from below is found to injure the leaf. When the leaves are partially dried they are piled (the qualities each apart) in square heaps to ferment, and these heaps are broken up and reconstructed occasionally, to allow the bundles that at one time lay outside to be placed in the middle, until all are equally heated. The tobacco is then sold to the manufacturer, and, as ten plants yield one pound weight, the return is considerable, being often 60 dollars for a Prussian morgen, or 15*l.* 15*s.* per English acre. Of this one-third is estimated to cover the labour, and contracts are frequently made by the richer growers with labourers on a footing of this kind. The labourer, however, frequently contracts to find plants and even dung. If he finds the plants alone, his share is

one-third ; but if he furnishes the dung, which of course is only usual where small parcels are cultivated, he gets one half of the gross produce. This mode of improving the wages of agricultural labourers would deserve some attention elsewhere. The tax upon tobacco-growing represses its cultivation in Prussia, as has been remarked ; but we shall have frequent opportunities of noticing this crop as we advance up the Rhine. Near the village of Wissen tobacco is cultivated on the uplands of Cleves. The second crop on which the farmer relies as a marketable one is flax, which we noticed as chiefly cultivated on the uplands near Pfalzdorf. The flax-fields of a village in the district of Jülich sometimes cover two hundred morgens (125 acres). Barley, clover, flax, and wheat, is considered a good rotation, but flax does not thrive on the same land oftener than once in six years. The clover stubbles are ploughed up deeply, and twenty small one-horse loads of dung carted upon it before the winter, and left upon the land. In spring the ground is well harrowed and sown, then harrowed again and rolled. This surface-dunging is said to have more effect upon the crop that immediately follows it, than when the dung is ploughed in. The effect of the ploughed-in dung is, however, greater on the crops of the following years. The flax-seed is either from Riga, Belgium, or the upper Rhine. The crop is estimated to average 5 cwt. of cleaned flax per morgen, or 8 cwt. per English acre. This, at 4s. per German stone of 11 lbs., gives about 17*l.* per English acre as the gross return, besides seed, of which 5 bushels are gained to the acre. The crop cannot on the whole be estimated at much less than 20*l.* per acre, where sufficient care is taken to obtain good quality.

The lowland cultivator on small farms looks to his rape-seed crop, with tobacco or flax, according as the soil or his habits induce him to prefer the one to the other. The large farmer is a stock-farmer, whose pastures furnish cheese made in the Dutch or Limburg fashion, and whose fat cattle find a ready sale in the manufacturing district of Elberfeld, or in the cities of Düsseldorf and Cologne. His fallow-crops are therefore mangelwurzel, Swedish turnips, or carrots and cabbages, and the grains from his distillery, with oil-cake, eke out his supply of fodder in the winter months. Land in the lowlands is high in price. We were told of a small estate of 18 morgens, with a peasant's house and offices upon it, that sold in 1845 for 20,000 dollars, or 3000*l.* It would be a high valuation to estimate the buildings at 500*l.* ; so that the land sold for 150*l.* per English acre.

We endeavoured to give some idea of the position and standing of the country gentleman on the Lower Rhine. Our sketch was indeed a hasty and most imperfect one, but the answer will probably be still less explicit and satisfactory when we are asked to describe what entitles a large class of the population to be called *peasants*. Peasant is a word that we have borrowed from the French, and means countryman. The corresponding word in German is "Bauer," which signifies a builder or workman ; and "the bauer" is the man who works up the soil for the general nourishment. A minuter inquiry shows, therefore, that "boor," a word used by us as a term of reproach, is in reality a distinction expressing the usefulness of agriculture as pre-eminent amongst the industrious occupations. The "Bauern" of Germany have only of late been emancipated from the yoke under

which the cultivators of the soil were long held in all the countries of Europe. The transition has been differently effected in different countries. In England the race of small cultivators was so much diminished in the Wars of the Roses, that the possessions returning into the hands of the feudal lords were of necessity farmed out by them in larger parcels. In France the small cultivators eventually triumphed over the nobility, and in the French revolution the estates were, by the agency of confiscations, transferred to new owners, mostly in small parcels. The German peasant was originally a subfeudholder, who held his land of a feudal lord on the terms of suit and service. In the most ancient times the peasant followed his chief into the field. Since the establishment of standing armies his duties have been confined to agricultural services. He had to work a number of days in the week for his lord, either with or without his team, as the terms of the holding ran. In Austria, where the labour-rents* (as they have been termed by a leading political economist) still prevail, the most common condition is 108 days, with a waggon and team, for about 36 acres of land. Smaller holdings are saddled proportionately with horse or manual service. The period of the Reformation, or rather, the close of the long struggle in Germany which ended in the erection of a Protestant kingdom in Prussia, marks the epoch of a change in the position of the most numerous class of the inhabitants. It had been usual to leave the holdings in the same family, and about the close of the seventeenth and beginning of the eighteenth centuries the claim to inherit began to be looked upon as unquestionable. The *emphy-*

* Rev. R. Jones, 'On the Distribution of Wealth.'

teusis, or hereditary lease on fixed terms, was a point easily ceded by lords who had no chance of asserting any other title. The acquisition of such a standing in society as actual indisputable possession of the soil conferred, seems to have reconciled the peasants to the continuance of many of the oppressive forms of feudal ages long after the necessity for them had passed away. Thus the village bond, with its distinctions of dress, modes of tillage, and other habits, were preserved in Germany beyond the period when the discomfort they occasioned had caused them to be abolished in other countries. To this day every village is distinguished by the colour to which the men and women for the most part scrupulously adhere in dress, by the hat of the males, and the prescribed rather than the favourite hood of the women. To change the accustomed attire and adopt the costume of the towns is synonymous in Germany with a change of condition. The peasant who does so becomes a "burgher," or townsman, as he enters on the career of a man of learning, as a pastor, a lawyer, or an official character. No man in office, whether a turnpike-keeper (who is here a servant of the crown) or a bailiff, wears the peasant's dress, nor is any innkeeper or shopman so attired. Even the village Boniface assumes the frock-coat and short waistcoat of the townsman, and drops the peasant's three-cornered hat where that is customarily worn. His wife assumes the simpler cap and bonnet of Paris or London, unless custom has preserved a relic of the ancient burgher-costume in the towns of the neighbourhood. In the Rhenish district that we have traversed, the influence of trade has undermined all those primitive distinctions, and the peasant dresses as he pleases. In the Duchy of

Cleves the feudal tie soon gave way to a calculation of mutual advantage between the owner and cultivator, and the custom of farming out land was here adopted earlier and has been continued on a more extensive scale than in any other part of Germany.

That the opinion we have ventured, in ascribing the free position of the peasant and landowner in the Duchy of Cleves to the influence of trade, is not a forced one, is proved by the fact-cited by Rive in his valuable work on the peasants' holdings in Westphalia. It appears that when, in the fourteenth century, the county of Mark, on the right bank of the Rhine, was united with Cleves, the rulers of the latter district could not understand why the relations between the feudal lords and the peasants should not be allowed to regulate themselves in the natural manner prescribed by mutual interest, as they had seen take place on the left bank. They could not enter into the feelings of the peasants to depend upon customary privileges, or on the interference of the government to protect them from encroaching superiors. But it is likely too that the statesmen of Cleves calculated too lightly the disadvantageous position of Westphalia, which lay out of the high road of trade, and possessed no traversable roads. To this county of Mark we now invite our readers to follow us, and for that purpose recommend them to follow the road from Marienbaum to Xanten, an old Roman station, prettily situated about a mile from the river's bank. The antiquarian may there seek the possible site of the wood in which Civilis excited the Batavians to revolt against Cæsar, and the position of the celebrated *Castra Vetera*. Lovers of art will admire the magnificent church, which is too little visited by strangers, and

where the architect will find the first specimen of that combination of the round with the pointed arch, which is characteristic of the Rhenish architecture of the middle ages. We may take a passing steamer at Xanten and land on the opposite bank at Ruhrart, at the mouth of the navigable and romantic river Ruhr, whose rocky bed and rapid current at Mühlheim are crossed by a handsome chain-bridge.

These two places are the chief seat of the coal-trade, which has attained a great extent on the Rhine.

CHAPTER III.

MÜHLHEIM lies in the Duchy of Berg, the title of which, after a long consolidation with Prussia, was revived by Napoleon for a principality conferred upon Murat. The former Duchy of Berg, which extended along the Rhine from the Ruhr to the commencement of the territories of the House of Nassau, has ever been famed for its richness in minerals. Iron of the finest quality produced in Europe, lead, copper, zinc, and the precious metals, furnish employment to the industrious inhabitants as miners and founders still. To these pursuits manufactures of textile wares have with considerable success been superadded. The population is therefore more strictly manufacturing than agricultural, and the agriculture of the Duchy of Berg is too much modified by this mixture of occupations to be of much interest to the farmer on a large scale. We shall therefore continue our journey along the high road to Essen, a town once governed by powerful Lady Abbesses, with the double authority delegated immediately from the Imperial crown and from the Church. The convent of Essen dates from the ninth century, and, according to tradition, occupies the site of the first Christian church erected in the district. The founder is named Alfred, which indicates a Saxon origin, and an aqueduct that imperfectly supplies the town with water is still called Alfred's "brunnen." The princely Abbess of Essen had a seat and vote in the old Germanic diet, and

more than once have candidates for the vacant seat called out their vassals, and asserted their clerical pretensions sword in hand. With the exception of the wonderfully curious old church, the most curious in style and form that we have met with, the town has now little that attracts curiosity, but with its neighbourhood we enter upon a different mode of landed tenure from all that prevail upon the Lower Rhine. The powerful clerical foundations of Westphalia and this neighbourhood were long able to resist the touch of time that was incessantly gnawing and leaving to moulder all the institutions that surrounded them. Had not the convulsion occasioned by the French invasion at once dispelled their glories, it is impossible to say what antiquated forms of feudal tenure might still exist in this now promising tract of country. That the antiquated forms which the change made by the French at once abolished, had lost all utility, was proved by the fact that the feudal lords on that memorable occasion were utterly unable to lend any vigour to the tottering throne, and equally incapable of affording the slightest protection to those whom they called their subjects.

The old Minster of Essen bounds an open place adjoining the town, two other sides of which are surrounded by irregular buildings that bear tokens of modernising in various epochs, and not in the best taste. One of the largest of these is devoted to the residences and bureaux of the government officials, the legitimate heirs of the old proprietors. The change, it is true, was made in the style of that glorious monarch Henry VIII., of pious memory, by a vote passed at a European congress, by which

monastic institutions were declared to be useless, and their lands forfeited to defray the expenses of the state. The Prussian government, however, did not expel the sisterhood and hang them as useless vagabonds, like the said Henry, but allowed the last members of the rich "Stift" decent pensions, and their abbess the enjoyment of her princely honours until her death, which occurred a short time since. Across this square at Essen, therefore, the peasants might for a long time be seen trooping to pay in money what in former times was levied in kind—the first-fruits or rent of the land; and although many praisers of the good old times lamented the change that an English artist has commemorated in his picture of the courtyard of Croyland Abbey, still the Germans live too near the reality of that picture, and know too much of its background, to wish to return to its epoch. The lay impropiators brought with them well-defined contracts, which the spirit of the times and of the Prussian administration were alike willing to adhere to, and to interpret favourably for the peasant. But while *the services*, as part of the old contract, were thus modified, *the suit* (a word borrowed by Norman lawyers from the French, to signify the duty of *following* the lord to the field) became also more clearly defined, and eventually included every male subject, without regard to property or other distinctions. The gathering of the vassals upon an emergency to do battle in the cause of the lord of the soil, has given way to the annual conscription, and to the spring and autumnal military manœuvres. The personal bickerings of jealous neighbours have been superseded by the policy which prevents all probability of war except upon the largest scale; but if

the landowner be not altogether freed from the chances of this greater evil, it is a benefit fully recognised on all sides that the smaller calamity is effectually removed.

Even the chance of a European war is now nearly reduced to the display of the means required to check the periodical ebullitions of one restless power, by whom central Europe is kept in a state of continual alarm. The Prussians have almost solely to thank their French neighbours for the immense military establishment that is supported by the devotion of the people to their king and their national institutions. Every man is enrolled between the age of eighteen and forty, either in the standing army or the militia, the first draft of which, comprising men from twenty-five to thirty-five years of age, forms the military strength of the nation. This arrangement has been sneered at by superficial tourists; but they have not told us by what other means M. Thiers would have been prevented from invading Germany in 1840. The French minister had then a good opportunity of executing a "coup" at sea, where he was well prepared. He was prevented from attempting it by the imposing attitude maintained by 400,000 Prussians and as many Austrians, well equipped, with horses and artillery in abundance.

Again a change comes over the spirit of our dream, and the edicts of the ministers Stein and Hardenberg not only recognise the ownership of the soil in the peasant's hands, but allow him to redeem, at a moderate valuation, all dues and services, whether in labour, in kind, or in money. The advantage of this somewhat violent release from dependence must be tested by two standards: first, the tendency to abuse the position of the landlord towards his dependent cultivator; secondly, the advantage at-

tending the transformation of so much circulating into fixed capital. The former test was too fresh in the memory of the peasants, and was too vividly pictured by the reformers of the time, to allow of much consideration for the latter. Experience proved the best solver of this difficulty. Where trade had created circulating capital and credit, the rents and dues were eagerly redeemed by the landowners; where those resources could not be commanded, things remained as they were. In the county of Mark, and in the adjacent manufacturing districts, not only were the services early redeemed by money-payments, and the landholders placed in the situation of English copyholders, but the estates offered by the crown for sale, having fallen to the royal demesne as indemnification for ceded territories elsewhere, found purchasers at moderate prices. Whatever sacrifices were made under these circumstances were justified by the prudent use made by the Prussian government of the money. There was but one idea to follow in our financial age: public credit had to be supported. This has been achieved during the reign of King Frederick William III. of Prussia. His success is recorded in the present price of the public funds, and still more intelligibly in the impossibility which M. Thiers found of executing his menaced attack on the left bank of the Rhine. We return to the present condition of the German peasant.

Wherever holdings were large enough to maintain a family, and the population thin enough to feel no pressure from its increase, the old forms of dress and mode of living have been preserved as strictly as if sumptuary laws and feudal control still prevailed. The peasant's position was, however, even more materially affected by an inno-

vation effected in the middle of the last century. Formerly the taxes of the state fell upon the lord; the heaviest of all, that of personal service in the field, being regarded as a mark of honour. The custom of standing armies with arbitrarily chosen officers deprived the lord of this badge of distinction, and he was ill prepared to substitute a money-payment for his personal sacrifice. A standing army demands a regular revenue, and the introduction of a land-tax was found necessary. The imposition of this tax was what occasioned the first formal recognition by the crown of a *right* enjoyed by the peasant in his holding. The Empress Maria Theresa, in her celebrated "Urbarium," asserts the right of the crown to interfere between the landlord and the peasant, on the ground that if the latter is oppressed by too severe service, he cannot contribute to the exigences of the state. The transfer of the land to the occupier from the feudal lord thus received the sanction of the crown. The Emperor Joseph II. sought to extend this innovation to all the other provinces of his empire. In Hungary he met with determined opposition, but the principle was everywhere eventually triumphant. Whether the mode adopted of effecting the change was, in all circumstances, a desirable one or not may be questioned, as we have seen.

We may assume that the pressure felt in any rank of society as the result of increasing population is a wise ordinance intended to spur men to exertion. In Germany (as in Ireland at present) the want of easy internal communication and of credit, owing to the repeated agitations of warlike neighbours or ambitious leaders, confined the peasant population exclusively to agriculture. The pressure which these felt as their numbers increased

would have induced many to turn their attention to other modes of obtaining their living, if the land had not thus been given as a bribe to continue in their comfortless condition. Germany with its diminutive holdings of land is certainly better off than Ireland would be were "fixity of tenure" to sanctify the holding of a potato-garden. But the principle is the same; setting aside all questions relative to security of property, it can do no good to devise expedients for bolstering up and preserving antiquated forms whose insufficiency occasions a pressure. Relief must be sought, where population presses, in an extension of the field of industry, as has been done in this part of Westphalia. The present state of holdings in the county of Mark and the adjoining districts has formed itself under the double influence of a rich proprietary and of growing industrial activity. The largest landowners were, as has been said, the clerical foundations. Their property was better defined than that of lay lords, for none could be alienated. In a country suited to grain cultivation it was soon discovered that a certain area of ground could be better, that is to say, more economically cultivated, than too small divisions of the land. The progress from the extensive cultivations (still found in Hungary, Poland, and North Germany), where one central farm had several outworks on a large scale attached to it, to the more moderate division of the surface, by making separate farms of the outworks, can in the history of these clerical foundations be clearly followed. Up to the period of the sale of the domains by the crown, the distinction remained between the head farm, or "Oberhof," and the dependent farms, although held by different tenants, in testimony of the

old system. The size of none of these farms was reduced below what a respectable tenant could manage, and in this condition the clerical foundations surrendered their trust to the crown. The rapid sale of all these holdings, which has been noticed, occurred after trade and manufactures had opened other sources of employment for the people. Iron and steel were in great demand during the French sway, and for some period after its expulsion. Of late years the coal-mines, which are found in the country on the banks of the Ruhr, have given a fresh spur to exertion. These circumstances could not but exert great influence on the size of estates, and accordingly we find holdings averaging a fair size. The usual allotments are from 100 to 200 acres. The face of the country in the neighbourhood of the Abbeys of Essen, its tributary Steele, and of the romantically situated Werden, may be termed poetically agricultural. The holdings can be traced as to size by the mixture of copse and timber, which shelters the farm on the wind side, if the neighbour's wood does not enclose it there. The house, roomy and handsomely painted, with its wide-stretched offices, takes up more room than an Englishman would think economical. Haggards and stack-yards are rare, although getting into fashion.

A drive or walk from Essen to Werden on the Ruhr, or in the opposite direction, will prove a treat to the traveller, and will justify our praise of the appearance of the country. We visited a seat situated about five miles to the east of Essen, where the hospitable proprietor opened for us a rich store of information. It was easy to detect the land he cultivated himself from that which was farmed out to cottiers or labourers, and he declared his intention of resuming, at the first opportunity, what

he had let out. The approach to the house was between shelving pieces of land which formed a bottom; the house stood near a running stream. This land appeared to us sadly to want draining, but we were assured that it only bore this appearance in a wet season like 1845. The remark has undoubtedly but relative truth. That draining will not pay with the present corn prices in any part of the Continent, we believe. We equally believe that without it such wheat crops as are raised in England cannot be obtained. The query to solve appears to be, therefore, whether such dear wheat crops, as are evidently a public grievance, can be a private benefit. In Westphalia, at least, no one is of that opinion, and good farmers would regret the necessity of turning their attention exclusively to grain, to the exclusion of crops that pay better.

In the counties of Mark and Berg the corn prices are the highest of all Germany. The official accounts show that wheat in 1842 averaged 85 gros per scheffel, or 42s. 6d. per quarter, in Elberfeld and the neighbourhood, while in Minden and Paderborn adjacent the average was 73s. gros per scheffel, or 57s. 6d. per quarter. This difference throws indeed a strong light on the state of the roads in the more remote parts of Westphalia, but perhaps the passive silence of the landowners of the Bishopric of Paderborn under such an infliction is best explained by the fact, that the district looks especially to flax as the paying crop. In the neighbourhood of the Ruhr corn is therefore most cultivated, but of course divides the field only with fodder for cows and for fattening stock,—the characteristic signs of a populous neighbourhood.

The farm at which we spent the most time while here,

had an extent of 400 morgens, or 250 acres, of which 41 morgens, or 22 acres, were underwood. Six horses and twenty cows and heifers, all at grass in meadows skirting the little stream, formed the chief stock. The number of human assistants appeared out of all proportion. Thirty-five men and women were in constant employment, and in the harvest-time help was sought from strangers. The owner pointed to an outhouse where both sexes lived promiscuously, and declared himself unable to answer for the morals of his labourers, whom we, of course without reference to their immorality, termed his "Irishmen." The resemblance was indeed too striking not to excite sympathy. They were peasants from the heart of Westphalia, and spoke *low German*, a dialect that is neither in use for writing nor for conversation amongst the educated classes. Thus cut off from the means open to others of obtaining information, their land for centuries untraversed by roads, and under strict clerical rule, the appearance of these poor labourers was fully explained in the thriving neighbourhood that lies so near their impoverished homes.* But a more useful hint may be taken from the labourers of Bielefeld, for from that far-famed linen district they came. Hand-loom weaving is the main occupation of the working people, and hand-spinning prevails throughout all the flax district of Westphalia. No one has had sufficient enterprise to establish a flax-mill in those parts, and the poor workmen are left unaided to contend against the improved machinery that everywhere surrounds them. The flax district lies too far to the north to be entitled to

* The wages of these labourers is 8 gros, or 10d., per day for men; and 6 gros, or 7d., for women.

a place in a description of Rhenish agriculture. Yet an excursion to the county of Ravensberg will repay the curiosity of any one desirous of studying flax-cultivation. The soil devoted to it is of the richest description, so that flax forms the third crop from the manured fallow. Beans are sown on the fallow, wheat follows, and then comes flax. The country-people point out the districts where flax flourishes best, and trace the limit of its degeneration. Here again we find the system of making the most of the land by the simplest routine. Forcing by a more studied rotation has not been attempted. As however flax equal in quality to much of the Belgian flax is produced in the county of Ravensberg, the effect of machinery and railroads will be to stimulate the cultivation of a crop which the peasants understand well. We remember to have seen a piece of Bielefeld linen at last year's exhibition at Berlin, which the king had purchased for 112 dollars, or 18*l.* 16*s.*

We shall, however, invite our readers to follow us in ascending the valley of the Ruhr to its junction with the Lenna. The country all the way presents the same pleasing appearance. Nor is the view less gratifying where the road recedes from the romantic banks of the river, on which castles, ruins, and factories rapidly succeed each other. The disposition of the agricultural tenements continues the same. The house, with its adjacent woods, stands everywhere on the farm in the manner we described near Essen. The frequent tall chimneys indicating the sites of coal-mines, round which labourers' cottages occasionally cluster, point to other sources of industrial earnings for a large portion of the dense population.

If we leave the Ruhr at Syburg, the elevated site of Witikind's castle, and the scene of fierce conflict between that Saxon hero and Charlemagne, and take the road leading from the thriving town of Hagen to the valley of the Wupper, we pass the line of the new railroad from Cologne to Minden, which traverses a beautiful valley on a splendid viaduct. As the traveller approaches Elberfeld, the seat of the silk and cotton manufactures, the face of the country presents a totally different aspect from the adjacent districts of the county of Mark that we have just traversed. Neat peasants' houses with small plots of land fill the rather narrow valley, the hills enclosing which are covered with wood for the use of the numerous steel-manufacturers. Here is the place to study the allotment system, although not in its best form. The factories are nearly all worked by water-power, and are consequently scattered along the course of the Wupper, according as the fall in its bed allows. Between them the peasants' houses stand, often at a distance of a mile or two from the factory, a portion of whose inmates are the labourers employed. These houses have a garden, fields that produce grain and fodder, and usually a piece of meadow on the river's bank that helps to feed a cow. Whether the manufacturer gains by this association of agriculture with factory labour we shall have an opportunity of examining in another volume, where we propose to treat of the state of manufactures in the Rhenish districts. In an agricultural point of view, little can be said that distinguishes this from other populous neighbourhoods. The small holdings are tilled with care, but produce on an average rather less grain than the large farms. Cabbages, car-

rots, small patches of flax and rape-seed, point to the wants or prevailing market crops of German peasants. It must be owned that a labouring population, so scattered and rurally disposed, forms a pleasing contrast to the dingy rows of cottages that are met with at the entrance to our manufacturing towns. Allowance must, however, be made for the small scale on which the German factories are erected, and for the substitution of water for steam power, which scatters the establishments instead of accumulating them on one spot. Perhaps a taste for gardening might, in England, be usefully nourished in the female manufacturing population. But we doubt whether the English workman would change with the German, however idyllic his dwelling may appear to the stranger. John Bull is much to be justified if he prefers fresh bread from the baker's to the homely rye-loaves that are here manufactured once a fortnight, and if he thinks beef and mutton selected at the shambles both better and cheaper than the dry cows and old wethers that form, the greatest part of his time, the meat at a German villager's meal.

Another source of earning for the peasants of this district is the carriage of goods to and from the Rhine. The ox, the primitive agent of draught, has, in consequence of the good roads, been very much superseded by horses. These are now about to make way for the railroad, which will, besides, introduce cheap corn from the inland counties of Germany. Of course, a modification of the present system of cultivation must be anticipated. If manufactures spread with the improved means of transport, we may look to see these valleys filled with the cottages of workmen surrounded by gardens only. In

this manner small allotments may be useful. For the growth of grain, or of other products that are best cultivated on a larger scale, a small parcelling of the land is not economical.

The pride of the German peasant is to be a small landowner. The sacrifices made to gratify this longing are incredible, as is the tenacity with which he clings to his land in all changes of fortune. The price paid for small lots of land in the valley of the Wupper and the adjoining districts would frighten an English farmer. From 500 to 700 dollars per morgen, or 117*l.* to 150*l.* per acre, is no unusual price for arable and meadow land. What interest he gets for his investment seems never to cross a peasant's mind. The rent of small patches adjoining these houses is not proportionately high, although dear enough; 10 or 12 dollars per morgen (2*l.* 10*s.* or 3*l.* 0*s.* per acre) is constantly paid in situations remote from the influence of towns. Building sites, especially those favourable for trade or manufactures, sell also as high as in England. The sum of 3000 dollars was paid a few years back for about an acre and a half of ground on which some zinc-works now stand at Duisburg. This was equal to 500*l.* per acre.

We shall, as we proceed, have frequent opportunities of describing the position and life of the German peasant. Here we shall only remark that the leading distinction between the industrious classes in England and Germany is mainly the result of a difference in the division of labour. In England, the labourer is early taught to look to his own exertions, concentrated upon some special occupation. He is fully aware of the advantages to be drawn from, and of the risk attendant on, a minute divi-

sion of labour, amidst numerous and active competitors. The German is still in that kind of dependence on the soil which apparently secures subsistence, and consequently independence, even if accompanied by poverty. In these and other districts, where the population has rapidly, of late, accumulated, the peasants are in a state of transition from the one position to the other.

The population of the counties of Berg and Mark approaches that of the most densely peopled parts of Great Britain.

	Population.	Per Eng. Sq. Mile.
Berg.	Circle of Düsseldorf	67,781 457
	„ Solingen	57,978 594
	„ Elberfeld	104,532 940
	„ Lennep	60,320 542
	„ Duisburg	85,627 350
Mark.	„ Hagen	62,097 404
	„ Iserlohn	34,469 272
	„ Bochun	43,930 294
	„ Dortmund	42,555 250

On reaching Barmen and Elberfeld the traveller has the choice of following the line of the new railroad to Düsseldorf, or taking the hilly post-road to Cologne by Remscheid, Solingen, and Burtscheid. On the line of the railroad the country presents much the same appearance that it does between Hagen and Barmen, but grows more decidedly agricultural, and the holdings increase in size as the railway recedes from the Wupper. In the hills of Remscheid and Solingen—the contrast between the cheerful cottage cultivation we have described and some of a very different description is striking. These hills present to the eye a mass of round elevations intersected by deep ravines. The small streams that run through the glens

are carefully shrouded by plantations of alders, and at convenient distances the water is collected into ponds, which furnish power for the working of small steel hammers or grinding-stones. The sides of the hills are nearly all under grass, although the water cannot be carried over them; and, indeed, it is too precious for the manufacturer, who works here on a very diminutive scale. The cottages of these owners of the hammers and the grindstones are usually small and poor in appearance, and stand at some distance from the little mills. It is easy to follow the calculation that seems to prescribe green crops, as demanding less time and attention than others, where the labour thus saved can be usefully applied.

Under these circumstances, and with the prospect of an early railroad communication with the corn growing counties of central Germany, the prospects of this district must also tend to a diminution of corn crops, and an increase of garden and dairy cultivation, to the great gain of the landowners as well as of the consuming population.

CHAPTER IV.

IF we recross the Rhine at Düsseldorf, and regain the high road which we left at Xanten, we come, in the neighbourhood of Crefeld, into a manufacturing district. The population of the circles of Crefeld and Gladbach is nealy 600 to the English square mile; that of the circle of Kempen exceeds 350 to the mile. The labourers, or more properly speaking, the weavers, in this district, like those near Elberfeld, occupy very small holdings, which they cultivate in the usual garden-like manner that accompanies such allotments. The price of produce is here, too, generally high, and the complaints of distress are loud and manifold throughout the district, especially in the present year, when the failure of the potato-crop threatens to press heavily upon the poorer portion of the population. We find ourselves therefore once more in a part of the country which ought to merge from agriculture into gardening in a natural manner, and cannot wonder at the high prices and high rents which these small parcels obtain. In the adjacent districts of Geldern and Jülich, although the soil is better, neither rent nor purchase-money rates so high. Flax is cultivated throughout, and linen is one of the chief productions of the loom in these parts. Cotton-factories are creeping into this neighbourhood, but those as yet established are on a very small scale. Silk gives the most employment, after linen, to the hand-loom weavers.

The effects of trade and manufactures upon the agricultural interests on the left bank of the Rhine are only strikingly visible as far as Crefeld, with the adjoining circle of Gladbach. As we approach Neuss all assumes an appearance that must be as novel to a Belgian and a Dutchman as to an Englishman. The whole face of the country is altered. Large tracts of arable land, denuded of all planting, and no longer dotted with the houses or cottages of the cultivators, extend on every side, but leave the villages clustered round the distant spires, distinctly visible in testimony of the existence of inhabitants, who are only seen on the fields at sowing and harvest time. What we have hitherto seen, together with much else that we shall have to describe upon the Rhine, is exceptional in German scenery. But from Neuss to the mountains near Bonn, and as far as the distant coast of the Baltic, the habit of living in villages, often at a considerable distance from the fields they cultivate, is the leading feature of German agricultural life. Nearly all the social and not a few political arrangements are essentially affected by this disposition of the dwellings of the inhabitants, which has materially contributed to form the national character. In former times it is possible that self-defence was the cause of a custom so generally adopted. The number of inhabitants in a village, although unable to contend with a large armed force, sufficed to ward off the plundering or tyrannical attempts of single knightly freebooters, at a time when it was found necessary to sanctify by clerical injunctions the plough in the field, and to exempt Sundays and holidays from sanguinary contest by the "Trève de Dieu." That the custom still prevailed after those barbarous ages had passed away may be

accounted for by the almost interminable wars of which Germany down to our own times has been the theatre. The effect has been, as we have said, to lend a deep imprint to the notions of the peasants that their interests have nothing in common with those of the classes who call themselves their superiors. In a German village there is no aping of the dress, manners, or language of the towns. The rich Bauer is proud of his position amongst his fellow-villagers, and retaliates the contempt which his appearance sometimes provokes amongst the townsmen, with a peculiar kind of sneering humility that shows how far he is from considering it necessary to study public opinion beyond the village bounds. This village-public opinion, if we may use the term, is however an invaluable possession for Germany, and mainly distinguishes the German from the French national character. It is a blessing for Germany that it was preserved through the tempest of the Revolutionary war. The inhabitant of a "dorf," even on the French frontier, is religiously disposed, and is careless of ridicule in following out his notions of right and wrong. It is not easy to imagine a more independent development of character individually than that of the villagers, man towards man, and even of the two sexes towards each other. In the courtships that are carried on for years between young people that grow up together, there is as much form and method, and far more security, for the girl who is left to trust to her wits, than ladies find who have a host of pistolled relations at their elbow. Travelers are usually prevented from diving into the secrets of village life in Germany, both by the difficulties of the language and by the reluctance of the villagers to asso-

ciate, or to give information beyond their own class. The best description that we have seen is to be found in the 'Tales of the Black Forest,' by M. Auerbach, which have been translated into English, and to which we refer our readers in confidence that they will find in them both information and amusement.

An advantage that was early drawn from this village association by the farmer, may be traced through all the land of Jülich and beyond Cologne to Bonn, in a peculiar uniformity of tillage. The winter, summer, and fallow crops of the villages lie all together, an arrangement that sprang from the custom, still in part maintained, of grazing the stubbles after harvest, and the fallow during its year of rest. In the Rhenish districts this primitive mode of cultivation is generally exploded. A fallow is occasionally left unsown once in six or seven years, but then it is carefully and even scientifically ploughed according to strict rule, and the village right of grazing has shrunk to nothing. Even the peasant now would grudge the dung that fell upon his neighbour's field, and he seeks by stall-feeding to enrich his heap at home to the utmost. Habit, however, still keeps the rye and wheat, the barley and oats, the potatoes and beet-root side by side where it is practicable, and in the highlands of Nassau and the plain of Darmstadt the traveller will find the custom in strict observance. One serious disadvantage has however been entailed by it, in the scattered position of the peasants' lands; as formerly every man had land on the three sides, devoted to winter and summer crops, and fallow. The villages lie usually about a mile to a mile and a half from one another. Hence the landowner who happens to have one portion of his land on the outskirts

of the district, and another, perhaps, in the middle of the village territory, but in an opposite direction, has all the difficulty to contend with that two fields at three-quarters of a mile from each other present, without the compensation derived from others lying nearer to the homestead. The disadvantage attending distance even on large estates has been pointed out and made matter of scientific calculation by M. de Thünen, whose name is known to English readers from his valuable contributions to Mr. Jacob's reports. The German governments have of late years taken up the matter, and seek to promote what are called consolidations by means of exchanges, so as to bring the scattered land as much as possible into estates lying within a ring fence. They meet with great difficulty from the dislike the peasant shows to part with land that he has long held, and the inconvenience attaching to which has been softened by the bonus given to him in the manner described a few pages back. The most effectual pressure that can now be administered, will spring from the prosperity of trade and manufactures.

With the old subdivision of property, the old agricultural implements have in a great measure been retained. We have observed why on the highlands the dung of cows and oxen is preferred to horse-dung. The preference is however carried farther than situation will justify, and in the plain between Jülich and Cologne cows and oxen may be seen yoked to the plough, where the work as well as the dung of horses would unquestionably be more advantageous to the farm. Ploughing with oxen entails the necessity of wheels, and in a country where iron is not abundant the whole apparatus is likely to be

of clumsy form. The plough in use in the countries of Cleves and Jülich most resembles the Kentish turn-wrest plough, but is heavier in construction. The mould board is fastened at the back by a chain which hangs on at either side, and in front it hooks on to a piece of iron that connects the share with the beam. A wooden support joining the sole to the beam, adds to the clumsiness of this plough, near which, however, we have seen a somewhat improved plough in use, to which a paring-share is occasionally affixed.

A more singularly formed plough is still in use in the neighbourhood of Bonn. This plough is called in Germany "Hundspflug," or "dogs'-plough," for what reason we could not learn, although some are desirous of connecting it with the invasion of Attila's Huns. It is indeed an antiquarian curiosity. This instrument is much lighter than the others; its long curved beam rests on an elevated cross-bar over the wheels. Its sole is not above a foot in length by one inch in breadth, and runs out from the lower end of the beam. The share is long and light, running from a higher point in the beam to the point of the sole, beyond which it projects sometimes in a straight line, and occasionally of serpentine shape. The mould-board is moveable, and hangs into a socket on each side of the beam and sole. For surface ploughing and drilling, we have heard the working of this plough praised, but it was acknowledged not to be serviceable in deep ploughing or in breaking up clover leys.

That the use of these heavy or inefficient instruments in a moderately light soil, such as is found in Jülich and Cleves, is not confined to the peasants who constantly

press their milch-cows into the yoke, may perhaps be explained by the combination of distilling with farming, to which we alluded when noticing the gain afforded by fattening oxen on grain and potato-mash. It is however a proof that no pressure towards great economy is felt; not that the farmers are rich enough to be able to dispense with it, but they can get on without it, and no very brilliant success achieved in other spheres of industry spurs them to seek for more. The harrows used have little to deserve notice; iron teeth are everywhere in use. But we must particularly notice a remarkably shaped scythe, which is in use on the rich soils on both banks of the Lower Rhine, and is chiefly used in getting in the oat-crop. The blade is lighter than that of a grass-scythe, but of the same shape, and is fixed at an acute angle to the thick stick about three feet long, from which a wooden handle projects at a right angle to the blade at the other end. This scythe is swung with one hand while the reaper holds his stick in the other, and after a kind of slashing cut gathers the grain on the scythe and lays it over. We were assured that a reaper with this instrument could get over half as much land again as with the sickle. To us it appeared a fatiguing tool, and scarcely applicable to barley, which it must cause to shed. The cradle-scythe in use in Belgium and other parts of Germany seems in every way to deserve preference. Sowing-machines are little used on the Lower Rhine, nor are thrashing-machines in use. Hand-screens are used for winnowing, but the implements of this district present nothing choice or very interesting.

We shall have occasion to speak more fully and more favourably of German agricultural implements when we

come to the Upper Rhine, where more attention has been paid to the subject. We shall here endeavour to complete our general survey of the country on the Lower Rhine, by some remarks on the appearance that portion presents which the traveller crosses who enters Germany from Belgium.

For a long time after passing the Prussian frontier between Verviers or Liege and Aix-la-Chapelle, the same scenery continues with which the traveller became acquainted on leaving the banks of the Meuse. The steep hills are laid down in beautiful pastures, on which the cattle graze, whose dung-falls are made conspicuous by the sweepings of the broom that twice a day distributes this manure over the adjacent surface. Dairy farming is the inheritance of this district, and the Limburg cheese, at whichever side of the border it is made, can rank with any cream-cheese but those of Stilton and Cottenham. These pastures cannot vie in richness with those we have mentioned as forming the agricultural riches of the lowlands along the Rhine, and which are laid down on such a level that the spring floods of the Rhine wash over them. The peasants have therefore no superabundance of hay, and in winter straw cut and occasionally mixed with potatoes, carrots, or mangel-wurzel, or oil-cake, forms the chief fodder. Yet the daily yield in milk we have found estimated at twelve to sixteen pots, yielding a pound of butter, for four to five months after calving, with a falling off of one-third in the remaining six months of the year. Six or eight weeks is the period during which the cows are dry before calving. As this estimate gives from 230 to 250 lbs. of butter yearly, it equals the pro-

duce of the richest and best managed dairies, and its correctness has been questioned for the uplands.

Where the land does not suit clover well, the resource of the farmer is the oil-cake. Hence the light pressure to which the cakes, both of rape and linseed, are exposed, and which has recently been turned to account, I believe, by English millers, who have pressed them over again. Such cakes are here in great demand in dry seasons, and in winter are boiled up with straw, potatoes, and other fodder to keep the cows in milk. The butter, as well as the fat cattle, find a ready sale in the manufacturing districts of Crefeld, Aix-la-Chapelle, and Belgium; and grazing land, where at all fertile, sells at a high price, being limited to the banks of brooks and rivulets. On the uplands, 300 to 400 dollars; in the low inundated land, 500 to 600 dollars, and even more, are paid for the English acre, while fresh butter sells from ninepence to tenpence per pound. A good cow may be had for thirty-five to fifty dollars. (5*l.* 5*s.* to 7*l.* 10*s.*) The calf sells at two months for twelve dollars. (1*l.* 16*s.*) The cow fattened before winter in the Belgian fashion, to be replaced by another in the spring, sells for sixty to seventy-five dollars (9*l.* to 11*l.* 10*s.*) to retail butchers. There is, however, a great deal of unreclaimed land between Maestricht and Crefeld. In the present year a purchase of 700 morgens was made by a small company of capitalists to bring it into cultivation. They paid 14,000 dollars for the whole, or at the rate of 1*l.* 18*s.* per English acre, a price that under the circumstances must be considered as illustrating the high value of land, of which we have spoken. We have

given the details of cheese-making in our description of Belgian agriculture, to which we refer.

On approaching Aix-la-Chapelle, the traveller, emerging from the northern passes of the Ardennes, finds the large monotonous plains on the north, which we have described, interrupted only by a few quaint castellated country-seats. To the south-east, as the railroad to Cologne follows the fall of the hills for some time, he has the forests of the Ardennes, with the singular addition of tall chimneys peeping above the trees, and indicating the site of the rich coal-mines in the earth beneath them. At Düren the railway reaches the open country, and the extensive level spreads on either side, seemingly bounded only by distant rows of hills, of which, however, some lie beyond the Rhine. A great deal of the land traversed by the railway is sand of the lightest description, and was a short time back unreclaimed heath.

At Cologne the traveller reaches a city of 70,000 inhabitants, thriving from trade, and fond of the good things of this world. There is also a demand from this neighbourhood to supply the unproductive valleys of the Ardennes, and that part of Limburg which is devoted to pasturage. Grain is therefore the chief object of farming, and the farmer combines, as far as he can, distilling and stock-fattening with his fallow crop; the potato furnishing the material for both. As we approach Cologne large farm-houses are here and there visible, surrounded by arable land, the furrows of which run up to the city walls. These are farms belonging to the clerical, charitable, and civic corporations of Cologne, and are held by men owning sufficient capital to be able to draw the most advantage from the vicinity of a large

town, for the demand of which the cultivation is of course adapted. Some of these farms are upon a very large scale, comprising from 500 to 1000 acres, and indeed throughout this whole district, which is more trading than manufacturing, large allotments farmed by their owners, or by tenants on lease, are more common than lower down the river. For minute information respecting the state of these holdings, and of the calculations of the cultivators, the best source is accessible in the ready communications of the gentlemen connected with the Agricultural Society and model farm at Popplesdorf, near Bonn.

Schwerz gives the following as the yield of corn near Düren :—

	Malter.	Per Cologne Morgen.	Per acre.	
Wheat . . .	3½	(of 340 lbs.)	= 20 bushels	(of 60 lbs.)
Rye . . .	4	(of 300 lbs.)	= 24 ,,	(of 50 lbs.)
Barley . . .	4½	(of 220 lbs)	= 28 ,,	(of 36 lbs.)
Winter ditto . . .	6	(of 220 lbs.)	= 36 ,,	(of 36 lbs.)
Spring Wheat . . .	3	(of 340 lbs.)	= 17 ,,	(of 60 lbs.)
Oats after clover	10	(of 190 lbs.)	= 57 ,,	(of 28 lbs.)
Rape-seed . . .	7	of 2 hectolitres	= 35 ,,	of 36 litres.

The same authority gives the following rotation and crops as he found them in the circle of Steinbach :—

Rye or wheat after fallow	4½ Malter	= 26 bushels per acre.
Rye following . . .	3 ,,	17 ,, ,,
Oats on clover stubbles . . .	9 ,,	50 ,, ,,
Rye following oats . . .	3 ,,	17 ,, ,,
Oats on rye-stubble . . .	5 ,,	29 ,, ,,

On the large well-managed farms the yield of wheat and rye is somewhat greater. It must also be remarked, that the numbers above given are taken from a course in which rye follows wheat and is followed by clover, which after one year's ley is broken up for oats. Flax is in

this whole district not grown as a market crop, the soil not offering any peculiar advantages ; and the grain, stock, and dairy-yield finding a ready sale upon the spot without demanding any effort of skilled labour. Rape-seed, as is evident from the return given above, is a highly remunerating crop, and, as we have observed, will not fail in any judicious rotation for the future, as it can now be easily exported. Clover-seed is also extensively grown between Aix-la-Chapelle and Bonn.

The plain between Cologne and Euskirchen, where the eastern offsets of the Ardennes run out to the Rhine and form its boundary, offers little differing in aspect for the farmer from the ground we have traversed. The same mode of cultivation prevails, and the village system is predominant, although the effects of rising prosperity in the richer classes begin to show themselves in pretty country-seats well placed upon the fall of the hills, that give life to the landscape. Bonn has recently become a central point of attraction for farmers, as the seat of an agricultural college and experimental farm on a small scale. It is not improbable that some of the taste for farming which is now displayed at Windsor was acquired or at least improved at Popplesdorf. Of these colleges, which are numerous in Germany, we shall speak more at large in a later part of our volume.

A plague peculiar to the dry districts along the Rhine is found in the mice, which in a fine season swarm in such myriads, that whole fields are devastated where no energetic means are adopted for destroying them. It is true that the winter frosts and spring floods cleanse the fields to all appearance thoroughly of this nuisance ; yet, if the month of May be fine, they appear in August with

undiminished force. In various villages the remedies attempted are different. Sometimes a reward in money is offered per one hundred skins, and the youthful population is encouraged to exert its skill and passion for the chase on the modern hydra. All such efforts prove, however, ineffectual to keep down the numbers of the general foe, whose paths across a corn-field are nearly as broad as those trodden by single foot-passengers, while the hoard abstracted from his crop is estimated by the farmer from the number of straws nibbled off at a short distance from the ground, the ears from which have disappeared within the subterranean labyrinths, that often repay the labour of digging up. In the neighbourhood of Jülich a mode of smoking out the mice has been introduced from Belgium. An iron pan, two feet high, has at bottom a grating supported by a pin. On the grating some charcoal is laid, and the pan, when filled with rags, leather, and sulphur, is fastened with an air-tight cover which has a small tube, into which a small hose connected with a bellows is inserted. The pan is held by an upper and a side handle. The night before it is used the field is surveyed, and all open mouse-holes are trodden close. In the morning such as are re-opened indicate those which are tenanted, and one being selected, the lower part of the pan is pressed against it, and the bellows being set at work, the smoke issues from the orifice near the grating, and penetrates into the runs or galleries that connect the holes. A number of assistants are required to tread the crevices close through which the smoke is seen to escape; and if all due precautions be taken, great numbers of these diminutive enemies may be slaughtered, and at the same time buried in their subterranean holds.

Much has been humorously said on the subject of the magisterial edicts which in Germany periodically prescribe the cleansing of fruit-trees, and the extinction of snails, slugs, and caterpillars, which is literally enjoined "de par le roi." It is, however, easier to smile at such attempts than to suggest an effectual remedy. Experience has shown that if fruit-trees are properly examined, and the crevices in the bark well cleaned, the destruction caused by insects, whose growth, like that of the plant they live upon, is favoured by the fine climate, may be much diminished. The fruit gathered on the Rhine is everywhere an addition to the comforts, and often a source of enviable revenue to the villagers, ripening well and being wholesome; and it is one of the evils of a minute subdivision of property that simultaneous exertion is difficult to obtain when needful. The magisterial sanction is therefore sought to force the tardy to similar exertion with the industrious, whose help all can command in the common cause, but whose exertions no one should be allowed to thwart by wilful neglect. If any who ridicule this village legislation had seen the whole male population of a district in Hungary, or in Southern Russia, turn out armed to resist an invasion of locusts, they would appreciate the simple efforts to the effectual application of which Western Europe is indebted for its freedom from many of the plagues that still devastate the richer tracts of the East. One of the most necessary, and at the same time one of the most effectual, of the precautions thus taken, and of which we in England are most happily ignorant, is the quarantine and inspection to which horned cattle imported from Turkey are subjected all along the eastern frontier of the Austrian empire. It is not uncommon to

have cattle driven from Moldavia to the chief German meat-markets, and without this care diseases would constantly be spread amongst us.

We have already indulged in many general reflections in this early portion of our task, but we cannot leave this district of the Lower Rhine to enter upon the novel and varied scenes that lie in and beyond the mountains to whose base we have wandered, without once more looking back on what we have passed, because we feel that our readers have by this time obtained an insight into agricultural life that must awaken deep and stirring reflection. From Cleves to Cologne in a straight line is about 70 miles; from Aix-la-Chapelle to Hagen in Westphalia, the base of the triangle we have measured, is nearly 100 miles. Our triangle is therefore equivalent to one leaning with its base upon London and Bath, and having its apex either at the extremity of the Isle of Wight, or in a northern direction at Coventry. Yet how different an appearance do the two English districts here marked out present from the portion of Germany with which we would compare them! Good high roads and navigable rivers traverse the German as the English districts, and afford them the advantages of trade. The population is nearly equal in density, and in abundance of iron and cheapness for the general consumer there is no great disparity. To the most unpractised eye, however, it must be evident that in the English districts more wealth is acquired in the year than in the German. The crops are more abundant, the outlay of capital is repaid sooner, the prices of produce are all higher in England than on the Rhine. Let us go into the details of the comparison.

It will hardly be disputed that the profit drawn from

agriculture, as well as from other branches of industry, is the more conspicuous the fewer the hands are that divide it. Now since farming, properly so called, is carried on in England upon allotments varying from 100 to 1000 acres, whereas the common limits in this part of Germany are from 10 to 300 acres; the difference in the numbers sharing the profits in both countries is at least as one to eight or perhaps ten. We have no doubt that the number of estates exceeding 1000 acres, managed by one farmer in central England, exceeds the number of those above 300 acres on the Rhine. In the districts more remote from the thoroughfares of trade, the proportion of the population employed in agriculture is overwhelming as compared with other occupations. Hence the low prices of produce in good years, and the difficulty the Germans find in accumulating capital. Where there is a superfluity of produce, if all produce the same, there can be no market. So it is in Germany. Every man grows his own bread. Who is to buy of those who produce more than they require for their own consumption? It is owing to this circumstance, and not because the cost of tillage is less, that prices are so low. To raise them it will be necessary to open new fields of labour in trade and manufactures, into which many of the present cultivators of the land must be induced to migrate, and thus to leave to a smaller number the division of the profits in agriculture. The gift to the peasants of the small lots they held, in the manner before described, had quite a contrary tendency, by keeping them on the land which they would by degrees have left. But at that time, and even still, the panacea prescribed in Germany for all widely spread discontent is to subdivide the land. Unless

such a measure be accompanied by a multiplication of the consumers, that is to say, of the markets, it is not easy to see what agriculturists have to gain by such a step. In Prussia it is estimated that three persons are employed in agriculture for one engaged in trade or manufactures. This will explain why, with such low prices as we usually find quoted in Germany, there is never a superabundance of corn, while prices rise rapidly on the first symptom of a demand from England. It will also account for the modes of cultivation that prevail, under which only a moderate yield is extracted from the land. That with the soil and climate of the Lower Rhine a far greater return might be obtained, is shown by the example of Belgium and England. But why should it be raised if there is no one to buy it? The exportation of wheat to France and Belgium assumes every year a more constant form. It will not be long before England appears as a regular customer at the Continental markets. It will then remain to be seen whether the more distant but more fertile districts of Poland will be able to furnish grain on better terms than the nearer plains of Germany, with their intelligent population. The irregularity of our demand has obliged countries that cannot produce without cost to leave us out of their calculations.

The next weighty consideration that presses itself upon us is the fact that, in the trading and manufacturing districts, and on the Rhine generally, both the rent of land and its capital value are higher than that of similarly circumstanced land in England. We have endeavoured to explain this fact from the circumstance that there are crops that all times assert their full value in the market of the world, such as seeds, flax, tobacco, dairy produce,

&c. On these the German farmer who works on a sufficiently large scale relies for his profit. It so happens that the demand for all those articles must increase when the price of corn falls, for more of them is consumed when bread is cheap than when it is dear. Thus the landlord holds the disease and its remedy in his own hands; if he wishes market crops, as they are here called, to rise in value, he must lower the price of grain. If corn became so cheap that it was not worth growing, he would find an immense demand for all other produce to indemnify him. Upon this calculation have those countries relied who have imposed no restrictions upon the price of grain; and we see from the experience of the Rhenish farmer on a larger scale, that it is a just one where trade and manufactures furnish wherewith to pay for superfluities. This remuneration, however, cannot be expected in any country where political or fiscal regulations favour an accumulation of cultivators on a small scale; and the rule is consequently as little vitiated by the experience of other parts of Germany as it is by that of Bengal, where similar poverty prevails amidst still richer natural advantages.

We have before remarked that farming out land to tenants is a practice that is only common on the Lower Rhine. In other parts of Germany the large demesnes of the crown, and of the nobility, as well as the estates of corporations and foundations, are let on lease to a class of tenants possessing capital, and generally specially educated for the occupation. Rents are in these instances mostly rated according to the vicinity or distance of the large towns. On the Lower Rhine land of all kinds is to be had on lease and in allotments of all sizes. A

short calculation shows the owner whether he does better to retain a farm in his own hands or to let it to a tenant, and trade and manufactures open to all persons other sources of industry and gain besides agriculture. Before the French invasion the term of a lease used to vary between twelve and twenty-four years, with a surrender clause at the end of half the term. The French lawyers (perhaps rather the diminished credit which their invasion caused) introduced shorter terms, that have since been adhered to. Three, six, and nine years, with a surrender clause for every third year, are now common terms. That farming originally here obtained on the Metayer system, or for rents of half the produce of the land, is evinced by one of the names still used to designate a small farmer, viz., "Halbwinner," or one who gains half the produce. Such contracts are still to be found here and there on a small scale, but money-rents are now prevalent in the whole of this district. The sums agreed for vary both according to the size of the holding and its situation. We were told of a large estate of nearly 1000 acres that was let for 2800 francs, while small lots in the immediate vicinity brought as much as 50 francs per acre. In such cases it is difficult to learn without minute inquiry what burdens devolve upon the tenant besides the rent, for he frequently undertakes all the responsibility for roads, schools, churches, &c., to which the landlord is liable. In the neighbourhood of the estate mentioned lies another, 300 morgens in extent, which pays six francs per acre. But these sums give no correct idea of the value of land at present, it being impossible to procure small well-situated lots under 10 dollars, and

larger farms, with suitable buildings, at less than 5 to 6 dollars per Prussian morgen, or English acre, where the situation offers no remarkable advantages.

The period of entering here is usually the 1st of May; occasionally, however, the 9th of November. The going-out tenant leaves dung and straw behind him, and claims the winter corn sown, which must not cover more than one-third of the arable land. There are no other valuations, and the outlay for fencing is confined to the clearing a few ditches, quickset hedges having disappeared on the traveller's leaving the Belgian frontier.

CHAPTER V.

ALL travellers that had a day or two to spare in ascending the Rhine used formerly to make an excursion from Godesberg into the valley of the Ahr. Since the establishment of the steam-boats, many of these side excursions are neglected, as being too tedious. The agriculturist does not measure the interest attaching to his tour by its length, and in studying the remarkable contrast offered by the Rhenish highlands to the plains we have traversed, he will find a stay in the Ardennes well worth his while.

The hills that a little below Godesberg run out to the Rhine, and with the chain of the Seven Hills opposite form the boundary of what is so properly designated "the Low Countries," are the eastern ramifications of the Ardennes, the true and irremovable boundary between France and Germany. Leaving Godesberg, the tourist passes, at Vilip, on to the elevated plateau, whose volcanic origin is evident to the most superficial glance. The rocky ground covered with a thin layer of earth, and—where cultivation has fostered and increased its accumulation—crops whose precarious appearance but too well accounts for the poverty of the cultivators, present a chilling foreground, behind which naked crags rise in various elevations, darkly and cheerlessly crowned in the distance by the summit of the Michelsberg. The middle-ground of the picture is filled up by forests that seem

boundless to the view, covering the bases of the craggy ranges, especially to the right, where their dark shadowing from an elevated point can be followed until all merges into indistinct grey. Through one of these forests, "the Wood of Flamersheim," so called from a neighbouring hall with knightly privileges, the road to Münstereifel, or the Minster of the Ardennes (in German *Eifel*), conducts the traveller. A walk or drive of about fifteen miles has transported him from a sunny corn-growing plain, into a wild mountainous region, whose ancient evil repute is still curiously attested by the pains every one in the towns and villages through which he passes takes to assure him that they do not belong to the Eifel. And yet in times when the lowlands where the object of knightly ravage, these barren heights were tenanted by noble families; and to judge by the respectable appearance of the Jesuits' Convent at Münstereifel, as well as by the name of the place itself, they were not so poor as to be despised by the Church. Münstereifel is situated on the little mountain brook called the Erft, which, from the damage its waters occasion, is called the "wilde Erft," and its story gives occasion to notice one of the remarkable phenomena which are almost peculiar to Germany, or at least to Central Europe, and some of the causes of which have latterly been systematically calculated by agriculturists. The sudden rise of craggy summits amidst extensive plateaux and wide spreading plains, probably occasions a resistance to the electrical streams circulating in the atmosphere, which collect around them until an explosion takes place, such as is rarely known in Western Europe. The "Cloud-break" (Wolkenbruch) is the name given in Germany to

so great a discharge of water from the atmosphere that its weight entails sudden destruction on all that it may strike. Trees are rooted up, and hurled down the torrents momentarily formed. Cattle grazing are carried off, and houses, if struck by the full force of the deluge, are thrown down and washed from their sites. The infliction is one to which mountainous districts are most subject. That we have not exaggerated the mischief thus done, will be best attested by the description of a cloudbreak which occurred in 1818, at Münstereifel, and destroyed nearly the whole town. We extract it from Professor E. M. Arndt's recently published 'Wanderings round Godesberg,' feeling, as every one must who knows the author or his story, that where he takes up the pen, others may well lay it down.

"It is nearly twenty-six years since the lovely spring weather (I think on the fourth of May), induced me and my friend Hüllmann to take a drive along the hills to Brühl. Towards evening we were warned homewards from a ramble under the oaks and beech trees of the park, by an accumulation of thick dark clouds, out of which irregular vivid flashes broke. It soon grew pitch dark, and a hail-shower was followed by a violent thunder-storm, and such heavy rain, that the road we drove home by was broken up in different places. This storm was destined to renovate Münstereifel. The tempest had discharged a 'cloudbreak' over the town, which tore up the banks and weirs of the rivulet, carrying with it bridges, mills, houses, in its wild track, and destroying whole streets in the town, which have since been rebuilt. Situated in a glen between lofty hills down which the brook winds its serpentine course, the traveller cannot

recognise in the shallow waters of its summer bed the ravaging violence of the torrents that pour down it when snow melts suddenly, or thunder-storms discharge their waters into it."

The summits, whose flattened surface, although intersected by deep ravines, form what may be called the plateau of the Eifel, are, as has been said, of volcanic formation. Not the tufa that around Naples spreads fertility and abundance, but rather the lava that surrounds Rome in the bleak and naked Campagna, is the chief formation in this district, which the tourist crosses on his way to the Mere of Laach. The Lake of Laach (an evident tautological appellation) fills the crater of an extinct volcano of the largest size, and similar lakes or meres, called "Maare" in the neighbourhood, to the number of twenty-seven, have been discovered. This portion of the Rhenish province of Prussia is the poorest in arable land of the whole kingdom. The irregular elevated surface is covered with bog, and the thin coating of soil does not afford nourishment for the roots of trees. Every valley, however, is inhabited, and on the rapid slopes along the banks of the Ahr and towards the Rhine vines and fruit-trees produce valuable crops. The wildest part of these highlands is called the Snow Eifel, and rises in the circle of Prüm to the height of 2100 feet.

In the valleys falling into the Rhine, and in the valley of the Rhine itself, the cultivation of fruit is the great resource of the peasant landowners. Every piece of cultivated land, or of land fit for cultivation, is covered with walnut, apple, pear, or cherry trees. The commune of Rügenach can show that the village revenues draw annually 10,000 francs from Coblenz for cherries alone.

The trade in fruit is described as taking place in the following manner:—The boatmen from the Rhine come some time previously to the village to treat for the fruit. When the period agreed upon arrives, the bell of the village gives the signal, and every villager, whether rich or poor, begins to strip the cherry-trees, and carry the filled baskets down to the river's side. One of the village headboroughs stands at the ship's side and weighs the fruit delivered. To him the money is paid by the boatmen, and he divides it on the following Sunday, after Vespers, amongst the peasants.

Walnuts are a favourite crop in the hilly parts, but not in the valleys, as it is said that the leaves damage the ground where they fall. The nuts yield delicious oil, and to obtain this they are chiefly pressed. Apples and pears are cut into pieces and strung on packthread. They are then hung up to dry, and serve as vegetables to eat with roast meat or with pancakes through the winter. Sometimes they are boiled up with plums and beet-root, the latter addition being intended in lieu of sugar. The fruit of the Eifel is good, but the really delicious fruit on the Rhine begins with the Moselle or with the fall of the Eifel towards that river. From Coblenz onwards the apples and pears attain a ripeness that makes them not only a pleasing but a nourishing article of food, and we have often thought of the difference between the apple-pies on the banks of the Thames, and those which, when well imitated on the Rhine, require no sugar to correct acidity in the fruit. Plums of a poor flavour, but excellent bearers, are indigenous in Germany, and form a part of the luxuries of every village from the Baltic to the Alps. In the Rhenish districts they are

skinned and put with a little water into jars, which are placed in the baking-ovens after the bread is taken out. They there simmer to a pulp or syrup, which is spread, instead of butter, on the bread. The consumption of this simple preserve is so great, that a good or bad season for plums materially affects the price of butter.

The inhabitants of Rhenish Prussia still speak with gratitude of a French *préfet* in Napoleon's time, who actively promoted the introduction of good kinds of fruit, and the establishment of village nursery-grounds. But that the Germans did not require to be schoolmastered on this score originally by the French, is shown by the current statement that the village of Metternich lost 14,000 fruit-trees during the invasion of 1790.

In this part of his journey the traveller, indeed, loses sight of the large calculations of capitalists, and of the general economical plan that runs through the industrious exertions of nations. He finds the local relations of every village and townlet scattered along the precipitous banks of the Rhine influence him, and after a time he begins to follow the inclinations and even to account for many apparent prejudices on the part of the inhabitants. In the great occupation of turning to the best account the soil and climate given to them by Providence, the peasant of the Rhine stands untutored except by experience. And could the tourist hear these men in their blouses and thick gaiters converse on the subject, he would be surprised at the mass of practical knowledge they possess, and at the caution and yet the keenness with which they study these advantages. Of this all may rest assured, that from the commencement of the offsets of the Eifel, where the village culti-

vation assumes an individual and strictly local character, good reason can be given for the manner in which every inch of land is laid out, as for every halm, root, or tree that covers it.

Before reaching Coblenz, the fields are covered with fruit-trees, planted in rows like the mulberry-trees in the north of Italy. These plantations are spread as far as Mayence, that is to say, as far as the fields lie at a certain elevation above the river, and which in dry seasons are benefited by the shade of the trees. Many belong not to individuals, but to the parish. These are usually contracted for annually by dealers, or speculative peasants, who make their beds in a temporary straw hut under the trees, if the number makes it worth their while, to guard against depredators.

We are sorry not to be able to confirm the good opinion that has sometimes been expressed by tourists, who are not in the secret, of the good behaviour of little boys and girls, and of travellers of all kinds, in Germany. In fact, fruit is everywhere a tempting thing, and the Rhenish villagers repose no more faith in the abstinence of their neighbours than experience justifies. The field-police is both well organized and strictly exercised, and yet the complaints of depredations increase from year to year. At the period of the ripening of the fruit extra watchmen are appointed, and the owners take this burthen often on themselves, when they are allowed to arm themselves with an old fowling-piece loaded with shot. It is to such precautions that the loaded state of the trees is mainly to be ascribed, that has excited so much wonder. According to the village laws, moreover, a delinquent caught in the act of field-stealing becomes

responsible for all the depredations that have been committed in the same year previous to his apprehension. In default of any person thus detected and made responsible, the party robbed can proceed against the village for redress, on the ground of insufficient protection from the field-police. A curious attempt is sometimes made to identify stolen fruit or vegetables in the public market-places of the large towns. The hubbub occasioned by such a proceeding, and the indiscriminate kind of evidence produced by the parties interested, our readers will easily picture to themselves.

Chestnuts furnish the inhabitants of the Rhenish districts throughout with an article of food. They are either eaten plain after roasting, or are boiled with various vegetables; and are occasionally served as stuffing with fowls. The largest plantation we have heard of belongs to the town of Wiesbaden, and consists of several thousand trees, which yield a considerable annual revenue. Along the Bergstrasse, between Darmstadt and Heidelberg, as along the eastern fall of the Black Forest, and the offsets of the Vosges on the opposite side of the Rhine, the chestnut is a favourite tree in the village fruit-plantations.

In any of the sequestered villages along the romantic part of the Rhine, which present little that is interesting on the subject of corn-growing or dairy-farming, the traveller will find a good opportunity of studying what may be called the foundation of German nationality. The feeling of nationality has its deepest roots in the village economy, which we before described in general terms. The villages hold the people together, and in them the first attempts at association on a large scale

have been made, and, perhaps, contain the germ of a healthy and useful development. At all events it behoves all in this age of change and reformation not to pass over the picture presented to us by the Germans, of what a people can preserve through difficulties, if we do not find in it how far judicious enterprise might be carried.

In the German village, to begin with the higher elements, the church is neither the property of the patron nor of the incumbent, nor is it vested in trustees for the benefit of the inhabitants. It belongs to the parish, or "Gemeinde," as the associated householders are called in German. The school, in the same manner, and all public institutions or buildings, roads, or water-courses, often mills and industrial establishments, that have been constructed at the expense of, or presented by patrons to, the village, are the property of the little community. But it will be said that persons must represent all corporations, to sue and to be sued. The German village is represented by one or more headboroughs according to its size, who have the honourable charge of protecting the public property, both against official and private aggression. The consequence of this retention of the management of their affairs in the villagers' own hands, has been a remarkable conservation of village property, and every member of a Gemeinde has the satisfaction of thinking that he is not alone herded with others in a county division for the purpose of facilitating taxation or militia returns, but that he is a member of an active association, which has life imparted to it by a sense of its holding property which must be managed and turned to account. It is most

interesting to hear the men to whom the direction of these village affairs is intrusted (and the office was long elective, being given only to such as deserved public confidence) on the manifold questions arising from the management of this property. Their circumspection, blended with the quiet manner of expressing themselves which is peculiar to respectable men of all classes in Germany, has often the appearance of slowness; and to those not better acquainted with them, would seem to indicate a good-natured easiness that would lead them to be duped. This notion is soon dispelled when business has to be transacted, and it then becomes evident that the peasant has often best considered his opinion before he pronounced it, and others are often glad to come round to it. Within a short period the privilege of electing their headborough has been taken from the villagers of Prussia. The central point of meeting in every village is some favourite inn. At nightfall the men of any standing usually resort to it as a lounge. They meet there the officials of the magistracy, if there be any, the tax-gatherer, and those who either, having no establishment, are boarders with the host, or who seek the spot to exchange opinions with their neighbours. In the early part of the evening, the pastor may be seen amongst them, and his presence indicates that propriety is not supposed to be violated by such meetings so long as order is maintained. Whoever is sufficiently master of the language to follow the peculiar tone of the conversation, which is anything but wordy—if he be indurated to tobacco fumes, will carry away with him from a few sittings, the idea of a people managing their own little interests with full consciousness—with an attention to economy that is most praiseworthy—

and with a regard to propriety that must call for admiration. Although a newspaper is to be found in every village, and transatlantic proceedings now interest nearly every German family, yet politics are not much discussed until they assume the tangible form of interfering with village property. The disputed points respecting general or provincial parliaments, freedom of the press, and constitutions granted or subverted, do not, in the present state of things, sufficiently excite the peasant, who is more on his guard against innovators, and against other preponderating influences in the state, than against the growth of the prerogative. We have already attributed to this village system the feeling of a separation of interests which we have observed between the peasants and what are called the higher classes. The tie arising from large landed properties, for the privilege of using which the tenant in England was long considered as indebted to the favour of the landlord, is here not to be found. Every man usually occupies his own land and lives in his own house—not so comfortably as an Englishman often does in a house that is rented—but, certainly, independently. On the other hand, the ill-will that threatens from a pressing demand for land for manufacturing purposes in England, need not here be feared, for the minute division of the land, united with the security conferred by the officially registered titles, facilitates the necessary transfers. In the small villages the police is left to the management of the headborough, who receives his instructions from the chief town of the circle, and the popular element in this system reconciles the people to the strict registration of the inhabitants, with their occupations, and property in land and cattle, which is insisted upon. This registra-

tion is again a source of credit, as mortgages must also be registered to be effective, and titles to land are clear and inexpensive to make out. Transfers of real property are often made in Germany under these official titles; the expense of conveying which in England would more than absorb the purchase-money. The village registers are of ancient date in Germany, and since the military surveys have been completed for the repartition of the land-tax, are accompanied by maps that afford a minute view of the country, such as leaves the most ardent statician nothing to desire. We are only beginning to use the detailed information that can in this way be collected, and the Prussian government has contributed liberally to our stock of knowledge respecting Central Europe. From the constitution of the village government, that we have endeavoured to describe, it is evident that the most detailed and authentic information must be at the minister's command. Out of this state of publicity regarding private affairs a peculiar tone of moral feeling necessarily arises. Every man's proceedings in the village being known, and the state of his property being no secret, there is little room for an affectation of prosperity that does not exist. On the other hand, the poor know and keep each other in countenance by their number. Nor do feelings of false pride in these villages prevent young men and women from going into service in the place where perhaps their parents occupied an independent position. There is a kindly tone prevalent, very different from that which separates the servant from the master in England. One table generally unites the whole family at meals, and the small landowner, as well as his wife, shares the field labour

with the "knecht," or servant, and with the "magd," or servant girl.

We are here far from wishing to represent the "dorf" as a pattern of rustic institutions, but we would recommend the study of these village corporations to inquiring travellers, as containing many elements of good, and, above all, as fostering independence of feeling and openness of character, both invaluable qualities in a people.

The village or common property comprises woodland as well as grazing-land, and, as has been said, frequently includes watercourses, public places and buildings, as well as money invested in the public funds. The revenue derived from all these sources is applied, as far as it goes, in alleviation of parochial and county taxation. From this fund the few poor persons that become chargeable are supported. We have been told of parishes where the members of the village corporation receive a dividend out of the common property. To obtain admittance to the rights of a villager a stranger must pay a certain sum, which is large or small according to the wealth of the corporation. He then enjoys the grazing and fuel rights, and the modification in taxation which the annual revenue procures. In the Rhenish districts the fee on admittance is high when compared with Central Germany. It is, we believe, highest in Rhenish Bavaria, where, in some villages, it amounts to 1500 florins, or 120*l*.

The various official personages of the village, such as the field-police, the cow, swine, and goose herd, the schoolmaster, the headborough and his officer or bailiff, receive their salaries from this fund, out of which, too, all public expenses, where it suffices, are defrayed. The church has generally its own foundation.

We cannot omit a very important service rendered by the government in the appointment of district physicians, who are bound to go wherever they may be required, and to report on the general state of the public health. The poorest person can demand their assistance without feeing them, but the richer peasants never fail to give some compensation. This excellent institution is completed by the appointment of official druggists in all district capitals, who are bound to keep only the best drugs, and to sell them at a fixed tariff. In no country is medical relief less expensive and more easily accessible than in Germany.

We propose treating in separate chapters the special interference assumed by the state in one of the most important branches of village economy—the management of the forests. The taxes that are raised directly from agriculture we also propose to explain and illustrate in a special chapter. But some of these village arrangements, although savouring of antiquity, are calculated to rouse the inquiry whether the spirit which called them into existence, and the calculation upon which they are founded, might not be acted upon still to the great advantage of society.

In the first place, to the mill of the lord of the manor, to which the peasants, while serfs, were bound to bring their grain to be ground, a village mill has succeeded, occasionally forming part of the corporation property, sometimes owned by shareholders who have purchased the mill of some once privileged owner. As it is still usual all over Germany for peasants to grind their own corn, there may be seen a table in all these mills in which the miller's fee, usually a portion of the meal, is expressed for

all the quantities commonly brought. The feeling of security conveyed by the power of doing without extraneous help, a relic perhaps of the times when communications were liable to constant interruption, and bad roads made carriage difficult or impossible, still gives value to these mills. We have known instances of large sums being refused for mills that were sought for manufacturing purposes; the ground assigned being that the village could not do without its mill.

A public baking-oven is another appendage to a German village, although every rich peasant has his own. The oven is heated in succession by those who use it, each person bringing his own wood. In autumn the flax, after steeping or dew-rotting, is dried in this oven. The tendency of modern times is to dispense with these efforts to attain, by association, what was difficult or expensive for individuals to establish. We cannot help thinking that more may be said in defence of these common institutions than in praise of much that has superseded them. The great article of consumption, bread, is, for instance, enjoyed at least in purity by the aid of the village mill. Cheapness of course is at present not attained by the peasant, who never calculates the value of the time he spends in procuring food, and who certainly does not rank the exemption of the females of his family from drudgery amongst his luxuries. They are allotted their full share of outdoor work, as well as all the care of the household.

The expense incurred by labour lost, or inefficiently applied, is, however, no result of the institutions which demand the sacrifice under their present management. It would only be necessary to place the mill, for instance, on the footing of a private trading concern,

and to value the corn delivered and the meal received in money, to make all waste apparent, and to suggest the requisite means of economy. Were the forests and grazing commons treated in the same manner a like result would take place. The invaluable control retained by the villagers over their miller, of displacing him for misconduct, would secure their meal from the adulteration of which the inhabitants of towns so justly complain. We cannot help thinking that a judicious development of this German village system would secure to the people many of the advantages which they hope, by what are called socialist or communist unions, to attain, without exposing them to the dangers which these innovations threaten. Food of all kinds and clothing cheap and good might be secured by village shops, or by the establishment of district magazines, on a plan like that of the Apothecaries' halls that are now found in all German towns under the inspection of the government. The adulteration of colonial wares, that is notorious, forms as heavy a drain on the health as the overcharge for retailing in small portions does upon the purses of the great mass of the people in all countries. Their resources might everywhere be made to go much further than they now can. To secure these advantages no revolution in political or religious institutions is requisite. A far more searching change in public opinion is, however, indispensable—the recognition of the fact that the cheapness of necessaries is a private as well as a public benefit.

Like the moral side of the village system, the material aspect and arrangements of the village itself, its houses, its roads, its public and corporation edifices, have two

points of view from which the stranger must judge of them. The position of nearly every old village was usually determined by flowing water, and the care bestowed upon the stream that runs apparently disregarded in its irregular meanderings through the mass of houses, whose position has, by its course, been no less irregularly fixed, is greater than a superficial glance would lead one to suppose. Endless are the difficulties which the preservation of this running water in its full purity opposes to changes, and often to improvements. Prosaic as it may seem, we are inclined to ascribe the early use of liquid manure amongst the German peasantry to the obligation enforced upon all neighbours to the stream to prevent the issue of drains into it. This restriction does not apply to rivers, which in Germany, as elsewhere, are made the means of impoverishing the people by ministering to their wasteful convenience. But the brook, which is the centre round which village arrangements revolve in their daily homely course, is consecrated to cleanliness, being, we are sorry to say, almost the only sacrifice on the altar of that deity that is conspicuous. The details of the best managed farm-yard suppose some portions of ground devoted to what in its place is prized as highly valuable, but out of its place is mere filth. A German village is an assemblage of diminutive farm-yards, where the dung-heaps, with all their accompanying odours and unsavoury streams, subdivided like the land they are destined to fertilise, are reproduced at every house ; and, as the neat and ingenious contrivances to keep these matters out of sight, which are practicable on a large scale, are out of the question when they require to be repeated in innumerable varieties around every man's tenement, they are

of course dropped altogether. The multiplicity of small dung-heaps, exposed to the heat of a Rhenish sun, unquestionably taints the air and affects the health of the villagers ; but it would be as hard to suppress the pleasure with which every member of the family regards the heap that is to supply their yearly food, as it is to drive the Irishman's pig out of the cabin of which *he* pays the rent.

As long as the peasant's food in the one country depends upon the dung *he* can accumulate, and the rent in the other is only to be raised by his sharing his house-room with his valuable four-footed companion, we fear that dung-heaps will stand under the windows of German cottages, and pigs run in and out of Irish cabins, whatever philanthropic taste may preach to the contrary.

We know several books, well penned and full of good advice, that are circulated at a cheap rate for the benefit of Irish cottiers. In one we remember a tirade against horses, the inclination to indulge in which is deeply implanted in Paddy's nature. The author has calculated, perhaps too moderately, the expense of the keep of a horse, and shows that a horse to five acres of land, as he finds is kept in part of the county of Wexford, is a palpable absurdity. But besides making no allowance for the fact that five acres of land leave a man time enough to earn money in other ways, and the trade of a carrier is everywhere a profitable one, the account is summarily balanced against the peasant without allowing anything for the manure of his stable. How friend Martin Doyle could overlook this point, as well as the fact that horse-dung in the wet soil of Ireland is likely to be more suitable manure than the dung of the cow, which he would substitute for the horse, we cannot explain. In Ger-

many no one recommends the peasant to diminish the number of his herd, nor do any pretend to prescribe the keeping of one animal for another, experience having long since made the peasant wiser on this point than his adviser, who cannot follow all his minute calculations. Directions for building pits, and treating the heaps so as to promote or check fermentation, as it may be necessary, are circulated by the agricultural societies, but the time has not yet arrived for observing whether the heap be exposed to the public gaze or not. As long as the existence of the mass of the people is only secured by the subdivision of the nourishing soil, that is to say, as long as manufactures do not at home afford means of exchange for agricultural objects, and trade is not allowed to seek them abroad, so long must the villager be a small landowner; and one of the responsibilities he lies under is, that of contributing his share, however diminutive, towards keeping the land in heart.

If the stream destined to furnish the indispensable beverage for man and beast is kept as pure as possible, this, under the circumstances, is done at the expense of nearly every other channel or conduit into which the impurities can drain, or are conducted to be kept until wanted. It is matter of difficulty to traverse the ups and downs of village roads and paths with dry shoes in any part of Germany. Taking the small stream as a point of departure, it is easy to see how the houses have agglomerated successively in various rows and angles, which their isolated position does not show at a cursory glance. But could we read the annals of these German parishes we should find much comparative value created by the vicinity of the stream, as allowing of an easier carriage of

water to the stable, or a shorter drive for cattle to water, to say nothing of the convenience to ducks and geese, who can waddle and sleek their feathers in the brook almost under the eyes of their owner, and of its utility to the washing part of the family, whose bare legs and much-used linen are unanimously allowed in no way to contaminate the living stream, which indeed they rarely tincture with soap.

The houses themselves offer a contrast to the diminutive holdings of which they are representatives. As we have already observed, they are out of all proportion large. In the Duchy of Cleves, they are moderate for the most part, owing to the gradually obtaining distinction between the agricultural and the other industrious classes, which tends to take land away from the one, and to augment the holdings of the others. In Westphalia we have noticed the extent of ground occupied by farming offices, which abstract considerably from the cultivated land, and entail great expense by outlay for repairs.

In the villages the houses are usually built of wooden frames, whose beams and standards are mortised into each other and bound and supported by sloping stays, the mortises being fastened by pegs throughout. Where that timber abounds the wood most in use is oak. Near the Rhine fir and pine wood are used. The wood is usually seven inches square, which conveniently holds a layer of bricks laid breadthwise in each compartment. The bricks are not always burnt, and the compartments are sometimes filled up with strong wicker-work which is plastered over. When the house is coated with lime or clay and whitewashed, the wooden frame is left conspicuous all over, and is often painted in fanciful colours.

The value of the building is indicated by the thickness of the timber shown to be employed in this framework. Formerly, while timber was abundant and cheap, this style of building was recommended by economy; now stone, which is almost always to be had, and bricks, are less expensive, excepting to the owners of forests. The house usually contains one or two sleeping-rooms, besides a sitting-room and kitchen; sometimes the same number of rooms is found in an upper story. The roof is invariably lofty, and serves the purpose of storehouse and barn. In its spacious cavity the thrashed corn, the hay, and often the vegetable store for winter use are kept. The housewife dries her clothes in winter on the cross-beams. A cellar is invariably found in better houses, and in general when a stranger is told that these are the abodes of people little above the station of cottiers, he finds them splendid. When he hears that these cottiers are the landowners and masters of the soil, he scarcely knows how to estimate their position.

The expense of a small peasant's house varies on the Rhine from 500 to 2000 dollars.

If of one story, with high roof, 3 rooms	500 dollars
Ditto, with roof and cellar, 3 rooms, } stable and barn, under the same roof {	900 "
Two stories, with roof and cellar . . .	1200 "
Two stories, with stables and loft, and } thrashing-barn between the cow-house } and stable, under one roof . . .	2000 to 2500

The barn serves as a passage from which the cows are fed during the greater part of the year. At the side of the cowhouse the wall is open.

With the best will it is scarcely possible for a family

employed in manual labour to keep a spacious house clean. Dirt accumulates in its passages, in its neglected or too much thronged rooms. The extensive front outside precludes all hope of constant neatness, and the expensive luxury is ultimately abandoned in despair. The distance at which these village houses lie from the land their owners have to till, absorbs the spare moments that might be employed with the broom, and the want of plan in laying out building-plots, where every man applies his own land to the purpose, constantly allows a neighbour to foil the best-directed efforts.

These drawbacks to cleanliness and external neatness are in part an effect of the German village system. In Holland the small farm-houses, with the road neatly clinkered in front, and unincumbered with useless buildings, offer a pleasanter picture to the English eye. But in Holland, as in England, trade has promoted that division of labour which is favourable to individual comfort, and in Germany this powerful lever has hitherto had little influence. What is most pleasing in the German village is that *the* school is an indispensable requisite, and often a conspicuous ornament of the place. The village school is not intrusted to any bed-ridden dame or superannuated person of the male sex who volunteers his services. The schoolmaster has been regularly educated to fill his post at seminaries destined to train teachers. He must have obtained his certificates of qualification and good conduct before any patronage can help him to his post; and usually he spends some years as assistant or usher in some school of larger resort before he is intrusted with the management of even the smallest village institution.

Amongst the injunctions he receives upon assuming office, the duty of encouraging improved processes of agriculture is enforced, in which, however, his influence goes no further than making trials of what is recommended by authors or occasionally by the government. Thus the schoolmasters in many parts have made trials in the breeding of silk-worms, which the German governments have very much recommended, and which has been sufficiently shown to be practicable. It will be long before a country struggling with the difficulty of raising food will show a general disposition to produce an article of luxury, like silk, on an extensive scale. In this as in many other points experience is a more influential teacher than the schoolmaster. Yet the time may come when his task may be extended to the inculcation of simple and convincing views of industry, and of sounder and more sociable doctrines than our narrow-minded age has hitherto professed. Then will it be evident how much a nation gains by having a ready sower to distribute the good seed, and by the previous pains taken to prepare the ground that is to receive it.

CHAPTER VI.

IN the Ardennes, at both extremities of which chain nature has deposited fossil coal in great abundance, our attention is first invited to the forest cultivation of Southern Germany. No better proof need be required of the fund available for agriculture, on which the rising population has yet to draw, than the extent of the forest land in Germany, and the comparatively small remuneration which it yields to the owner. The rapid rise in the value of fire-wood and timber within a quarter of a century has attracted the attention of the government, and scientific observations on the state and prospects of the forests have been communicated from so many sides, that we may be said to possess a clearer and more satisfactory survey of the forest cultivation of Germany than of the field tillage. As the methodical way of treating forests that is practised in Germany will probably be a novelty for many of our readers, we propose dwelling upon the subject sufficiently to gratify their curiosity. In a country where the winter is long and severe, the thermometer averaging in January 30° Fahr. at Breslau, and 36° at Coblenz, a supply of fuel at a moderate price is as essential to the common welfare as the sufficient supply of food. It was probably the desire of preserving and methodically following the pleasures of the chase, that originally occasioned in all German states the appointment of a numerous body of foresters, under some-

thing like a military rule, at the head of which stands the grand huntsman (Oberjägermeister), usually a nobleman of high connexions, but who has by no means a sinecure in any part of Germany. The whole country is divided into districts that usually correspond with the civil and judicial divisions, and according to the extent of forest land in each district is the number of foresters appointed to inspect and watch over the district large or small. Whatever be the size of the woods, every tree is known, and destined either to long or short growth, according to its promise of sturdy vitality, or its liability to decay. Although the more responsible duties of the forester now-a-days relate to the number and condition of the trees in his woods, yet the sporting department is kept up with the old routine, although it may have lost some of its chivalrous character. The wild boar is now seldom met with in German forests, excepting where walled enclosures debar his predatory incursions into the neighbouring fields. The wolf is occasionally seen in the Ardennes, where his character is said to be unusually savage. But the red-deer and the roebuck are sufficiently numerous not only to afford good sport, but to furnish an item to the forest budget of most districts. The birds are also in great variety, from the cock of the woods down to a small throstle that comes in vast flocks from the north, in the autumn, and is prized as a great delicacy: pheasants are only found in strict preserves; the vermin that abounds is their greatest enemy: partridges and hares are tolerably abundant in the open country.

It is undeniably a curious fact, that while the proportion of forest to arable land in all Prussia is that of one half (arable, 32,800,000 morg.; forest, 15,798,000 morg.),

in the Rhenish province, the most populous and the most industrious part of the kingdom, the proportion is as three to four, there being 3,148,713 morg. forest, and 4,037,690 morg. arable land. Nearly the whole of the surface covered with forests, it is true, is mountain-land and in part very elevated. Of the summits of the Ardennes the Michaelsberg is 1860 feet, the Ernstberg 2080 feet over the level of the Rhine. In the Hunds-rück, which adjoins it on the south, with its ramifications, the Hochwald and the Idar, there are many summits between 2000 and 2500 feet above the Rhine level. Opposite Remagen, where the Ardennes run out to the Rhine, a chain of similar volcanic hills rises abruptly in the Drachenfels, and stretches inwards far into the back country. Near the Rhine are the well known Seven Hills, and, following the course of the little river Sieg, a mountainous tract of considerable extent runs through the district of Siegen into the heart of Westphalia. This district we shall find worthy of a special visit, as the forest system followed in it differs from that which obtains in the rest of Germany.

On the left bank of the Rhine, in the Ardennes and adjacent forests, the production of timber is the object kept in view. The trunk of the tree forms the object of the forester's care, and the regular quantity that can be felled, with the mode of keeping up the supply, is what he has to calculate. Beech, oak, and fir are the chief descriptions of timber met with; beech is almost exclusively used for fire-wood; oak gives materials for building and for machinery; fir is used both for firewood and for building. With all the attention that has been devoted to the subject, it has been found impossible to lay

down very exact general calculations as to the return obtained from plantations of these kinds of timber, so great is the influence of soil, climate, and position upon the growth and longevity of the trees. Different authorities that have made the same estimate from experience of a forest to be exterminated and renewed in the course of one hundred years, have arrived at the differing conclusions noted in the figures of the following table. It supposes the term of one hundred years divided into five periods for felling, at each of which the number of cubic feet noted in the table shows the growth of the trees and the planter's gain. The calculations differ as much as thirty-three per cent.

Authorities.	1st felling.	2nd felling.	3rd felling.	4th felling.	5th felling.	cubic ft.
Cotta . . .	1509	1208	907	606	425	
Brunhard . . .	2058	1661	1307	951	607	„
Hundeshagen . .	1716	1400	1077	820	566	„
Klampsrecht . .	1693	1445	1130	817	566	„
Pfeil . . .	1810	1509	1209	908	608	„
Bavarian forest administration }	1631	1240	937	668	372	„

According to the calculation of the first-named writer a morgen of land ought to produce 4655 cubic feet of timber in a hundred years, while the second estimates a growth of 6584 cubic feet in the same interval; this will show the difficulty of treating the subject briefly and satisfactorily. These figures are taken from tables calculated on observations made in different parts of Germany; it would be as dangerous, however, to assume an average of these results as a practical guide in forest estimates, as it is to attempt to form a general table of mortality from a combination of scattered materials. The calculation will in both cases be a safer one if it be con-

finer to the localities from which sure information has been obtained. When the forester has ascertained the slow or rapid growth of his timber, and the kind of timber predominating in his district, he may then apply some such table as the following to calculate his stock and its prospects:—

Produce of a Fulda morgen equal to half an acre of beech-wood, in a course of 120 years:—

Age of trees and periods of felling. Years.	Cubic contents of stock. Cubic feet.	Growth annual. Cubic ft.	Disposable quantity of timber and brushwood per annum. Cubic feet.	Total dispos- able quantity accumulated.
5	70	—	42	210
10	160	18	83	830
15	260	20	128	1,930
20	365	21	177	3,545
25	480	23	228	5,715
30	605	25	283	8,490
35	755	30	342	11,965
40	930	35	407	16,265
45	1130	40	478	21,515
50	1355	45	557	27,840
55	1605	50	643	35,365
60	1870	53	736	44,185
65	2155	56	837	54,390
70	2455	60	944	66,065
75	2770	63	1057	79,285
80	3100	66	1176	94,125
85	3430	66	1301	110,615
90	3750	64	1430	128,725
95	4050	60	1562	148,375
100	4330	56	1694	169,465
105	4600	54	1827	191,925
110	4870	54	1960	215,735
115	5140	54	2094	240,895
120	5410	54	2228	267,405

From column three we see that the annual growth increases in the beech, under favourable circumstances of

soil and climate, such as the author of this table assumes, to about the ninetieth year; the increment is less after that period, but the value of timber of so large a size as a tree attains in 100 or 120 years is proportionately greater than at an earlier period; hence, up to 120, it is more profitable to leave the aged trees, if sound, than it would be to supplant them by a younger stock. This is still more applicable as a rule for oaks, the size of which is so important for machinery, that a thickness of a few inches with sufficient length of trunk often makes a difference in the value of the tree of thirty to fifty per cent.

The fourth column shows the disposable quantity of timber, brushwood, and branches that the forester, under usual circumstances, can draw at the several periods indicated in the first column from a morgen of land. As however the seasons, the destructive effects of insects, and incidental circumstances make the precise period of felling a matter of local calculation, while the state of the market occasionally hastens or retards the operation, the profit or loss is materially affected by the forester's judgment in availing himself of all advantages. In selecting the trees to be felled, he must know the qualities of each individually, as a farmer studies the peculiarities of his beasts. Some trees are of more rapid growth than others; these are of course left as long as this quality shows itself, and such as have increased but little in bulk between two periods of felling are selected as the first disposable. A forester who loves his task is thus in constant converse with nature, and it is common to find men in the forest department more enthusiastically attached to their profession than in almost any other branch of the public service. The feeling thus awakened is

akin to, but still very different from, that love of trees which is common in England, but which attaches only to the appearance and picturesque grouping of isolated trees or plantations. It is at the same time more matter of fact, and is based upon more correct views of natural history; in a word, it is much more practical, while the English taste is more sentimental. This love of trees is confined in Germany to those whose studies and occupations give them the means of being constantly in contact with the verdant ornaments of the mountain and the valley. The fine specimens of planting must in Germany be sought in remote districts; they are not selected and thrown into full relief by the disposition of a park or the shape of a lawn, and are consequently not universally accessible. We would, however, recommend to such of our travellers as may be interested in forest cultivation, whether at home or in the Colonies, to follow the methods now in general practice in Germany; and although we shall give as much information as can be condensed into a general view like that which is the object of this volume, yet it will not render the knowledge that can be more agreeably acquired in conversation from practical men, and confirmed by observations taken on the spot, the less necessary.

The forests of Rhenish Prussia, although covering so vast an area as we have described, afford on neither bank of the Rhine such splendid specimens of woodland vegetation as the Odenwald near Darmstadt or the Black Forest in the Grand Duchy of Baden. The rapid accumulation of the population in the manufacturing districts on the Lower Rhine, and the careless or wasteful forest management during the period of the French occu-

ation, have destroyed the uninterrupted succession in the growth of timber in the parts we have travelled through, and it will take a long period of fostering to retrieve what has been lost. If we take any of the roads leading into the Odenwald between Darmstadt and Heidelberg, we find wild and magnificent forest scenery that sufficiently repays the traveller who has a taste for nature's rougher scenes, and here, or in the Black Forest near Baden Baden, or the valley of Hell near Freiburg, he can best study the management and observe in all stages the growth and the yield of forest cultivation. From these two forest-tracts and the Spessart Forest on the north bank of the Main near Aschaffenburg, the supply of timber for exportation is drawn, which is, however, so much diminished in its passage down the Rhine by the demands of the populous districts, that the yearly mass no longer suffices for the consumption of the Dutch shipbuilders. The management of these forests, which is now the object of our attention, is the same in its leading characteristics in all the different states. We avail ourselves therefore of the information communicated in detail by a forester of the Grand Duchy of Baden, to show how the people and the forest-owners are situated with regard to this branch of production.

Our table (page 103) shows the quantity of timber that can be produced upon a given area of land in 120 years. The table is calculated for a measure which is about one-third less than the morgen of Prussia or Baden, so that the reader is here made to feel one difficulty that accompanies all these investigations in Germany, viz., the endless changes in the weights and measures that the various states adhere to. Another calculation of the

forester is the ground or area that his trees cover with their branches. This area, when ascertained, shows the number of trees that he can allow to stand upon any given measure. The ground covered by all kinds of trees at the various periods of felling has been carefully ascertained, and a picture of an oak wood divided into five portions, each portion, except the first or seedling period, being covered with an equal extent of shadow, may be presented by a table like the following. The number of trees to be felled at each period is here seen to be prescribed by the growth of the crown or upper branches.

	No. of Trees.				Total in Sq. Feet.	
	30 yrs.	60 yrs.	90 yrs.	120 yrs.	Trunks.	Crown.
First Period (Seedlings)						
Second Period . . .	391	..	..	..	391	7820
Third Period . . .	295	30	..	..	325	7820
Fourth Period . . .	163	30	20	..	213	7820
Fifth Period . . .	50	30	20	10	110	7820

It is, however, not usual to cover the whole surface, and at the felling period seldom more than one-half is covered by beech and oaks, in order to leave light and air for the succession that is to replace what is taken away. Firs are differently managed, and are kept as much as possible at the same age. When a portion of a fir-forest is felled, the ground is therefore left perfectly clear for the seedlings.

The description of oak that most abounds in Germany is a very beautiful tree that grows straighter than the elm or the beech, and when judiciously pruned, runs up to the height of 65 or 70 feet from the ground to the crown or top branches. The table we have given above supposes an oak of 150 years' standing and 70 feet in height

to cover with its branches an area of 346 square feet. A tree of 120 years' growth 65 feet in height covers 226 square feet; one 90 years old spreads over 132 square feet. The beauty of a tree of this kind consists in its perfect soundness and vigour, and the finest specimens are found in forests in Germany, where the trees afford each other protection against the cold winds. Hardy as the oak and fir appear when their growth is flourishing, yet the dangers they encounter are various. A severe winter often destroys whole acres of seedlings or of young plants. The wind in an exposed situation may tear off a branch, whose stump remaining jagged catches the rain, and beginning to rot, the decay penetrates into the core. Lastly, an orifice made in the bark by a small puncture when the tree is young, lets in moisture at an advanced age, and when the thaw sets in after the winter frost the splitting of trees that have suffered in this manner causes a report like that of a musket.

The effect of the sun upon trees that have grown in the outskirts of a wood is described as very curious. They are said to twist in the direction of the sun's course, and to be less compact and hard in grain than the rest. Trees growing in a northern aspect are always preferred for building uses.

Respecting the yield per acre of forest-land in Germany, our readers are already aware that it is difficult to obtain precise information. Not only do the estimates of growth and of the periods at which trees can be felled with the greatest advantage differ, but the prices are so various as to bid defiance to all attempts to find an average value. In some parts scarcity of fuel raises the value of small wood and clearings; in others, the de-

mand for charcoal has a similar effect, people having of late years discovered that underwood and branches yield the best charcoal. The Black Forest and the Spessart being well situated with respect to water communication, the larger trees are bought for exportation, and the largest fir and pine trunks are called "Holländer" when felled, from their destination to be floated down the Rhine to Holland. In the manufacturing districts of the Lower Rhine, on the other hand, the demand for oak timber for the construction of machinery is very great, and high prices are paid for it.

An undefined notion of the cheapness of timber in Germany has long prevailed in England. We shall see that the Rhenish districts do not participate in this advantage. A rapid rise has everywhere been experienced in the price of wood, that is acknowledged to operate unfavourably on the general prosperity of the Rhenish states. Details that can be relied upon have only been published for the Grand Duchy of Baden; but these will suffice to show the relative increase in the price of timber and fire-wood when compared with other agricultural products. Within the last ten years the price, according to recent statements, has advanced from 30 to 40 per cent. The average price for one cubic foot in the forests of Baden was in

		1833	1838	1843
		Kr.	Kr.	Kr.
Timber	{ Oak . .	17	23·6	21·6
	{ Fir . .	10	13·5	12·5
Fire-wood	{ Oak . .	12·6	16·7	16·7
	{ Beech . .	9·6	13·1	12·7
	{ Fir . .	7·4	10·7	10

Three kreutzers make exactly one English penny: the present price of choice oak timber, in stems of 65 to 70

feet in length, with 3 to 4 feet circumference at 30 feet from the root, is now $7\frac{1}{2}d.$ per cubic foot in the forest, or $9d.$ to $10d.$ delivered at any spot on the Rhine. Fire-wood (beech) has risen from $3\frac{1}{2}d.$ to $4\frac{1}{2}d.$ per cubic foot, an advance that renders the whole fuel consumed 30 per cent. dearer than in 1833. That this is oppressively felt is evident from the large proportion of wood consumed as fuel, which in Baden is 70 per cent. of the wood annually felled, but which in Hesse, that is less favourably situated for exportation, amounts to 94 per cent. of the whole.

The rise in the price of wood is the more remarkable that it stands alone amongst the products of agriculture, as is shown by the following comparison of the values of timber and grain for long periods in Baden and Wirtemberg:—

Years between.	Price of wood.			Price of corn.		
	Average.	Beech.	Fir.	Wheat.	Barley.	Wine.
1640-1680	1	1	1	1	1	1
1690-1730	1·32	1·54	1·10	1·49	1·46	·8
1740-1780	3·77	3·62	3·93	1·54	1·25	1·6
1790-1830	10·73	9·19	14·27	2	1·72	4

This highly interesting table, which we borrow from a recent publication, shows that a moderate price of corn in no way reduces the value of other agricultural products. As we have already said, cheap food contributes to raise the demand for other things. This is evinced as well by the price of wine, in the last column, as by that of fire-wood; and it is further proved, if not by increasing prices, at least by the increasing consumption of all articles of clothing. But a rise in the price of fuel is in itself a national evil where the climate demands artificial heat, as is the case in Central Europe. The bad

effects of the rise in this indispensable article are exhibited by a table published officially in Baden, and which deserves to be placed by the side of the table drawn up by M. Quetelet, and published in a recent volume of the Belgian Statistical Society's Transactions. The number of convictions for wood-stealing in the Grand Duchy of Baden was, in proportion to the population,

In 1836 as 1 to 6·1 inhabitants.

1837	1	5·2	''
1838	1	4·7	''
1839	1	4·7	''
1840	1	4·5	''
1841	1	4·6	''
1842	1	4·0	''
1843	1	4·7	''

With the rise in price noted in the former table but one, the number of offences increased, and this number in 1843 showed a tendency to diminish, although slightly. In Bavaria, where wood is but about half the price, the number of convictions for stealing in forests amounts but to 1 in 22 inhabitants.

The periods for clearing and thinning timber-forests are shown by the tables to be in the 30th, 60th, 90th, 120th, and 150th years. The wood gained upon a Prussian morgen ($1\frac{6}{10}$ English acres) at these various periods, reduced to the measure usual on the Rhine—the "klafter" of 108 cubic feet—is, according to our authority,

On the 1st clearing $\frac{1}{4}$ klafter, and 150 faggots in the 30th year.

2nd	1 $\frac{1}{2}$	50	60th
3rd	2	50	70th
4th	3	50	90th
5th	5	50	110th
6th	6	100	130th
7th	10	450	
The felling 40 trees containing 75 cubic ft. } 150th			
40	37 $\frac{1}{2}$		

Assuming the wood to be half beech and half oak, and that 100 faggots are equivalent to one klafter of 108 feet, the morgen would produce $36\frac{3}{4}$ klafters of fire-wood and 4500 cubic feet of timber. The value, estimated at 12 florins per klafter for the former, and at 12 kreutzers per cubic foot for the latter, amounts to about 112*l.*, or divided through a period of 150 years, about 15*s.* sterling per morgen, or 1*l.* 4*s.* per acre per annum. About 1*l.* per acre may be taken as the cost of sowing. The charge for clearing, setting up in measures of a klafter each, must be defrayed by the seller. The whole is covered by a few pounds; so that at these prices, with a yield equal to what is above stated, forest-land would be a good investment. Unfortunately only a small number of forests are now able to yield so much—the table supposing a regular well-supported cultivation of oak and beech on the most recent and approved principles, and that this cultivation has been regularly followed for the last 150 years. This has of course nowhere been the case; and the consequences of neglect in former years, of the cupidity of thoughtless owners, and of the ravages of war, are bitterly lamented in every part of the continent. The usual production cannot be estimated at perhaps more than half the quantity stated above; and as a change to other branches of cultivation is not easy, a vast extent of land is locked up in wood, that is neither profitable for the owner, nor, from the dearness of wood, useful to the consumer.

If we look to the past as a guide for the future, those who plant forests for the benefit of their posterity seem indeed to have a rich field before them. The rise in the value of timber since 1801 we have already noticed. We

take from the same source the following survey of the prices in Wirtemberg and in the Odenwald near Darmstadt, for a longer series of years. The standard is taken from the oldest recorded price of each description of wood:—

Year.	ODENWALD.		WIRTEMBERG.	
	Proportional price of Beech.	Fir.	Proportional price of Beech.	Fir.
1730	1	—	—	—
1740	4·4	1	1	1
1750	8	1·82	1·2	1·8
1760	10·8	2·45	1·82	1·6
1770	9·6	2·18	1·85	1·63
1780	8·8	2	1·63	1·68
1790	15·4	3·57	2·12	2·13
1800	22·0	5·0	2·41	3·95
1810	28·8	6·5	4·01	5·18
1820	—	—	4·93	6·09
1830	34·0	7·7	5·53	6·95
1841	59·2	13·4	?	?

If the price of the beech-wood in Wirtemberg be multiplied by 4·4 on the increase in the Odenwald between 1730 and 1740, the two tables will be found to coincide tolerably. Still both the effects of trade and of war may be more easily traced in the Hessian table than in that of the country more remote from the Rhine. Notwithstanding this last-named drawback it is clear that the Rhenish forests promise the best return, and that this return is sure to augment with the growth of trade and of population.

To what price it will be possible to raise fire-wood in future times it is not easy to say. That its value will in the next 100 years be raised 15-fold may reasonably be doubted, both on account of the rapid and cheap means of communication that are yearly opened, and because the dearness of fuel would operate as a check to popula-

tion. Coals are now in general use all along the Rhine in towns. In villages, where the supply of fire-wood is not subject to such rapid fluctuations, wood is still used for firing. But manufactures of all kinds requiring either furnaces or steam-engines have long been established only in places well supplied with coals, such as on the banks of the Ruter, or of the Upper Moselle, and the neighbourhood of Aix-la-Chapelle.

Were we, however, to calculate the return of any capital sum laid out in the purchase or in the planting of forests, from the experience of the last 100 years, 1000 cubic feet of timber, instead of being worth 4000 pence, would a century hence be worth 60,000 pence; and the present value estimated at compound interest, payable at periods of 30, 60, 70, 80, 90, and 100 years, would be 3*l.* 17*s.* 6*d.* instead of 2*l.* 1*s.* 6*d.* In a country where land abounds,—that is to say, where the population has not accumulated so much as to make the provision of food matter of difficulty, there is no necessity for reckoning with compound interest, and the land devoted to forests being required for no other species of cultivation, it forms a capital that, at simple interest, yields its fair return. The present investment, in purchase-money and cost of planting necessary to secure a return of 4500 feet of timber, which we have seen is a fair yield for an acre of forest-land, when well managed, after 150 years, may, without anticipating a rise of prices, be estimated at 4*l.* to 8*l.* 10*s.* In order therefore to bring such a portion of the forest-land as is suited for arable uses or for meadowing to the value that we have quoted for such land on the Lower Rhine, a great increase of population and corresponding growth of prosperity will be required.

But this improved value cannot, for evident reasons, be anticipated from a corresponding rise in the price of fuel, as we have seen the value of arable land is not raised by high prices of food, so little is the landlord anywhere dependent upon any fixed crop for the best return, and so sure are all to share in the growth of general prosperity. In that part of Bavaria which lies remote from the Rhine the price of wood is not above half that which is paid in the Black Forest. In many of the manufacturing districts on the Lower Rhine higher prices are obtained, both for fire-wood and timber, than are obtained in Baden.

Amongst the most valuable property of the villages in Germany must be reckoned the forests which are common property. Their management has latterly been taken under the guardianship of the state, and the district forester has to be consulted both as to the plan of cultivation and the quantity to be felled. Every village has its supply of wood for firing and for building; what remains, after the village wants are covered, is sent to the nearest market. The price of wood, like the price of corn, thus depends upon the size of the towns where purchasers are to be sought. In the country, every man having enough for his own consumption, there are scarcely any buyers. Hence the great variations in the price of wood in different states, whereas it may everywhere be assumed that the inhabitants of towns pay nearly double the price that it costs the villagers. Where towns or corporate bodies have forests as common property, the produce is generally sold at market and the proceeds divided amongst the parties interested, unless the situation and size of the town be such as to

present no market. Here we find the same state of things that prevails respecting farming produce. The actual value of what is consumed for fuel, that is to say, what it costs in labour, in carriage, and rent, is never ascertained for the greater part of the consumption of Germany. A market-price bearing any proportion to the cost of these items is only to be found on the banks of the navigable rivers.

From the necessity every village and town lies under of having fuel and timber at command, the forests are not exclusively confined to the mountainous and uncultivable tracts of land. In Rhenish Prussia, the forests of which we have spoken lie between the Belgian frontier and the circle of Cleves, in the Ardennes, on the heights enclosing the valley of the Upper Moselle, and on the right bank in the counties of Berg and Mark. More than one-half of the forests belonging strictly to the region of the Rhine are Prussian. The forests of the Duchy of Nassau comprise the Westerwald and Taunus mountain-chains, and cover a large tract of country extending inwards between Neuwied and Bieberich.

In the Grand Duchy of Hesse the chain of the Odenwald, stretching in a line parallel with the Rhine between the Main and the Neckar, contains the chief supply of timber. On the left bank of the river, between Bingen and Worms, the woods scantily supply the villages of the densely-peopled province of Rheinhessen with fuel, and they are obliged to bring wood across the Rhine, from the Odenwald and the Black Forest.

The Black Forest stretches the whole length of the Grand Duchy of Baden, from the Neckar to the Lake of

Constance and Basel, although the hilly portions attain no considerable elevation before the traveller reaches Pforzheim. In the Palatinate, belonging to Bavaria, on the left bank of the Rhine, the hilly districts are extensively wooded, and the forest-land, as in Rhenish Prussia, nearly equals the arable land in area.

Berghaus gives the following as the extent of forest-land in the countries bordering on the Rhine:—

	Arable, &c.	Forests.	
Rhenish Prussia	4,130,369	3,148,713	Pruss. Morgen
Nassau . . .	1,076,164	736,377	Nassau do
Gd. Duchy of Hesse .	2,047,176	1,081,410	Hess. do.
Baden . . .	851,398	1,296,070	Bad. do.
Rhenish Bavaria . .	926,220	704,706	Bav. do.

The whole making a total of about 4,815,600 English acres.

CHAPTER VII.

WE suppose the traveller to have fixed his head-quarters at Remagen or Sinzig as convenient spots for excursions into the valley of the Ahr and the volcanic region of the Eifel. If he crosses the Rhine with a descending steamer to Königswinter at the foot of the Drachenfels, he finds himself in a volcanic region, apparently a continuation of the chain on the opposite side, and known by the name of the Seven Hills. The summit of one of these is crowned by a former convent, now a substantial farmhouse, with a considerable establishment. But we do not know anything very remarkable to attract the inquiring agriculturist up the steep ascent to the Petersberg, unless he have plenty of time to devote to the gratification of his curiosity.

If he will follow us in an excursion into the back country, taking the road from Bonn to Siegburg and Altenkirchen, there is not a little to be seen and learnt that he will find well worthy of attention. At Siegburg we reach the hills that bound the level valley of the Lower Rhine, and which grow steeper and more tortuous in proportion as we follow the road leading northwards. All the hills are covered with wood, but for the most part present a very different aspect from the stately plantations of the Upper Ardennes. From Altenkirchen to Wissen-on-the-Sieg the country becomes more romantic as we proceed, and at Wissen a wild valley, shut in by

wooded heights, offering a great variety of mountain scenery, at the bottom of which the river Sieg rolls its rapid waters, forms a striking contrast both to the broad valley of the Rhine and the narrow glens of the Ardennes in its immediate vicinity. Here the elevation of the ground and the circumstance of our being on the north side of the Westerwald, and consequently in a district exposed to cold winds, with the slope of the hills quite unfavourable for radiation of heat, forbid the cultivation of the vine, and render corn-crops precarious and scanty. The stranger is however at no loss to explain the number and good appearance of the villages through which he passes, for the heaps of earth on the mountain side and the open entrances to galleries carried from low points into the hill-side, remind him at every turn that he is traversing a mining district. In the districts of Sayn and Siegen, that long were cut off from all easy traffic with the Rhine for want of good roads, a remarkable spirit of industry and an ingenuity worthy of admiration has been displayed by the inhabitants that must surprise all to whom the circumstances of these districts are not known. There is perhaps no district in Europe of which a minute history for the last three centuries would be more useful and more entertaining. But the people have been acting and not reasoning, and although the age has in many respects run away from them, yet they have a right to claim for past times an interesting position very much in advance of their contemporaries. Both in agriculture and in many branches of manufacture the people of Siegen presented, until very recently, a model for their neighbours. Their agriculture was of course modified by the circumstances of the country, and

their woods have for centuries been managed in a peculiar manner, very well suited to the wants of miners, founders, and steel-manufacturers. The chief source of wealth for the country lies in the sparry iron ore which abounds about Siegen. The system of foresting practised at Siegen is founded upon the principle of obtaining the greatest possible yield of wood suited for charcoal-burning, combined with the best crop of bark, an article that latterly has very much improved in price. It is well known that of late years the greatest production both of charcoal and of bark for tanning has been ascertained to be derived from young trees and branches, and the forest system of Siegen turns both to the best account.

The woods lie everywhere on the hills, which are steep and often rise to the height of 1000 feet above the Sieg, being intersected with narrow valleys and glens, to which the Sieg serves as a drain. A large portion of the wood-land between Altenkirchen and Wissen belongs to the crown, and on these tracts timber is more frequently found than in the woods situated between Wissen and Siegen, and which are the property of parishes, or of companies formed by individuals. The system of cultivation adopted is a rotation of sixteen, eighteen, or twenty years, the brushwood having at that age attained its best size and strength for charcoal, and, when the stock is oak, the bark yielding at those periods its greatest profit. The woods of this last-named description form a curious illustration of the spirit of association, which is a characteristic trait in the German character, united with all the peculiarities that spring from the kind of education which the peasant works out for himself in the spirit of mistrust

that we have before noticed. The origin of many of these corporations, or rather joint-stock companies, that own woods in the neighbourhood of Siegen, goes back to remote periods. Money was furnished by the forefathers of the present holders, or of those from whom the present owners acquired the property, for the purchase and planting of the land, and the shares are still calculated in the name of the coin current at that early period, but which is now represented by a much higher value. An albus of the sixteenth century is the usual share, which then was worth one-eightieth of a dollar, and is now represented by fifty to eighty dollars. In every wood thus belonging to shareholders in common there are good and bad situations. When the period for felling arrives the wood is mathematically divided by lines drawn, if possible, evenly through good and bad sites. Sometimes, where there is a projecting angle, all the lines run out to a point. The portions are numbered, and lots decide the parties to which they respectively fall. The felling then takes place, but not by contract or by persons employed for the purpose. Every peasant takes his lot and cuts, barks, binds, and carries home what it yields at his convenience. He is, however, bound to take his share away before the peculiar cultivation resorted to on the bared ground commences. The roots of the trees are left standing in the ground to throw out shoots, which, in twenty years, are to replace the underwood of which it has been cleared. Between these the surface of the soil is pared off a few inches deep, and the sods are collected into heaps and burnt. The ashes are strewed upon the ground and lightly ploughed with a

remarkably-shaped plough, light enough to be managed upon steeps often presenting an angle of 50° to 60°. Oxen are generally used for this work, and rye is the grain that experience shows to thrive best in these cleared thickets. The paring, burning, ploughing, and sowing are again performed by each owner on his own lot. Nothing is common amongst the proprietors but the resolution to follow a peculiar system of cultivation, and the general property in the soil, which is periodically divided in the manner we have described. The year after the rye is harvested the ground is left in repose, and in the following or fourth year the whole ground is covered with broom (*genista*). This curious crop is cut close to the ground in the autumn, and does not re-appear until the fourth year after the cutting of the wood—that is to say, until twenty or eighteen years after it has been gathered in, according to the term of years which the wood is allowed to stand. The peasants use the broom for thatching roofs and the weather-side of their houses. The poorer people make it serve in their stables for litter for cows and horses—the thick stems serving for fuel. After the broom, grass appears in some abundance; and the cattle of the proprietors, where the wood is private property, or of the village, where the wood belongs to one, are driven to graze among the young trees. Many foresters are of opinion that this practice is injurious to the young shoots: the peasants maintain that their gain from the grazing exceeds their loss in the wood-crop. It is probable that the broom is kept down by the cows nibbling at the young shrub. The yield from a morgen of “hauberg,” as these woods

are termed, has been stated to us on good authority* to be as follows:—

	£	s.	d.
A crop of rye, 12 bushels to the acre	2	2	6
Ditto broom	0	10	0
Grazing, 10 years			
Wood for charcoal, 608 cub. ft. per morgen (in charcoal)	2	12	6
Bark, at 1 ton per morgen	2	12	6
	<hr/>		
	£	7	17 6

It is probable that the grazing in the “hauberg” brings in no gain to the peasants, who lose their dung that would otherwise accumulate in their yards, besides the loss of milk that ensues from driving the cows up the hill to these indifferent pastures. The whole sum divided by seventeen, the number of years in the rotation, gives 9s. 3d. per annum, as the return drawn from mountain land too steep for the plough, and situated under a very inclement climate.

The manner in which charcoal is burnt in the woods of Siegen is the following:—A plot of ground of a circular form is prepared by removing all stones from the surface, and making it perfectly level. The bottom is stamped hard, and if not raised by the accumulation of charcoal dust from former burnings, must have a ditch drawn round it to carry off water. In the centre is fixed an upright stake, round which the wood, split into pieces of three inches or little more in diameter, is piled on end. The wood is chosen as equal in sizes as possible, and is placed piece by piece in the round, the longer pieces 10 to 12 feet high in the centre, and the shorter gradually

* Vorländer, quoted by Schenk in his ‘Statistics of Siegen.’

diminishing towards the outside until the mass assumes the shape of a flat cone.

An inner covering of moss and turf is laid over the heap, and is again covered with clay sifted to free it from stones. In this outer covering 12 to 14 holes are made after it has been stamped till it hardens. The stake in the centre is then drawn out and fire laid upon the top, the gradual progress of which is anxiously watched by the coal-burner, who opens or stops up the air-holes according to the direction and strength of the wind, that the whole may burn evenly and thoroughly. When all is burnt out, the earthy covering is loosened at bottom, and peels off the heap easily. The coals are spread out, and those not thoroughly burnt separated from the rest, which are carried as soon as they cool to the place where they are to be used.

From $2\frac{1}{2}$ klafters, or 221 Prussian cubic feet of beech wood, or from 10 one-horse loads of underwood, a "wagen" of charcoal of 2500 lbs. weight or $194\frac{1}{4}$ cubic feet of charcoal is obtained, the price of which is now about 25 dollars, or 3*l.* 15*s.* The royal forests of Siegen furnish 3000 wagens yearly. The village and private woods yield something more than 2000 wagens. On 130,000 morgens of forest-land, this shews $2\frac{1}{2}$ morgens to the wagen of charcoal annually, or a return of 13 dollars, including labour.

Although the good effects of the German village-system in fostering a spirit of association, and of accustoming men of small means to an independent management of their shares in the common property, may be traced in every German village, yet they are nowhere so conspicuous as in Siegen and some of the adjacent districts.

The peasants, besides the large village properties, are almost all share-holders in the forest companies that we have described. They are besides nearly all miners, and hold shares frequently in one or two iron foundries. In winter the mines are worked and charcoal is burnt for the following "campaign" at the blast-furnace. In consequence of this arrangement, which leaves them time in the spring and autumn to attend to their meadows, while the short summer is devoted to field tillage, the year is filled up in a manner suited to the habits, and which formerly was equally subservient to the interests, of the villagers. They were long in possession of a monopoly of great value—the production of steel, for which their iron is particularly well suited. The temptation that greater countries and more highly educated men have not been able to resist of shaping the market to their pleasure was too strong to be resisted by the villagers, the artisans, and even the Princes of Siegen (then a branch of the House of Nassau); and an apparently well calculated plan was laid, by which the foundries and steel-works bound themselves not to work more than a certain number of days in the year. The valuable product they furnished was thus not allowed to overstock the market, and charcoal and ore were kept at a moderate price, and were mostly worked up by the owners of the mines and woods.

The result has been that which infallibly results from all such attempts to restrict the flow of industry for the benefit of a few. The scarcity of iron in Germany obliged the neighbouring states to look elsewhere for supplies. Sweden was found to abound in ores of the best quality, and to be especially rich in the peculiar

kind of ore that was required for making steel. Trade had scarcely taken this turn in the direction of the Baltic from France and England, when the French invasion and subsequent Continental blockade cut off all remains of direct communication between England, the greatest market, and the interior of Germany. After the war not only was the very name of this once celebrated and still rich district lost to the great trading stream in the West of Europe; but the improvements effected by English steel-manufacturers enabled them, in spite of enormous duties, to send steel of superior quality to Siegen itself, where it is now sold at every dealer's shop, and of course is preferred by cutlers and other artisans.

On the cession of this district to Prussia after the war, the productions of the mines and foundries, instead of increasing in value, were every year less and less sought. It was suggested by some thinking heads, that as all the modes of restriction devisable had been tried without success, it would be well to try the effect of setting the trade in metals and charcoal free. The export of ore, which had long been prohibited even in the neighbouring circles, was allowed without much opposition on the part of the founders who could not work up their ores. Still, although large establishments immediately sprang up on the borders, which were worked by coke brought from the river Ruhr, the founders and steel-workers have not yet given up the restrictions on production, which they still look upon as a kind of privilege. The government does not urge them, as they alone are interested in the matter, and experience has shown that the present system brings no gain. The wood-owners of Siegen have thus, by a plan adopted as a specimen of perfect wisdom while all lay in

their power that could give them a command of the market, voluntarily placed themselves in the position which we have seen the German farmers for the most part occupy. Each has his own supply of wood, which seems to be of little value, because if he does not work it up himself, his neighbours being also supplied, would not take it off his hands. No third party can interfere, for by the charter of restriction (if such an absurd, although true, title may be allowed), no new foundries may be established within the district, nor may the old ones extend their period of working. It is singular that the obvious fact should escape their notice, that the competition of other countries makes it impossible that iron should permanently rise in price, whereas competition amongst iron-masters and steel-workers would infallibly raise the price of charcoal. Who, however, that has once strayed into the delusive labyrinth of restrictions ever found a simple path out of its toils?

The village system, therefore, much as it favours popular discussion, and consequently offers the surest means of protecting individual interest, is no infallible safeguard against error. The diffusion of knowledge through the means of newspapers and periodicals, is not so rapid as to pervade the widely extended class that in Germany is directly interested in the solution of difficult economical questions. In the present state of things the individuals who follow the fluctuations of the market prices possess an advantage over their simpler neighbours which gives them opportunities of gain, their address in using which is still looked upon with an invidious feeling by those who are less successful, and who not unfrequently find themselves outwitted. The cleverness of the more in-

telligent is however limited to speculation on a very small scale, and nowhere is the true trading principle of drawing a small, but sure, profit from undertakings on an extended scale acknowledged as the golden rule in Germany.

The remedy for the present state of things in Siegen is now thought to be in the construction of a railroad, connecting this mining country with the coal district on the Ruhr. The notion of any gain resulting from regulating the price of fuel by artificial means will be dispelled when this is effected, and all may return to a wholesome state of active production.

A singular contrast is presented in another branch of industry, for which Siegen has long been justly celebrated, and which, although it is impossible to protect it by restrictions, yet forms a pursuit that the people of Siegen are passionately fond of. It is not improbable that the art of laying down and managing irrigated meadows was introduced by some of the artisans who taught the people the mode of making steel. The origin of both arts points to Italy, and it is likely that some prince of Nassau, who was more than a mere Condottiere, brought them with him as the best trophy of some successful campaign in the fertile plains of Lombardy. Brescia was as probably the parent-seat of one of these arts, as Como or Lodi may have been the school in which the other was learnt. History is silent as to the original introduction of irrigation, which until lately was peculiar in Germany to the district of Siegen. The climate there is anything but a sunny one. From the sixteenth century, however, there exist laws and regulations respecting the rights of the owners of water-courses intended to fertilize

meadows, which evince that the care of the government at that early period embraced this great agricultural improvement.

At present not only the whole of the valley of the Upper Sieg, but all the side vales and glens that issue into it, have their bottoms carpeted with beautiful verdure, affording the owners a rich crop, and (after the outlay for laying down has been made) with an inexpensive mode of cultivation. To drain these glens for the purpose of extracting any other crop from their chilled soils would be attended with enormous expense. By simply adopting the oriental plan of letting the water run over the surface, the most productive crops of grass are obtained. The same principle applied in Holland has furnished that country with a rich and never-failing revenue derived from dairy produce, which no art could extract from the rich but humid soil in any other shape. Nor is the traveller left in doubt as to the natural or artificial origin of these meadows on the banks of the Sieg. The greensward is everywhere intersected by innumerable canals, the broadest of which forming the water-courses vary from three to five feet. These catch the water of the river or of its tributary brooks at the highest possible level, and carry it along the hill-side, or over an elevated bed through the centre of the meadow. Out of this are led the small cuts, nine inches deep, and nine to twelve inches broad, which carry the portion allotted to each bed in the required direction. Bed is the proper term here, and not field; for although the absence of fences gives to a whole valley the appearance of belonging to one proprietor, yet it is not easy to imagine a more minute division of the soil, and more exclusive proprie-

tory rights and obligations than such a valley contains. A similar spirit of association on the one side, combined with tenacious adherence to private property on the other, which the "Hauberg" showed us, is presented in these water-meadows. A similar want of economy in labour may also be traced in their management; but as the return from the meadow is a better one, the loss is not of much consequence.

The meadow regulations, whose origin is lost in the obscurity of time, are stringent as far as they go, although doubtful in their nature, that is to say, partaking of both a judicial and voluntary character. Every parish or commune, called in German "Gemeinde," has its meadow-overseer! like its wood-ranger; both being peasants chosen by their fellow villagers for their experience and tact in these various occupations, and receiving a moderate salary for their trouble. Their duty is to see that every one performs his due share of the common obligation, and that the water-rights are not infringed by the rival interests of the hammers and mills that are driven by the same streams. In the autumn, generally in November, the canals are laid dry to be cleaned out. Every proprietor must clean the portion passing through or skirting his meadow, and dispose of the refuse extracted as well as he can. If he neglects to perform his part he is subject to a fine, which is levied daily until the work is done. The whole valley may then be seen filled with small mounds of clay, running in straight lines in every direction. A few days afterwards these disappear, being carried in different directions to improve the level or to regulate the slope of the surface. This is the period when changes are made in the watering and in the drain-

ing canals, and an amateur seldom lets the year go round without making some such change as the result of observation or of restless fancy.

Whoever has watched this annually repeated cultivation, and followed the care with which the owners study their little properties to find out the nature of the soil, and choose the disposition best suited to the position with regard to the sun and the wind, will be convinced that a perfect system of water-meadowing must be a work of time and of great care and observation. He will, however, be persuaded, by observing the value of the crops obtained without the aid of manure from a large extent of poor land under a severe climate, that no time should be lost in adopting this mode of treating meadows wherever circumstances make it practicable. The Duke of Portland and the Duke of Marlborough have, we believe, recently adopted irrigation on a large scale in England, where at least as much land may easily be watered as has of late years been drained, and unquestionably with a no less profitable result. Although the manure obtained from towns is of the greatest value in increasing the yield of meadows, yet it is important to make the fact known, that simple water, unaccompanied by the wash of floods, or by any extraneous matter, promotes the growth of grass on meadows in a remarkable manner. The meadows of Siegen allow the peasants to give all their dung to the arable land, which, in its cold bleak situation on the sides of the hills, would, on other terms, not be worth cultivating. The whole agricultural plan of this district thus combines whatever can be of use to a half-manufacturing population, by demanding little labour and producing chiefly

what assists the miner, or serves as fodder for beasts of burthen.

The water-meadows are now systematically laid down in three different manners according to the slope the ground commands, and the abundance or scarcity of water. The engineers are usually the peasants of the neighbourhood, who by practice have acquired great skill. The surveying instruments may be seen in their houses in all the villages, and the precision with which their levels are taken and the flow of water promoted is not a little surprising. The three modes consist in terraced beds, and in broad and narrow beds with an elevated ridge in the middle. The following are the directions given by the Oberförster Vorländer. The chief canal should be carried as high above the level of the meadow to be irrigated as possible. Where circumstances do not favour the laying down of the canal at a sufficient elevation, and the soil is too soft to allow of the construction of a high dam without great expense, the level of the meadow may be lowered sufficiently to answer the purpose. It must be kept in mind, that by constant watering the level of the meadow is raised in time, for the soil swells in consequence of the accumulation of roots and the addition of particles of humus, as well as from the depth to which vegetation is promoted. When the surface reaches the level of the water-course from which it is irrigated, it becomes necessary to break up the meadow and to lower its surface.

The mode adopted either to alter the level or to regulate the unequal surface of a meadow, is not to plough up the ground and crop it with corn or potatoes, although one would expect to obtain rich returns, especially of

oats, from a lay of 16 or 20 years' standing. The sods on the surface are pared off with a peculiar kind of narrow spade (Fig. 6, p. 139) 2 feet $2\frac{1}{2}$ inches deep. Strips are previously cut in the surface with the axe, and the strips when rolled up are carried on a stick passed through the middle of the roll. One man usually marks the strips, two pare them from the surface, and a fourth rolls them up. These rolls are recommended in the place of square or oblong cuttings; amongst other advantages they insure a sufficient quantity of sod to cover the field when it is levelled. If the turf be cut off in small pieces, the quantity often proves somewhat deficient. The beginning is generally made with those parts of the meadow which being highest have the greatest quantity of ground to spare, and with those which are hollow and require filling up. The turf being removed the ground below is dug up and carried from the one to the other. Care is, however, taken by good meadowers not to carry away the soil that lies immediately under the turf-paring. Of this a portion is reserved to form the bed on which the turf is to be relaid. The ground transferred from one place to another is taken from the subsoil, unless the good ground be very deep. When the level of the whole meadow has to be lowered, the stuff taken from the subsoil that becomes useless must be carted and thrown away.

Where the surface, at a sufficient depth under the chief water-course, still offers a fall of $\frac{1}{36}$ th of the length of the meadow, and there is plenty of water, the meadow is laid down in what at Siegen is called the terrace-mode of irrigation (Hangbau).

If the slope is less and there are marshy spots the meadow is laid down with narrow ridges.

Broad ridges are used where water is not abundant at all times, and the ground free from marshy spots, but commanding little fall. Where these peculiarities of site and command of water are observed, the yield of a water-meadow on an average is the same in all three systems of laying down. The first cut is made about Midsummer, and on good soils gives 3 tons of excellent hay to the morgen, or $4\frac{1}{2}$ tons to the acre. The after-grass yields about half as much. On average soils the yield may be estimated for the neighbourhood of Siegen at 3 tons to $3\frac{1}{2}$ tons per acre. With retentive subsoils the meadows yield below the average. It is customary in autumn to drive the cows on the meadows, their weight being supposed useful in treading down the surface, which has a constant tendency to swell and grow over the level of the irrigating canals. These meadows furnish in autumn pasturage, and in summer the cows are driven into the "Hauberg." In the morning and evening some green fodder is given them in the stables. In winter hay, straw, and chaff, mixed up and boiled with potatoes, carrots, or beatroot, form the usual fodder.

Terraced Meadows.

In the meadow that is destined to be laid down on the terrace plan, the water-course being carried over the highest part, the level of the distributing canal must be marked by a stake driven near the centre. Another stake driven at the lowest extremity of the field must mark the level of the draining conduit—the terraced meadow being supposed to have a breadth of 6 Prussian roods of 10 feet, and is divided into 4 beds each $1\frac{1}{2}$ rood in breadth. The channels, laid parallel to the distributing

channel, are supplied with water from the distributing canal by means of transversal cuttings. It may seem simpler to let the water at once run over the whole surface from the distributing canal; but experience has shown that the richest grass springs nearest to the canals, although the reason why there should be a difference where there is water enough to flood the whole surface is not very apparent. By increasing the number of canals the fertilising principle is more equally distributed, and terraces of 6 roods in length by $1\frac{1}{4}$ in breadth are found to be the most advantageous size for ensuring the best yield of grass. If the level of the beds be found after a few years' watering to be raised too much, the canals can each be carried a foot or two higher up the slope, the old cuttings being closed and covered with the turf taken out of the new ones.

The sluice cuttings in the dam of the upper water-course are 5 inches wide, and their bottom is sloped, being at the upper end 6 inches higher than the level of the chief water-course. The irrigating canals are 5 inches broad and 4 inches deep. The transversal cuttings are of the same dimensions.

Irrigation by means of narrow Ridges.

In a meadow irrigated on the system of narrow ridges, the water-course, with the sluice-cuttings through its dam, are the same as in the terraced meadows. The distributing canal is kept horizontal, and is $1\frac{1}{2}$ foot broad and 5 inches deep. The meadow is measured and divided into equal portions, the best size for which is between 15 and 25 feet. Each bed or ridge is supposed to have a

breadth of 20 feet, so that each slope has a breadth of 10 feet. The ridges are 60 feet in length. Stakes are driven at the openings of the transversal cuts, which are levelled, and the draining conduit must then be marked out and stakes fixed at the points. The fall does not exceed 1 foot in a length of 63 feet. With the aid of the last stakes parallel cuttings are made in a transversal direction from the draining conduit in the direction of the distributing channel, but stopping at some distance short of the latter. The bottom of these cuttings is sloped, being 5 inches higher than the level of the draining conduit. The cuttings divide the ridges and serve as drains. Between them the ground is raised in the middle so as to slope towards each draining canal, the upper part of the ridge being kept high enough to carry an irrigating canal which takes the water at the level of the distributing canal, and carries it with a slope of 5 inches to the draining canal. When this canal is full and overflows, the water runs into the lower cutting, and thence into the lower drain, in the bottom of which there is also a slope of 6 inches.

At the lower end of every ridge the surface presents the appearance of a triangle.

Irrigation with broad Ridges.

In a meadow laid down near Keppel with broad ridges, the water in the brook that supplies the main canal is scanty in summer, and is applied to turning the wheels of some steel-works. The main canal is 4 feet broad, $1\frac{1}{2}$ foot deep, and has a fall at bottom of $\frac{1}{4}$ inch in soft. The dam is 3 feet broad, and the sluiced cuttings

through it are each 1 foot broad. The horizontal distributing canal is 2 feet broad and $\frac{1}{2}$ foot deep. The ridge-cuttings that issue from it are 90 feet long; at the mouth they are $1\frac{1}{2}$ foot, and 1 foot broad, with a depth of 5 inches. The width of each ridge is 60 feet, consequently each bed or slope is 30 feet broad.

In order to diminish the size of the intervals between the cuttings transversal canals are carried across the beds.

The drain-cuttings have a fall at the surface of only 3 inches, but at bottom of 5 inches, being 4 inches deep and 8 inches broad, and 6 inches deep and 1 foot broad. In this meadow the chief drain serves as a distributing canal for a meadow situated below and adjacent to it.

In a meadow laid out by M. Vorländer in such a manner as to combine the terrace plan applied to the more elevated part with the narrow ridge system, the drain canals serve as distributing canals for the meadows situated below them. In a large meadow near Keppel, by a skilful adoption of the various modes of laying down the surface, the same water is carried over eight different plots of land in succession.

The instruments principally used at Siegen by the meadow-owners are—

Fig. 1, A, an axe of peculiar construction for making a sharp perpendicular cut in the turf either for raising sods or for cutting canals. The point at the back of the blade is intended to balance it and to give weight and precision to the cut. The edge is of steel and is ground sharp. The price of the axe is one dollar, or three shillings.

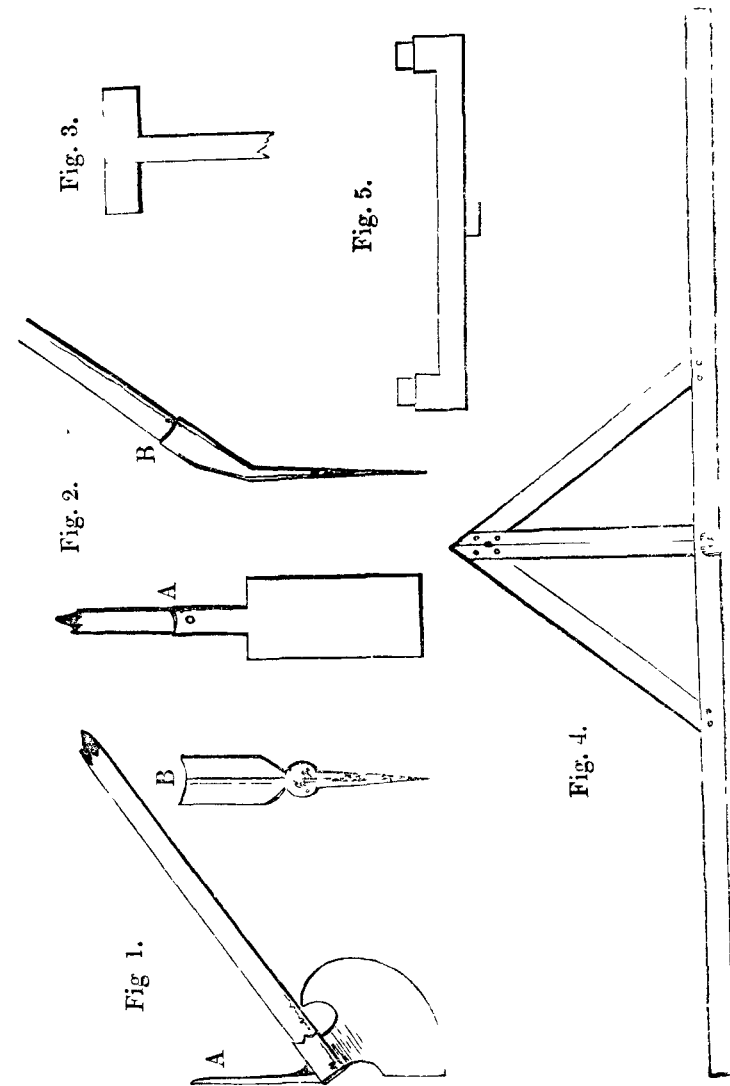
Fig. 2 is a narrow spade bent at the angle, shown in Fig. 2, B, to the handle. With this the grass is cut under the roots when sods are to be raised, and it serves to transport the soil or rubbish, as may be required, from one spot to another. The bottoms of the canals are levelled with this instrument.

Fig. 3 is a board nailed at right angles to a pole, and is used in levelling the surface and the bottoms of the canals. Three of these sight-boards are requisite.

Fig. 5 is a tube of tin, the ends of which are raised at right angles. At the top of these raised ends continuation tubes of glass are affixed, that allow the play of the water, with which the tube is filled, to be seen. The contrivance is intended to save expense in the glass, of which material the whole tube may be made. When fixed upon a pole by means of the socket this instrument shows the level of the surface.

Fig. 4 is a common plumb on a long board. It is used for ascertaining the level at short distances.

The proper time for cleaning out the ditches and canals is late in the autumn, when the cattle are no longer driven to the meadows. A day is fixed by the overseer of the meadows by which all the canals have to be cleaned out under a certain penalty. Then it is that the principal watering for the year takes place. If there has been heavy rain and the irrigating brooks are muddy, the water is not let on to the meadows until it begins to get clear. Too great a sediment fills up the canals and leaves unequal deposits on the surface that mar the labours of the meadow-owner. In the autumn no fear is entertained of the meadows being overwatered. The great point sought to



be accomplished is that the flow of the water shall everywhere be perceptible, and that none remains stagnant in any part. In the beginning of winter, when the frost sets in, the water is kept off the land. If the weather is open and rain falls, the water may be turned on again.

Spring is the season that demands the farmer's care. In mild rainy weather the irrigation may be continued; but after floods, as in the autumn, the water must be allowed to settle. When the sun grows powerful the irrigation must cease altogether. In March and April a little moistening is allowable; but in these and the following months the water may only be spread during the night. In the middle of June occasional night-watering does good, but none is let on for four weeks previous to the hay harvest.

The practice of cutting late in order that the grass may sow itself is common in the district of Siegen, and differs very much from the Italian plan, according to which the grass is cut when it attains its full length without its being allowed to ripen. The colour of the hay at Siegen is not good, and it is not greedily eaten by horses. The ripening of the seed must also exhaust the land.

As the water-meadows are not manured, all the dung of the stables is appropriated to the arable and garden land, which is usually small in extent; but of a cold meagre nature, and very unproductive. The fields lie on slopes sufficiently level to retain the soil in heavy rains, but too high to be watered. The decomposed clay slate, of which the hills are mostly composed and which forms the upper soil, is void of all mixture of limestone, and none is to be had at any convenient distance for manuring. Crops are consequently poor, and corn has to be pur-

chased to eke out the year's consumption. The humid climate and severe winters operating on so weak a soil, make it necessary to cover the winter seed with dung in order to quicken and protect it. But the only dung in this district is that of oxen, or at best horse-dung mixed with that of horned cattle, and there is little warmth in it to impart to the soil.

The general use of oxen or of cows for draught cattle upon the banks of the Rhine is recommended, as we have seen, by the necessity for dung not likely to overheat the ground under a scorching summer sun. In these colder parts the ox is still an indispensable inmate of the stable, but for another reason.

Mining and forest work are fully as much the business of the peasants as agriculture in the level land. They are, however, carried on upon the hills, which are on all sides pierced by countless mines. Many of these lie on heights of considerable elevation, or in back valleys from the Sieg, the access to which is steep and difficult. As the ascent is commonly effected with an empty car on two wheels, the draught is not oppressive for oxen. To descend the worn-out roads towards the villages or the high road is not so easy a task, and here the ox is invaluable as a servant. They may be seen guiding with their foreheads under their yokes, the weight of ore intrusted to them, and while the deep ruts in the road act as a drag to the car, the animal's own weight adds resistance to its pressure; and loads varying from 12 cwt. to 20 cwt. are thus securely brought down with a speed, not equal to horse draught on roads well laid down, but which is all that can be accomplished with the present ones.

A macadamized road has opened the romantic valley of the Sieg since 1840, and along this line cartage is gradually being transferred from oxen to horses. The habits of the agriculturists, however, do not change so rapidly as mechanical improvements advance at the present day; and the roads to the mines being in their ancient condition, oxen are likely for some to predominate. The small miners occasionally use their milch cows for draught, as is the case all over Germany.

In the year 1837, the official returns showed for the circle of Siegen, a stock of cattle on the German square mile (20 $\frac{3}{4}$ English square miles), amounting to 30 horses; 1276 horned cattle; 624 sheep; 113 goats; 325 pigs.

The population in the same year having numbered 3440 on the German square mile, the number of horned cattle was nearly one for every two inhabitants, which will serve to show how great the proportion of draught oxen must have been. The circumstances of the country prevent it having any thing remarkable in arable agriculture to interest the practical farmer. Every slope in the winding valleys yields a different return, and rye, oats, and potatoes of poor quality, and scanty in quantity, repay the peasant badly for the time he abstracts from other occupations to apply to their cultivation. More than 10 to 12 bushels of rye per acre cannot be calculated upon as return from the "Hauberg," and 3 sheffes of potatoes from the Prussian "ruchte," or 150 bushels to the acre is considered a good crop of this root. Turnips are constantly sown in the oat stubbles, although the damp of the autumn and the early frost at night prevent their attaining even a moderate size. Flax is cultivated to

some extent in some of the valleys near Siegen, where hand-loom weaving is the employment of many of the peasants. The poor earnings obtained for this work have recently induced those who could do so to seek other occupations.

CHAPTER VIII.

LEAVING the valley of the Sieg, let us follow the new road that leads by way of Altenkirchen and Driedorf to Neuwied. We follow the foot of a chain of heights that constitute a remarkable boundary, as dividing two valleys of very different climate from each other, both opening at no great distance from each other upon the Rhine. The valleys are those of the Wied and the Lahn. The former unites with the valley of the Sayn at Neuwied. The Lahn falls into the Rhine a little below Coblenz. The hills that divide them are called the Westerwald, and although the highest summits scarcely attain 2000 feet in elevation, yet the extent of rocky soil and mountainous declivities which the range contains, makes the whole region bleak and unfruitful. On these heights the winter is very severe, yet their elevation is not sufficient to conserve a supply of moisture to promote vegetation in a dry summer. The higher region is thinly peopled, and little appearance of cultivation is evinced by the soil in the spaces that intervene between the forests. Extensive pastures, that early in the year show a tolerable covering of grass, but which in summer are soon fed bare, are frequent, and on these large herds of cattle may be seen feeding. Cattle-breeding is the chief productive occupation of the farmer in the Westerwald. A race of small cows very much resembling the Devon breed, like these, too, good milkers and easily fattened, is indige-

nous in these hills, and cows are drawn from the Westerwald to distant parts of Germany. On the mountain-roads that we have described in the neighbourhood of Siegen, as on those of the Odenwald, Black Forest and great part of the Taunus range, the light compact ox of the Westerwald breed does excellent service. The pastures on the hills are mostly village property, and being seldom more than six months in the year productive, neither butter nor cheese can be made for distant sale. The neighbourhood of the larger towns on the Rhine, however, where there is a considerable demand for butcher's meat, causes stock-feeding to be a profitable branch of farming. The meadows along the banks of the Wied, after it leaves the mountains, furnish the rich peasants and farmers of the low lands with summer grass and the necessary supply of hay for the winter. Of the latter article the German farmer is chary, and he depends fully as much upon the produce of his distillery mash-tub, as upon that of his meadows. Distilling is in this district only carried on to assist the fattening of the cattle.

The consumption of meat is both too limited, even in towns, and too little attention is paid by the consumer to quality, to make it worth the farmer's while to use the exertions that English and Scotch graziers resort to in order to produce gigantic specimens of cattle in the shortest possible time. The ox (and often the cow) repay their keep by labour in the field or on the road until the period for slaughtering arrives. Two and sometimes three years' run are given to the calf, if he be destined for draught: from three to seven, he is supposed to be in his prime for work, and the sooner he finds his way

to the slaughter-house after that age the better for the farmer. The luxurious calculations of our markets, in which fat and quality of meat are distinguished by highly remunerating prices, are unknown in Germany. And here it will be well to say something about the butcher's shop and his trade, as a matter of essential interest to the agriculturist.

Like the grain-farmer the stock-feeder finds his market especially in the large towns. In the villages the pig, slaughtered at home, and made up into hams, bacon, and sausages of all flavours and sizes, meets him in every house, and keeps down his price. What the pig may have cost in milk, potatoes, and refuse, is often as little calculated, as the price of the rye-bread that we have shown is purchased at a great expense of labour. This waste of labour in growing corn is, however, a still more formidable diminisher of the butcher's gains than the pig; for it prevents the husbandman from earning in any other manner, and he has consequently little to spend in meat. The slaughtering of horned cattle in a village is therefore a rare occurrence, and seldom takes place until the larders of the better kind are ascertained to be sufficiently emptied to ensure a ready demand for meat. We must not, however, suppose the German peasant to be ill-fed: his dish of potatoes is usually savoured with a piece of bacon, and the same condiment is introduced into the pancake—a favourite dish, and, when so flavoured, digestible for those who work much abroad, as peasants, male and female, often do. Sunday brings meat, soup, and the grand family-dish, the unsalted boiled beef, or “rindfleisch;” of which, as the staple article of the slaughter-house, we must first speak.

The price of meat is reckoned from that of “rindfleisch,” as the price of corn of all kinds is calculated from that of rye, as the standard. Little as the butcher has to do in the village, and easily as he can evade all prescriptive price by substituting inferior quality where good beasts are not well paid for, the black board, with its lines for the price of enumerated articles sold by him, still marks the butcher's shop, and affords a kind of assurance to the credulous peasant that he shall not be worse treated than his neighbour. The excise of meat is continued in the Prussian towns by the authorities, because it affords a means of estimating the slaughtering-tax, which is still levied in place of the property-tax in many places. It is as popular, however, amongst the citizens as the famed excise of bread used to be amongst the housewives of London during the war, when no other resource was supposed practicable against the enormities of bakers and mealmen.

The fixing a price for articles of food deprives the poor of the possibility of selecting a less costly joint when circumstances are adverse. On the other hand, as the poor have no means of bribing the butcher to begin a new cut when they come, and to cause him to leave any stump that may lie upon his block for the smart cookmaid or housekeeper of a richer neighbour, it operates as an excuse for oppression in many ways. Not only must the butcher's customers take the cut as they find it, if he chooses to make them follow in their turn, but he claims the exclusive command of a certain market, without interference, as a recompense for the supposed curtailment of his profits by the excise. The licence to open a butcher's shop is therefore not easily obtained. The price of meat

being an average price, the whole beast must be sold at the same rate, and those who obtain a portion of the more fleshy parts are obliged to take a certain quantity of bone cut off from any part where it may be to spare to eke out the lot. In many parts of Germany the form of publishing weekly the prices at which the different butchers of a town sell, according to their own report, is considered sufficient control on the part of the magistracy, and competition is allowed to do its part towards reducing prices. In all districts, however, the district medical officer has the charge of watching that no unsound meat be exposed for sale.

From what has been said the reader must have gathered that no great luxury is indulged in, as far as the consumption of meat is concerned, by the German peasants and burghers. Meat is sought as a necessary article of food, and no more is expended upon it than can be avoided. The farmer therefore has but little help from the butcher, especially in the country; and the price he gets does not induce him to make the same exertions to fatten stock that are made in England. The main inducement to keep stock is in the dung obtained from the beasts and the sale of milk, for the use of the animals for draught seldom more than pays the cost of their keep. By selling the carcase to the butcher the invested capital is preserved undiminished.

We subjoin some of the calculations on which the foregoing remarks are founded, and shall trace the stock-farmer's outlay from the commencement. We have pointed out the high lands of the Westerwald as the seat of cattle-breeding. A cow with her calf in that district may be purchased for 60 to 80 florins, or from 5*l.* to 7*l.*

The calf alone sells for 5 florins, or about 9*s.* Until they are four weeks old, the calves get nothing but milk: in the fifth week they get hay, and, in good farms, oat-meal mixed with the milk. Calves intended for the shambles are universally slaughtered within a week after their being dropped. The price of veal, instead of rating higher than that of beef, is consequently much lower. Veal may constantly be bought at 3*d.* per lb. when beef rates at 4*d.* per lb.

The cost of rearing the Dutch and short-horned breeds to the third year is calculated as follows, on good farms:—

	Milk. lbs.	Hay. lbs.	Straw. lbs.	Meal. lbs.
1st year . .	320	2164	1643	147
2nd ditto . .		3832	2554	
3rd ditto . .		5840	3285	

If we turn this amount of forage into money, at the following prices—

	£	s.	d.
320 lbs. milk, at $\frac{1}{2}$ <i>d.</i> per lb.	0	13	3
192 cwts. hay, at 1 <i>s.</i> 8 <i>d.</i> per cwt.	16	0	0
147 lbs. meal	0	8	4
	<hr/>		
	£	17	1 7

It is here apparent that the small breed that has the run of the mountain-pastures, and which does not cost its owner more than 5*l.* at three years old, is a more marketable article than the heavier beasts reared in stables at the cost here stated. The drovers from the manufacturing districts bring down about 1000 fat beasts annually from the Westerwald, averaging 48 to 50 stone, which cost them 6*l.* 6*s.* to 7*l.* 7*s.* a-head. The fat cattle on good farms average 12 to 15 cwt. The feeding has become matter

of scientific calculation, as will be seen from the following details.

Besides the cost of driving the mountain cattle to a distant market, which is saved on the farms that lie near the large towns, the German farmer calculates the gain from the dung of his stall-fed oxen at 3 waggon loads or 9 tons annually per beast, with a strictly economical use of straw. In money this quantity of dung may be valued at *1l.* 10*s.* to *3l.*, according to the vicinity of the farm to a town, or the nature of the crop to which the manure is applied.

A draught ox is estimated to consume in 120 days, from the 1st of June to the 30th of September, green clover and meadow hay equivalent to 23 lbs. of hay, with 1 lb. of meal, daily. The winter fodder, 14 lbs. hay, 14 lbs. potatoes, and 8 lbs. cut straw per diem—added to the former is equal to—

	£	s.	d.
Annually, 4 tons 11 cwt. hay, at 15 <i>s.</i> per ton	3	7	10
Salt, 54 lbs., at $\frac{1}{2}$ <i>d.</i> per lb.	0	2	3
Cost of cutting straw, clover, &c.	0	5	10
Straw for litter, 4 lbs. daily, at 6 <i>d.</i> per cwt.	0	6	8
Wages of 1 man to 24 head of cattle, at 12 <i>l.</i> 12 <i>s.</i> per annum	0	10	6
Shoeing	0	5	0
Wear and tear of buildings, harness, &c.	1	8	0
Veterinary charges	0	0	0
	£	6	6
			1

The set-off against this outlay, besides the manure valued as above at *1l.* 10*s.*, is, where full work can be had, 250 days' draught, at 1*s.*, or 12*l.* 10*s.* per annum. In the valley of the Sieg the earnings of an ox may amount to more than this sum; but the average price of hay in

that district is at least 50 per cent. higher than in the above estimate.

The weight of meadow-hay, or of equivalents requisite to sustain a cow, is $\frac{1}{60}$ of the animal's weight daily. Until this allowance is exceeded no milk can be expected. A cow is fully fed if she gets double this quantity. At the college of Hohenheim, a cow weighing between 1100 and 1200 lbs., gave, with a daily allowance of 36 lbs. of hay or equivalents, 39 lbs. of milk. The yield of milk is in the following proportions: If the animal weighs 500 lbs. it will yield 2500 lbs. of milk; 800 lbs. weight in the carcase is expected to yield 4000 lbs.: and an animal weighing 1200 lbs. to give 6000 lbs. weight of milk in the year.

The following table has been calculated of the increase in weight of horned cattle, in proportion to the quantity of fodder given daily of the quantity of good hay.

Daily fodder to 100 lbs. weight of carcase.	In proportion for 12 cwt. of carcase.	Increase per diem in weight.
2½ lbs.	30 lbs.	0·7 lbs.
3 "	36 "	2 "
3½ "	42 "	3·2 "
4 "	48 "	4·5 "

An ox weighing, alive, 1520 lbs., has been found to yield in

The two fore quarters	388 lbs.
" hind quarters	326 "
	714
Tallow	138
Hide with the hair	80
Offal	160
Loss	428

1520 lbs.

If four months be taken as the time required for fat-

tening, and the ox be supposed to sell for 12*l.* 12*s.*, if of large size for slaughtering, the account between the cost of stock holding and the return stands as follows:—

Cost of the calf . . .	£ 0	10	0
Three years' rearing . .	17	1	7
Three years at work . .	18	19	6
Three months' fattening	3	0	0
	<hr/>		
	£ 39	11	1

From which deduct—

Three years' work 37 <i>l.</i> 10 <i>s.</i>			
Butcher's price 12 0	—	49	10 0
Profit		10	0 0
Besides six years' dung at 1 <i>l.</i> 10 <i>s.</i>		7	10 0

To realise this profit the price of fodder must be as low as has been stated, and the ox must have full work, two conditions that are not always realized, and for that reason we have stated the main inducement to hold stock is now in the dung gained.

In mountainous districts a Westerwald ox that may be bought for 5*l.* at three years old, and which sells to the butcher three years later for the same sum, will do as much work as the heavier kind of cattle. An ox of that breed requires but two-thirds of the fodder consumed by the other, but gives only two-thirds of the weight of dung. The balance is ultimately very much in favour of the smaller animals under those circumstances.

A Westerwald cow weighing 500 lbs. may give in three years

6400 lbs., or 1600 Prussian quarts of milk	£.	s.	d.
that sells in Siegen at 2 <i>d.</i> per quart	13	6	8
Five years' dung at 1 <i>l.</i>		5	0 0
Three calves		1	10 0
Butcher's price		5	0 0

Carried forward £ 24 16 8

Brought forward £ 24 16 8

From which deduct—

Cost of calf	10 <i>s.</i>		
Price at two years	5 <i>l.</i>		
Three years' feeding 12 <i>l.</i>	—		
		£ 17	10 0
		<hr/>	
		£ 7	6 8

The quantity of milk is reckoned low because the cow may do light work 150 days in the year. The dung valued at 8*d.* per week adds 5*l.* to the above sum, which yields 50 per cent. on the total outlay; whereas the large draught-ox returns but 44 per cent. to the stock farmer. The latter is the common peasants' calculation.

On regaining the Rhine at Neuwied, the traveller greets with pleasure a milder climate and more genial soil than his mountain excursion showed him. The large basin presented by the valleys of the Wied and the Moselle, with the depth of alluvial soil and the mild climate of South Germany, which may there be said to commence, do not, however, efface from his recollection the skill and industry with which the meadows and mountain sides of the vale of the Sieg are rendered productive. Where nature does much for the farmer he is apt to relax in his efforts, unless spurred by the demands of a numerous population, and in the neighbourhood of Neuwied and Coblenz no such pressure exists. The fruit-trees covering the fields, and the vines scaling the slopes of the hills, tell of other enjoyments than those at the command of the Westphalian miners. There is, however, no greater appearance of well-being, either in the persons or in the dwellings of the inhabitants of the Rhenish villages than we left behind us in the less favoured districts. In dress, the people, especially on the left bank, are less neat, and their manners indicate less

promptness and persevering activity than we were accustomed to amongst the mountaineers.

The large towns here draw off some hands from the land, but the effects of trade, although we are again on the high road of Europe, are not so perceptibly beneficial as we found them on the lower Rhine. The territories of the old Electorate of Treves still betray the effects of church-government and of the good old times, when the object was to make people suit themselves and their wants to certain forms and customs, instead of proclaiming the subserviency of all forms and modes of cultivation to the well-being of man himself.

One natural result of this circumstance is that estates are here met with in larger allotments than are common on the middle Rhine. Here, as in Westphalia, a number of estates belonging to clerical foundations, and which were kept of moderate size by those corporations, passed in this form at the period of the confiscations into the hands of private owners. Farms of 250 to 300 morgens (155 to 187 acres) are here frequent, still more numerous are those of 120 to 180 morgens, although small possessions are frequent of 20 morgens (12 acres) and less amongst the villagers. The larger farms are compact, and mostly surround or are adjacent to the dwelling-house. The small holdings are scattered in all directions, the natural consequence of the village system that has been described.

The soil between Andernach and Coblenz is composed of the sand of volcanic origin carried down from the heights by the mountain streams, but mixed with the deposits of frequent floods that cover the lower parts, leaving good stuff on the poor soils, but covering the

fields where the soil has been made by cultivation, with matter that gives the farmer a great deal of his work to do over again. As we leave the Rhine the volcanic sand predominates, especially in the strip at the foot of the hills, called the "Mayfield," between Mayen and Münstermayen. In the hilly region, to which we must return when speaking of the vineyards, the prevalence of lava and basalt makes the soil difficult to plough, and condemns large tracts to the condition of poor pastures. On these large flocks of sheep are kept, numbering 500, 600, and sometimes 900 head. Some time back it was the fashion to cultivate the Merino cross; but the loss that ensued when the rot and other diseases ran through an expensive flock, discouraged the small farmers, and made them leave things as they were. The sheep the traveller finds here present, therefore, the strangest mixture, from high-bred Merinos to the common mountain breed yielding small weight of carcase, and short although coarse wool, of which the fleece runs from 2 lbs. to 3½ lbs. in weight. On the larger farms good management of manures is frequently to be found. The volcanic soil is well limed by diligent farmers. Compost heaps, on which especially the liquid manure is poured, are also common. For green manures, soiling of rye, lupins and buckwheat are used, the last named plant being allowed to flower before it is ploughed in. It is probable that this good system of manuring partly owes its origin to the care of the former government of the last Elector Palatine, who freed lime, marl, and manure of all kinds from tolls upon the high-roads, of which he was likewise an active promoter. The outlay in ready money for turnpike toll is often a greater sacrifice for a

poor man than the day's work with his horse and cart. Wood ashes that have been drenched for washing are considered good manure for rape-seed. Gypsum is found to act most beneficially on clover, lucern, peas, tares, and turnips. The gypsum is strewn in moist weather, about the middle of April.

A common rotation on these farms on the left bank is the following :—

- 1 Fallow with dung 12 to 16 loads to the morgen.
- 2 Rape-seed.
- 3 Winter barley.
- 4 Wheat.
- 5 Clover with gypsum, 2 cwt. to the morgen.
- 6 Oats.

The second rotation is sometimes varied ;

- 1 Buckwheat.
- 2 Wheat with dung.
- 3 Rye.
- 4 Oats.

On the sandy soil further from the river ;

- 1 Fallow with dung.
- 2 Rye.
- 3 Clover limed and soiled with ditch clearings.
- 4 Wheat with dung.
- 5 Buckwheat.
- 6 Rye with dung.
- 7 Oats.

In this last rotation, poverty of soil, and distance from markets for dairy produce, are easily traced. It likewise points to small holdings and the poor economy of peasants ; all of which may again furnish the inquisitive with a correct clue to former political subdivisions and the

chequered mass of religious and educational systems which this land presented in the olden time. So surely are the sins of the fathers visited on the children.

It is certainly strange that the village peasantry, the holders and owners of the smallest allotments that we have described, should, in the immediate vicinity of the larger farms, where so much intelligence is displayed in the management of the soil, present the following curious picture. We extract it the more willingly from a well-known author rather than describe what we have often witnessed, that we may not incur the reproach of being supercilious strangers lowering the character of the peasantry of a foreign land. In reading the following description of the district of the Lower Moselle, by Scherz, it must be remembered that hedges for inclosure are unknown :—

“ Stall-feeding is general in the Moselle district. In the autumn alone is there some pasturage on the stubbles, and when the aftergrass is cut the meadows are grazed for a couple of hours daily. It is curious to see how the quantity of cattle are fed which are kept on the numerous little parcels of land.

“ In the spring the women and children range the fields, cut the young thistles and nettles, dig up the roots of the couch-grass, collect weeds of all kinds, and strive to turn them to account. What is thus scraped together is well washed, mixed with cut straw and chaff, and, after boiling water has been poured over the whole, it is given to the cattle. A little later, when the weeds grow stronger, they are given unmixed as fodder. The lucern comes at length to help, and then the clover, which lasts until the autumn, when cabbage-leaves and turnips are to be had. When these are scarce potato-haulm is taken to help

until the stubble-turnips are fit. In winter cut straw is mixed with the turnips, and warm feeding begins. In the morning a mash of chaff, rape leaves, pea-pods, or cut straw, with bruised turnips, potatoes, or oilcake, boiled up together. Then barley or wheat straw follows this meal, which is repeated at noon and in the evening. In the middle of the day clover or meadow hay is occasionally given to the cattle.

“ In larger farms where 10 or 15 cows are kept this kind of mash is given only twice a day. The poor farmer is obliged to be more economical, and must occasionally try, by the choice of his ingredients, to make good the quantity that he cannot bring together. Even in summer he prepares a soup of this kind for his beasts, but then adds clover, thistles, convolvulus bind, and other weeds, to the mixture. A portion of oilcake is added while it is hot.

“ Turnips carefully preserved, mangel wurzel, turnip-cabbage, potatoes, and Swedes play their part in the spring and winter fodder. But this provision is not at the command of all that keep cows, and the industrious skill of many often degenerates into actual robbery. In summer many a cow is kept sleek on purloined goods, but in winter, when such are not accessible, the animal pays the penalty; as its master has nothing but straw to give, and that in such wretched portions that half the next summer is spent before it recovers its strength.

“ This brings me to a subject that I never lose an opportunity of noticing, for when evil habits accompany a bad system it becomes a sin to keep silence. The following is the opinion of a man of weight in the Moselle district: ‘The pasturage of cattle is not common with

us, but in autumn the stubbles are grazed down. The disorderly habits that have such influence in after life, it may safely be asserted have their root in the practice of sending children to watch the cattle on the (uninclosed) stubbles. Big and little meet here together. The cattle are allowed to graze for the most part on other people’s lands; little bands are formed, where the older children teach the younger their bad habits. Thefts are discussed and planned, fighting follows, then come other vices. First, fruit and potatoes are stolen, and every evening at parting the wish is entertained that they may be able to meet again the next. Neither fields, gardens, nor houses are eventually spared, and with the excuse of this employment it is scarcely possible to bring the children together to frequent a summer day-school, or to attend on Sundays to the weekly explanation of the Christian doctrines.’”

It appears, from this picture of village habits, that the circumstance of every family living in its own house and on its own small property is not a panacea for all social evils. The colours of the sketch we have quoted might easily be heightened, and the loose notions of honesty that prevail in the business transactions of the largest class of the people might be traced to a wider school than the village pasture fields, were we inclined to dwell upon the dark side of the picture.

In the sandy Mayfield, where grass is scanty and artificial grasses not sufficiently common, leaves are constantly used for fodder. The poplar is the favourite tree for this use, and the crown is cut off to allow the young shoots to spring like osiers. These shoots are cut every fourth year at Michaelmas, and tied up into bundles,

which are packed with the leaves in some dry place, and in spring they are thrown to the cows and sheep (some readers may remember Laban's adventure); but for horses the leaves are stripped off the stalks, and are said to be as nourishing as good hay.

With the exception of a little butter sent to the markets of Neuwied and Coblenz, the peasants of this district have nothing to sell off their lands but fruit. The market crop of the larger farmers is rape-seed; and a similar style of farming prevails throughout the mountainous tract that intervenes between Coblenz and Bingen.

On the right bank, the valley of the Lahn, narrow at its mouth and shut in by rocky precipitous heights, presents in the neighbourhood of Lahnstein, Ems, and Nassau, picturesque sites that offer little that is interesting to the traveller. Higher up the valley lie various ruins and country seats, the estates surrounding which are good specimens of careful German farming. Baron Stein of Altenstein has long been a resident proprietor. Count Waltersdorf of Moltke has a splendid seat in a commanding position, overlooking the valley. The Archduke Stephen, son to the Palatine of Hungary, has inherited from his mother large estates, with the castle of Schaumburg, that are under excellent management. The managers of estates of this description are all scholars that have received a systematic education at one or other of the numerous agricultural colleges that abound in Germany. They remain in correspondence with these establishments, and constantly communicate their practical experiments or observations to one or other of the popular agricultural periodicals which these colleges publish. Any improvement suggested is sure to meet with somebody willing to

make a trial of it, and the knowledge and talent that now finds a field in agricultural improvements is likely hereafter to confer great benefit on the country. We say hereafter, as pointing to two indispensable changes that must precede an improvement in the prospects of the Rhenish agriculturist. The one, the abolition of those impediments to exportation which still exist in France, the Low Countries, and England, and which has made some progress since our volume went to press. The other, a change in the industrial arrangements at home which will favour the division of labour between agriculturists and manufacturers to the great advantage of each, may be slower in progress. In England, where this division has long been effected, the calculations of farmers turn chiefly on combinations resembling manufacturing operations. For the Scotch farmer the land is a machine, and when its management is familiar to him he conducts the farming operations of 10,000 acres as easily as he does those of 1000. Sure markets, with high prices for corn and cattle, allow him fearlessly to risk the chances which a very bad climate for grain renders inevitable. In southern Germany the climate is highly favourable for grain crops, and large tracts of land in the valleys of the Rhine, the Lahn, and the Maine, are highly fertile. The bounds to speculation lie in the limited market, which at home is confined by the number of agriculturists that stand in each other's way and prevent the increase of the consuming population. With every addition to the population in England the profits of the farmers increase; and should the corn laws be continued the consumers would eventually come into such dependence on the producers that the latter would find little necessity for extraordinary

exertion of intelligence. Their countrymen would be glad to take what they had to give, and they might fix their own conditions. In Germany, on the contrary, every addition to the population increases the poverty of the mass of the people, and diminishes the prospect of gain for those who depend on market for remuneration. Hence every year renders the farmer's task more and more difficult, and he is spurred to study his soil and his manures that he may keep his ground under such difficult circumstances. In good farms, therefore, such as the estates of the noblemen we have named, as well as on others that might be added, and some of whom we shall notice in going along, the management and economy observed surpasses that found on the generality of farms in England. The manager has no point given to start from in a prescribed crop. He must himself at the same time choose his system of cultivation and hunt out his market. But for every facility afforded him in his task he is well prepared, and will turn it to advantage. He courts competition. Would that English farmers were not afraid of it!

In passing Bonn we noticed shortly the agricultural college of Popplesdorf, that has recently been established there. Near Wiesbaden the traveller will find another, which has, perhaps, had a more direct influence on the country surrounding it. The manager, M. Albrecht, is a gentleman highly respected for his scientific acquirements, and indefatigable in discharging the duties he has undertaken. A walk up to the Geisberg will well repay the visitor to that fashionable watering-place, especially in the summer and autumn, when he will find in the experimental farm the most interesting varieties of cultivation collected together from numerous districts. The

origin of the farm is no less interesting than the results obtained by the comparatively small means at its command. The chief fund consists in the subscriptions of the members of the Agricultural Society of the Duchy of Nassau, the contributions to which are rated so low as not to debar almost the poorest from joining. Five shillings per annum, collected from about 1500 members, with some other sources of revenue, suffice to pay the interest on the purchase-money of the farm, to keep it at work, and to publish a weekly journal containing useful agricultural intelligence. The other sources of revenue consist in the sale of the produce of the farm, which is not of much moment, as the experiments are of course not all suited to the wants of the neighbourhood. Attached to the farm is a seminary in which lectures are held that have a bearing on agriculture. Natural history, mineralogy, botany, zoology, the theory of agriculture, and technology; besides veterinary surgery and agricultural book-keeping; form a course that is completed by students easily in three winter half years. The summer they are recommended to spend on some farms where they can learn the practice of husbandry. Natives of the Duchy have free instruction at this college, in consideration of a yearly addition to its revenues, granted by the state. Strangers pay 44 florins (about 4*l.*) for the half-year's instruction, which is conducted by highly qualified professors. The grounds are divided into portions on which the agricultural systems of England and Flanders, Mecklenburg, Holstein, and the improved ordinary village course are followed, and the results thus made intelligible to the scholars. Irrigated meadows form one part, and a garden and nursery another part, of the grounds. A

third, adjoining a public walk, is devoted to experiments on various seeds and plants, hops, vines, &c. The buildings join a spacious farm-yard, although only milch cows are kept, the labour being all done by contract.

The slender fund of the agricultural society still suffices to afford a distribution of prizes to agricultural servants for good conduct, and to keep up a small collection of models and a library. A veterinary hospital is kept in one part of the buildings, to which the farmers of the neighbourhood and the people of the town resort. The influence of the establishment has been great; chiefly because the government has made it the direct organ for encouraging improvements. The Director M. Albrecht is not only encouraged to suggest improvements, but has been employed as commissary for years together in the carrying out a grand plan formed for improving the state of the heights of the Westerwald, the name of which is already familiar to the reader. The brooks and little streams of a large district in those mountains have been united where practicable, and led into situations that allow them to overflow and irrigate a large extent of meadow land in the fashion of the meadows of Siegen. Besides the meadows attached to the farm, there are others near Wiesbaden which bear testimony to the gain resulting from the small exertion required to let the water run over the land occasionally.

Wiesbaden is a good station to observe the two sides that have been pointed out in the present condition of agriculture in Germany. The little town, which is not much more than a considerable village, has also its two sides. What may be called the aboriginal inhabitants

are all villagers living on the produce of their own lands which they for the most part till in person. Some exceptions are found in landowners who have made money by the sudden rise in the value of land for building, occasioned by the removal of the court from Biberich, and the rapid increase of the annual visitors to the waters. Both these changes have occurred within a few years, and have unhinged the steady revolving activity of the husbandman, without having as yet introduced the more refined and larger sphere of action that belongs to towns. The small landowners possess their grounds invariably on three sides of the town; and the nearest arable land is at least a quarter of a mile distant from the owner's house, while the "gemarkung" or parish extends five miles in breadth, without having outlying farms to them with the few exceptions that we shall notice. The observer who notices the march of dung-carts, ploughs, harrows, and other implements at five o'clock in the morning often to perform a distance of two miles of road, and to return after work to a twelve o'clock dinner, will not be at a loss to calculate the amount of labour that is annually wasted by this arrangement. The visitor has constant occasion to wonder at the village appearance of great part of a town in which 20,000 fashionable strangers congregate from all parts of Europe during three months of the summer. Were any one, strangers or domestic speculators, or even the authorities of the country, to project a change that would make farming a valuable occupation, while the town would answer the purpose for which towns were intended, in consequence of the alteration it would be found altogether impracticable. It may be assumed to be matter of utter impossibility to purchase at any price one hundred acres of contiguous land, even in

situations where a moment's reflection shows that the ground is not only utterly valueless to its present owners, but that its cultivation must entail a loss. It is, however, not very long since people began to reason any where on these matters; and it is but justice to say, that the government has spared no pains in recommending the consolidation at least of the present scattered properties, in which task M. Albrecht, the director of the agricultural college, has been very serviceable. It is, however, characteristic of the little capital, and of its present burgesses, that in Wiesbaden we could not discover that a single consolidation had taken place.

Of the nature of the contributions that are made to the weekly publication, an opinion may be formed from the following notices. Among other things a map of the Duchy of Nassau has been given. From this we learn the prevalence of another elementary scourge scarcely less destructive for the moment than the cloud-breaks that we described some chapters back. The hailstorms of Germany are often fearfully destructive. We have seen corn-fields in ear so completely exterminated, that the very haulm has been beaten into the earth, and a few hours have sufficed to make it difficult to say what crop had stood on the ground. These hailstorms are local plagues, seldom extending in breadth beyond a mile; but the length of the strip they ravage is very various. Calculations of the chances they present have been made, and insurance societies have been established against loss by hail in many parts of Germany. The map shows the loss that has accrued to the Duchy of Nassau within the last fifty years from hailstorms, and by means of various colours the number of times different places have suffered are distinctly shown.

The Duchy of Nassau has also an insurance society against the mortality of cattle at Hofheim, with an agency at Frankfort. This institution has been of great benefit to the poor farmers since its establishment.

In another contribution to the weekly journal, we found a description of an improved management of under-wood plantations on the plan of the "hauberge," that we described as peculiar to Siegen. In some parts of Nassau, after the wood is cut the ground is subjected to a three years' rotation of crops. Rye is sown in the first year on the soil manured by burning the sods; oats follow in the second; and potatoes in the third year. Woods have, according to this statement, been farmed out for three years after cutting, at 5 florins the morgen, or 12s. 6d. the acre, per annum. The crop of broom that grows spontaneously in the woods of Siegen seems to be lost under this system.

We extract from the eleventh volume of the Transactions of this useful little society, the state of its funds in 1838, for the purpose of showing how easily such associations are established.

<i>Dr.</i>	<i>Income.</i>			<i>Expenditure.</i>	<i>Cr.</i>		
	£	s.	d.		£	s.	d.
Balance from 1837.	40	0	0	Rates and taxes	8	9	0
Interest of sundry sums . . .	4	12	0	Salary of clerks, gardener, post- age, lighting, &c.	97	16	6
Money borrowed	115	12	6	Interest of money	44	19	0
Contribution from Government .	361	5	0	Borrowed money repaid . . .	111	10	0
Subscription to weekly and annual publications . . .	309	4	0	Prizes distributed	167	10	0
Contributions for journals . . .	6	2	6	Cost of veterinary hospital . . .	6	0	0
For foals and mares at grass . . .	2	7	8	Students' foundations . . .	10	8	4
				Cost of publishing	152	8	4
				Cost of journals*	17	1	4

<i>Dr.</i>	<i>Income.</i>	<i>Expenditure.</i>	<i>Cr.</i>
	£ s. d.		£ s. d.
For brood ewes and lambs . . .	1 5 6	Rent of meadow	21 11 6
Profit on model farms . . .	176 16 1	Breeding cattle	13 0 0
Sundry credits . . .	10 0 0	Rent and expenses on the model farms . . .	127 15 0
		Sundry purchases as below . . .	142 6 0
		Sundry debits . . .	14 6 0
		Balance in hand . . .	82 4 3
	<u>£1027 5 3</u>		<u>£1027 5 3</u>
1837.		<i>Stock of the Society.</i>	1838.
£ s. d.		£ s. d.	
10 8 4	Capital advanced . . .	10 8 4	
12 15 0	Shares in Merino breeders	12 15 0	
2176 10 0	Value of land at Idstein and Wiesbaden . . .	2268 0 8	
618 7 2	Improvements in land and buildings . . .	651 13 4	
259 0 1	Cattle and implements . . .	275 3 6	
55 0 0	Furniture . . .	55 0 0	
44 5 0	Matrices for medals . . .	44 5 0	
258 10 0	Stock of annuals and weekly publications . . .	285 4 6	
21 16 6	Stock of prize medals . . .	0 0 0	
37 10 6	Cash in hand . . .	82 4 3	
£3494 2 7	Total of stock . . .	£3684 14 7	
1179 3 1	Money borrowed . . .	1183 6 8	
£2314 19 6	Property of the society	£2501 7 11	

Many of the items in this account are well worthy of consideration. The liberality of the government, the excellent economy by means of which two farms are managed, and a journal with a circulation of 1500 copies published, prizes liberally distributed, and information of the most valuable description circulated at a cost of 600*l.* per annum, are equally deserving of admiration.

While stranger guests are devouring sumptuous meals in palace-like dining-saloons, and the four quarters of the

world are taxed to furnish a bill of fare for ten tables d'hôte, that may be safely called the best furnished, and the cheapest dinners in Europe, the said peasant burgesses are sitting down to their homely meal, at which the rye-bread figures that has grown upon their land, been carted by their horses, and ground at one of the eleven privileged mills of the district, little supposing that his outlay for food is not much less than that of his more travelled guest at the Rose, or the Four Seasons. Yet this is undoubtedly the case, and not only at Wiesbaden, but over the greater part of Germany, as a result of the distance at which the lands lie from the houses of the peasantry. There happens in most parts to be land enough; and where the population is most dense, the climate multiplies its powers. Thus the pressure of actual want is rarely felt by the present number of inhabitants; but how much capital that ought to accumulate is wasted, how much labour that might be advantageously employed in other ways is lost in this most expensive system of agriculture!

The face of the country round Wiesbaden presents a fair picture of the vast extent of level land that stretches from the Taunus eastward, to the Spessart, Oden, and Blackforest mountains; and to the south as far as Breisach, comprising the valleys of the Lower Maine, and one-half of the vale of the Upper Rhine. The soil is alluvial throughout, and of varying but nowhere of less than average fertility. Between Wiesbaden and the rise of the Spessart beyond Hanau, the soil is especially suited for wheat, and the dryness of the ground that is unfavourable for meadowing on the heights, admits of the cultivation of artificial grasses. This last branch of farming is here well understood by every peasant, even by

those who cannot comprehend the loss that ensues from carting the green clover two miles every day to the stall-fed cows. We are afraid that their mode of indemnifying themselves by reducing the quality of the milk, will be found to savour more of urban than of rural habits. Latterly too an attempt has been made to *protect* the bakers by taxing the bread of the outlying bakers, a fact that is symptomatic of civic or at least of corporation progress; but which, with so nomadic a population as Wiesbaden can boast, is rather a dangerous experiment. These remarks are not intended as local gossip. The same calculations have been made and acted upon at Vienna and Berlin, that we find only in imitation amongst the more recent civic authorities of Wiesbaden; and every Prussian and Austrian village presents the same agricultural features that we have traced at the foot of the Taunus.

Although no prescribed rotation of crops is now followed by the Wiesbaden farmers, yet the recent existence of the village system is testified by the absence of enclosures, and the regular appearance of the parish shepherd, who may be seen guiding his scanty flock as close as he can to the greenest fallow plots. His dog, who seems to share his cares, jumps about and barks as if loath to grudge the poor animals the stolen nibble at the beet-root leaves, or the clover-ley, that indicate the improvements which are rendering the services of both superfluous. But although shorn of the dignity of an official personage, and only the servant of the man who farms the much diminished right of grazing, he is amenable to the town council for all depredations committed by his flock. The peasant burgess may therefore smoke

his pipe and drink his "schoppen" at home, comparatively sure that the wisp of straw which he has set up on a stick to denote that he means to use his fallow himself will be respected, and that no more of the border of his quarter-of-an-acre field will be nibbled than custom has prescribed to be "law." The owner of fruit-trees is differently circumstanced, and the limit to which these pretty ornaments of a Rhenish farm can be extended are fixed by the walking powers of a few gardes champêtres, very inefficient protection, as the reader will suppose, against the youth or the loose population of the surrounding country. The abundance and good quality of the fruit in this neighbourhood have already been noticed. In Frankfort-on-the-Main cider is a favourite beverage, although the drink sold under that name would surprise the most homely drinker of the valleys of the Severn or the Blackwater. It is strange that such excellent materials should be used so perversely. But the fact is that fruit in these parts is used at meals like vegetables, and the apples, pears, and plums, dressed, fresh, or after drying, are a never-failing accompaniment of the roast joint at table. Of their use as a substitute for butter we have already spoken. The malter of apples or pears at harvest time (nearly equal to four bushels) sells for 3 or 4 florins (5s. to 6s. 8d.). The peasant-like calculations of the small landowners about Wiesbaden are most strikingly illustrated by the absence of all cultivation of early vegetables and table fruit, for both of which the climate is favourable, and the visitors would gladly purchase. The vegetables are daily brought to market from the other side of the Rhine.

In this respect the inhabitants of Mayence and Frank-

fort, as townsmen of older standing, are much more industrious. A walk through the "garden-field" of Mayence, as a portion of the land enclosed between the walls of the town and the outer range of works is called, is an interesting lounge in summer. Not only has every citizen his little plot, to which he or his family with male or female servants adjourn to drink coffee, smoke, and delve the soil every afternoon; but nursery gardens on a small scale may be found which disseminate the new plants and flowers as they come into use or into fashion. A flower show is held twice a-year at Mayence, at which prizes are distributed. In Frankfort the love of flowers is a pleasing characteristic of the richer inhabitants, especially as they lend their aid to extend this desirable taste amongst their poorer neighbours. The flower show takes place several times in the year, and it is combined with a lottery for the purchase and distribution of the plants. Thus the poorer gardeners are sure to be indemnified for any extra cost to which they go in rearing plants.

The ease with which money is earned by studying the wants and whims of the numerous strangers during the season at Wiesbaden, takes the people off their regular employments. Building speculation has however done more to disturb the regular progress in agriculture, for which the neighbourhood is well adapted. The character of the whole country between the mountain limits that we have traced is decidedly agricultural; but there is a mixture and uncertainty that puzzles the observer unless he is prepared to allow for some disturbing element such as we have described, or to regard the agriculture of the country as in a state of transition.

Wiesbaden is a good place to study the various tenures of land and the mode of occupying it common in Central Germany. In the immediate neighbourhood there are a number of small farms, agreeable excursions to which may be made by strangers, and the more easily as the sale of milk and wine is generally combined with agricultural operations by the owners, so that a stranger need not fear that his visit will be looked upon as an intrusion: the valleys of the Taunus present shady paths in summer to the nearest of these farms. Immediately adjoining the town lies the secularized convent of Clarenthal, part of whose lands have been sold, while part is still a domain of the state. The latter portion, comprising about 400 morgen, or 250 acres, is let on lease to a farmer at the rent of 9 florins per morgen, or about 1*l.* 5*s.* per acre. Were the circumstances other than we have described in the town, and its market open for supplies at fair prices, there can be no doubt but that the rent of land so situated would be much higher. A nice farm near Clarenthal is managed by its owner, and consists of rather more land in one lot. About two miles farther on in the hills lies the small farm of Adamsthal, which presents a very good picture of the improved farming of Germany on a limited scale—water-meadows in the hollow, grain and artificial grasses on the height, and a tolerable quantity of fruit-trees, although the elevated situation is not very favourable for them. Similar farms, in more or less picturesque situations, are the Nuremberg Hof, the Armada Hof, and others. The islands in the Rhine opposite to Bieberich contain farms also. The Petersau, which is the largest, had three farms upon it, until lately, when the govern-

ment of Hesse Darmstadt bought the largest, and has laid it all down under lucern. Adjacent is the Ingelheimau, which is let on the condition of the farmer's furnishing four hundred loads of dung annually for Count Ingelheim's vineyards at Ingelheim and in the Rhinegau. On a third island, immediately opposite Bieberich, there is a considerable farm, at present untenanted, belonging to the Duke of Nassau.

In the course of a few rides and drives along the foot of the Taunus range, it is easy for a visitor to make himself fully acquainted with the farming processes and division of property. Fruit is a part of the crop on all estates near the mountains, and individuals as well as whole parishes make it a profitable source of revenue. Every village has a peculiar fruit for which it is famous. Frauenstein furnishes cherries; Schierstein, apples and grapes. We have already noticed the large chestnut-plantation belonging to Wiesbaden. The village of Brenthal, about four miles east of Wiesbaden, draws a revenue of 5000 florins from its fruit, mostly apples. Eppstein and Hofheim furnish good cider. Kronberg serves as a nursery, fruits and fruit-trees of the kinds most in use being produced there in abundance for the adjacent country. If we leave the Taunus and cross the Maine to the territory of Hesse Darmstadt, we find similar arrangements. The large plain between the mountains and the Rhine is devoted to grain-crops, but little of this space can vie in quality with the wheat-lands between Hochheim and Hanau. The railroad traverses this latter plain between Mayence and Frankfort; and the traveller can there, too, observe the effect of the village system in taking the cultivators off the land, and very much in-

creasing the labour of tillage. Near Frankfort there are several large farms, the property of foundations, clerical, charitable, or civic; and the approach to the city is through a little forest of apple-trees, which seem to proclaim the love of the Frankfort people for cider. Of the various farms, one belonging to M. Bethmann will best repay the trouble of visiting.

From Darmstadt to Heidelberg the road runs along the foot of the Oden mountains, and has the plain on one side. The mixture of picturesque mountain scenery with the rich cultivation and plantations of fruit-trees in the plain have given celebrity to this Bergstrasse, which will soon be rendered accessible to tourists by the railroad from Frankfort to Heidelberg that will be opened in the summer of 1846. Between this road and the Rhine large villages intervene, which, lying out of the high road, preserve much that is antiquated in the dress and manners of the inhabitants. There is, however, also, a great deal of poverty in these villages, the lands of which are sandy, and exposed to frequent floods from the Rhine. The whole space of country between the hills and the river presented, in the spring of 1845, the appearance of one enormous lake, involving great destruction of property. The Grand Duchy of Darmstadt is altogether an agricultural state, possessing no manufactures of any importance. The revenue is also principally drawn from the cultivators of the soil, and the land-tax and parish-rates are both heavy, and press severely on the poor landholders, whose energies are lamed by the dispersed situations of the lands they till. The village system, in this respect, presents its most disadvantageous side in this portion of Hesse Darmstadt.

The city of Mayence is one of the largest corn-markets in Germany. Not only are large supplies of grain and seeds collected by the merchants there to be distributed amongst the numerous small markets, and to be sent down the Rhine to the manufacturing districts, but a considerable exportation takes place by the Rhine to Holland and to the adjoining districts of France. Mayence is the capital of the province of "Rheinessen," belonging to the Grand Duchy of Hesse. This province is one of the most populous districts of Germany, and the sole occupation of the inhabitants is agriculture. The soil is for the most part of fair quality, and, under the cultivation of a great number of small proprietors, is made to produce a great deal; but, as usual, at the cost of all to the peasant owners but the means of subsistence on the footing of labourers. The high roads most frequently travelled do not run through this part of the Grand Duchy of Hesse. We prefer, therefore, enlarging on the agricultural processes and prospects of the districts on the Upper Rhine when we come to the Duchy of Baden

CHAPTER IX.

WE must now call our readers back to the rise of the mountain-tract that separates the Lower from the Middle Rhine near Bonn. Here the cultivation of the vine has its proper commencement, and even the little gardens of Bonn are diversified by small patches of vines cut low or trained over arbours, not merely to afford shade, but to furnish grapes for the table. The abrupt steeps presented by the hills enclosing the vales of the volcanic district on both banks of the Rhine are good sites for ripening grapes, but the want of sufficient depth of soil is shown by the less generous nature of the fruit the vines produce as compared with those of the alluvial soils of the Middle Rhine. The sides of the Drachenfels are covered with vineyards that stretch from the river's bank up the base of the mountain to a considerable height, where the aspect is south or south-east; and nearly every such site is henceforward occupied as we proceed up the stream. The produce of these vineyards is however very indifferent, and it is not until we reach the valley of the Ahr that we find names familiar to lovers of Rhenish wine. The course of the Ahr being generally east and west, the north bank presents a number of favourable exposures to the south, which have of late years been turned to good account by skilful growers. With the exception of the "Rhinegau" vineyards, perhaps the greatest care is bestowed upon the growth of these Ahr

vines ; and this is illustrative of the truth of the remark, that where Nature does the most, man is often tempted to do the least to improve her gifts. The most recent improvements of late years have been made in the regulation of the fermenting process. By care bestowed in this stage of wine-making, valuable crops that formerly were wasted are now turned to account. Not that good treatment will make sour grapes yield sweet must, or bestow flavour where Nature has withheld it: but formerly much fruit that was both well ripened and well flavoured, produced, in bad hands, a most unsavoury drink. The fine wines of this district are all red, and are treated in the French fashion. The chief reason for this is that the small red Burgundy grape ripens earlier and requires less depth of soil than the fine grapes used in the Rhinegau. A supplementary reason may be, that red wine allows of additions to heighten the flavour, such as are well understood in France; whereas the pure "hock" spurns all artificial adjuncts.

The Ahrbleichart wines, as they are commonly called, are fully equal to the French "vin du pays," in the northern departments, and at Walportsheim and the Ahrdale, a wine of generous quality is produced that may rank with some of the Macon and Rhone growths, which it resembles more than the Bordeaux clarets.

The cultivation of the vine ought nowhere to be undertaken by peasants, for it supposes the possession of no inconsiderable capital where it is to prove remunerating. When a vineyard is laid down, three years are lost before even grapes can be gathered, and wine cannot be expected before the fifth year. The field selected ought, moreover, to lie fallow for two or three years

previous to the planting, and it is then turned over with the spade and pickaxe and trenched, so that the surface is buried several feet (where the soil is deep enough) and the subsoil brought up. Trenches are then opened, and, in March or April, the cuttings that have been buried in bundles from the previous autumn, and are beginning to sprout, are planted two together at intervals of four, five, or six feet from one another in rows five feet asunder. Opinions differ as to whether it is better to plant the cuttings when they begin to sprout in the spring, or to wait till the autumn and plant them after another year's fallow. The first manure employed is the grass sod that has formed on the surface during the preceding year, and it is deemed good to allow this fully to decay before the plants are set.

A more difficult matter is the choice of the direction in which the rows are to run, for in a country where sunshine is scanty (for the vine), too much care cannot be bestowed upon the position of the plants so that one may not shade the other. It is especially necessary that the sunbeams should sufficiently warm the ground between the rows, as the grower depends at least as much in the ripening season upon this reflected heat as upon the direct solar influence. Where the hills present rapidly changing aspect, as in the tortuous side-valleys of the Rhine, and even in the Rhine vale itself, contiguous vineyards may be seen with the line of their ascending rows varying in direction with every curve, but always opening to that point of the heavens where the sun stands in the middle of his course with regard to that individual slope of the hill.

The problem of obtaining good wine depends in a

northern latitude upon these two requisites—reflected heat and richness of soil. The vine has a tap-root that shoots perpendicularly into the ground to so great a depth, where the soil admits, that it finds moisture in the hottest summer. A stony surface is useful for two reasons, in causing the rain water which the plant does not need for nourishment to roll off, while stones and slates often retain the heat of the summer sun long after it has gone down. It is, however, a mistake to suppose that a rocky district is more favourable to the growth of the plant than alluvial deposits, as we shall abundantly prove as we go along. Many travellers are, at first sight of the Rhenish vineyards, disappointed. Being accustomed only to vines trained on walls or on trelliswork, they cannot fancy the plant otherwise than as a creeper gracefully festooning poles or the trunks of trees or other lofty supporters. It must, however, be remembered, that the hill-side on which the vine is invariably planted is intended to serve as a wall by reflecting the sun's heat. The numerous plants in a vineyard (4850 are planted on an acre of land) represent the spread of a vine upon a wall, with this difference, that the sources of nourishment are so many more as there are roots within an equal space. The luxuriant growth which can thus be attained is, however, checked by periodical prunings of the young shoots and large lower leaves that would keep off the rays of the sun. Notwithstanding the bare appearance of the vine-planted hills in the early part of the summer, when all around is clothed in green, we have never been able to look at them without associating ideas of cheerfulness and joy with their view, and fancying that they were an index of

wealth and comfort for the district. This is far from being everywhere the case, for the reason before assigned, that considerable capital is requisite to make the cultivation of the vine a profitable occupation. A vineyard is, however, an undoubted token for an Englishman that sunshine is common where it is found, and sunshine alone is a precious gift. The wanderer in the vale of the Ahr will soon feel the satisfaction which all must experience on finding that its inhabitants have a compensation allotted to them for the general rudeness of the soil and the severe climate of the valley in winter.

As we progress up the Rhine it is interesting to watch the vineyards that seem to spring from bank to bank and from precipice to precipice, according as a southern aspect can be obtained. The wildest thickets alternate with these vineyards, which bear appearance of the most careful cultivation all along. Endless is the labour with which the steep hill-side is carefully terraced, from the top to the base, wherever the slope is so rapid as to cause the soil to be washed down by heavy rains. Although the manure of which the vine is greedy has to be carried up in baskets to the vineyards on these heights, and the labour they demand is constant, yet the winzer is indefatigable, and as little inclined to scrutinize closely the true cost of cultivation as his neighbour the peasant corn-grower in the lowland village. The years of disappointment are also numerous. To one good vintage there are estimated two of ordinary yield, two of poor crops, and one total failure; so that the hard labour in the vineyard is accompanied by never-ceasing anxiety of the owner for the result of his toil. This is best evinced by the following official statement of the crops :—

Wine Production in the Rhenish Province in the following
Years.

Year.	Quant. in Eimers.	Year.	Quant. in Eimers.
1819	605,056	1831	189,924
1820	99,122	1832	294,752
1821	24,869	1833	591,201
1822	469,211	1834	854,000
1823	235,799	1835	692,005
1824	206,969	1836	342,619
1825	363,260	1837	257,567
1826	711,113	1838	173,835
1827	140,820	1839	412,830
1828	816,229	1840	236,722
1829	228,759	1841	189,070
1830	14,674	1842	466,993

The average of these 24 years is 359,058 eimers, or 5,385,000 imp. gallons as the production of 48,968 morgens, or 31,195 acres, being nearly 185 gallons per acre. In the years quoted in the table, 2 were average years, 12 were below, and 10 above the average. The years 1821 and 1830 may be considered as total failures; whereas 1826, 1828, 1834, and 1835 were extraordinarily favourable seasons. The ground under wine-cultivation in the Prussian part of the Rhine and Moselle valleys, and the adjacent vales, was classified as follows for the land-tax:—

In the first class	were	9,021	morgens.
„ second class	„	12,199	„
„ third class	„	14,598	„
„ fourth class	„	10,529	„
„ fifth class	„	2,336	„
„ sixth class	„	283	„

Little more than one-fifth of the whole was, therefore, classed as first-rate soil. This arises from the circumstance that the climate not being very favourable in the portion of the Middle Rhine that belongs to Prussia, it

is only possible to grow vines upon the steep slopes of the mountains. Even in the valley of the Moselle it is scarcely possible to use the ground which presents the depth of soil that the vine requires, without losing too much in reflected heat. The traveller finds some vineyards on the alluvial offsets of the hills soon after leaving Coblenz, on a gentle slope near the village of Winnigen; but their produce, notwithstanding the good quality of the soil, is not to be compared to those on the steep a little farther on, where the hill-side forms an angle of 45°, and was only made accessible a few years back by an extensive blasting-operation conducted by the engineers of Coblenz. The vineyards of Piesport, Brauneberg, and Zelting vary in the angle they present to the surface of the river from 20° to 40°. In so mountainous a district any site less steep than these would assuredly prove unfit for the vine.

Two peculiarities may be observed in the vineyards of the Moselle that distinguish them from those of Nassau and Rhenish Hesse, but which we shall again meet with in the Palatinate. The first is the apparent neglect with which the growers seem to treat the preparation of the soil for planting. The young vines are planted in trenches with some dung, but with far less care than is observed on the Rhine. The land is not allowed to lie unused for years previous to the planting, nor is a layer of turf deemed necessary to receive the roots of the young plants. This is explained by the rapid decomposition of the soft clay-slate of which the hills are composed, and which keeps up a constant supply of fresh soil, that by turning over is brought into contact with the plant. What this regeneration of the soil imparts in the shape of nourish-

ment is, however, not precisely ascertained. The second peculiarly consists in its being possible to train the vines on the good sites much higher than can be done in the valley of the Rhine; the angle of the slope being sharp enough to reflect heat to the plant at a greater elevation.

The grapes usually cultivated are such as ripen earliest, the climate not favouring a late vintage, except on the best sites and soils. The Kleinberg grape is the most common on the Moselle. This species gives abundance of fruit, sweet but without fine flavour, and ripens in the beginning of October. The Riesling, of which the finest hock wines are made, is only found in the choicest vineyards at Brauneberg, Piesport, and Zeltingen. The Riesling ripens towards the close of October, but can only be used in warm seasons. In unfavourable summers it gives no return. Hence the quantity of the fine Moselle wines that is grown is very limited. Scharzberg, Brauneberg, Piesport, and Zeltingen must not be judged of by the light wines sold under those names at tables d'hôte, or by the still lighter that are daily recommended by travelling agents. The choice Moselle growths are rich but delicate wines, and are very expensive on the spot where they are produced. The Kleinberg wines are usually those which are distinguished by mildness and absence of acidity when young. They do not keep so well, nor can they be in any way ranked with the juice of the riesling grape. At Piesport and Zeltingen a good deal of red wine is made.

The wine made by the peasants is treated nearly in the same manner on the Moselle as on the Rhine. The grapes are not allowed to hang so long as in the choice vineyards, and after they are trodden or stamped with a

wooden mallet in small vats, are abandoned to nature for the process of fermentation. As soon as all fermentation subsides, the wine is drawn off into casks, and is again racked off into other casks in the spring and autumn of the following year, or allowed to remain undisturbed according to the circumstances and diligence of the grower. The wine-merchant generally makes his purchases after the spring racking, when the quality can be ascertained, and undertakes the further management. The light wines may be drunk in the second year; the heavier sorts require from three to five years to ripen. During this time the wine is kept in casks holding one or two pipes, as the quantity best suited to the convenience of the cellarman, and to bring the liquor to maturity. The immense tuns that were formerly in use have gone quite out of fashion. Once in every year, at least, the wine must be racked off as long as it shows signs of fermentation at the close of the spring, and before these symptoms cease it is not fit to bottle. There is great similarity in all the light wines made on the Moselle and on the Rhine below Bingen. The wines of Caub and Lorch are distinguished amongst them by a very delicate aroma, but possess too little body to bear exportation. In the hot summer of that part of the Rhine they afford a very pleasing beverage when they can be had pure. At Bingen the direction of the bed of the Rhine is suddenly changed from a course lying N. and S. to one bearing E. and W. In consequence of this change the whole of the right bank, stretching as far as the Maine, has a southern aspect. This bank is lined by the Taunus range, which at Rudesheim advances with a rocky mass to the river's bank, but whose heights gradually recede, forming an acute angle with the river to

Walluf, where they suddenly leave it and stretch at a right angle towards Wiesbaden and Homburg. At Walluf a projecting ridge runs out from the main range, and thus the gentle slopes that, with various undulations, lie on the base of the Taunus between Rudesheim and Walluf, are sheltered from the east wind as well as from the violence of storms from the S.W. When to these favourable circumstances we add that these slopes are formed of alluvial soil, frequently attaining a depth of twenty feet or more of an exceedingly fertile nature, the reader will easily conceive on what the claims of the "Rhinegau" to be pre-eminently adapted to the production of wine are founded. The produce of the Rhinegau vineyards will unhesitatingly be pronounced by all who have had an opportunity of tasting it in its purity, and with due selection, to be the choicest wine that is made. But, in addition to the drawback of its being the dearest wine that is sold, its rarity prevents so many from having the opportunity of judging of it, that many of our readers, travelled as well as untravelled, must, we fear, content themselves with the proofs which we shall adduce of the correctness of our asseveration. The whole length of this favoured tract of country is from 10 to 12 English miles. The summits of the Taunus that shelter it on the north rise 1500 feet above the Rhine, and recede to a distance of a mile and a half from its bank. The upper part of the mountains is wooded, the lower part presents undulations of varying size and slope. As the boat winds round what is emphatically called the hill of Rudesheim, the traveller glances with no little surprise at the close and compact patches of vines with which its precipitous side is literally clothed.

With the exception of a few narrow paths, wall succeeds wall, and terrace overhangs terrace, to an elevation of 500 feet above the level of the river. The hill is an immense mass of clay-slate, which is the predominant formation of the Taunus, and the steepness here alike supplies the place of deep soil and allows every aspect to be used. In approaching this round projection we pass Assmanshausen, which stands also shrouded in vineyards, with a south-westerly exposure. Here red wine is chiefly made, but choice white wine has lately been produced there. An angle in the hill intervenes, but the same aspect soon recurs, and the Rudesheim vineyards commence. The full round of the hill gives breadth to the south-western, southern, and south-eastern sites, on each of which a wine of first-rate quality is produced. The whole front contains 400 morgens (250 acres). The description of grape chiefly planted on the "Berg" is called the Orleans grape, bearing a large oval green berry that in warm years is a luscious fruit, but in damp seasons is more inclined to fall than even the riesling. The Orleans grape was formerly more prevalent in the Rhinegau than it now is, as this disadvantage has banished it to the hill of Rudesheim. Adjacent to the "Berg" comes the site called "Rottland," then follows the "Hinterhaus," the favourite growths of the riesling grape. For the initiated there are two distinct Rudesheim wines, independently of the flavour belonging to the actual vineyard. In the Rhenish vineyards such generic terms as Hock, Port, Sherry, and Madeira are unknown. Where pure grape-juice can be had, the shades of flavour are countless, but each possesses its peculiar charm.

The appearance of the vineyards from Rudesheim on-

wards presents little variety in the style of cultivation. The vines are kept low, and all rank shoots are pinched off at various periods, that all the strength of the plant may be left for the formation of the fruit. The vines, planted with the care described some pages back, have three stakes set, one near the stock, and two at two feet distance on each side in the line of the meridian, that is to say, in the line running from the top to the bottom of the slope. The space between the rows is thus left free for the rays of the sun to penetrate and to shine on three sides of the bunch. Between the rows in well kept grounds not a weed is to be seen, and the soil is turned over with a two-pronged pickaxe, two feet deep at least, three times, but often four or five times, in the course of the summer. Cow-dung is exclusively applied in considerable quantities every three years.

At Rudesheim is a cellar, belonging to the Duke of Nassau, at which the curious traveller late in the autumn can see the pains that are taken in making the choicest wines. Both red wine from the Ducal vineyard at Assmanshausen and white Rudesheimer are made in this cellar, the arrangements in which may serve as a model. The grapes are allowed to hang at Assmanshausen until they begin to shrink; but not until they moulder, as is the case with the white grapes. It is necessary to preserve the colouring matter under the skin in order to dye the wine red. In other respects the treatment is nearly the same in both cases. The grapes after gathering are trodden into a mash by men with great leathern boots, and the vats are removed to Rudesheim, when the red grapes are thrown on a wire grating laid upon the butts into which they are to fall, and are separated from the

stalks by rubbing them to and fro with a broom. In these butts the grapes are again bruised with wooden clubs until no berry remains unbroken, when they are removed to another compartment of the building. Here the bruised grapes are thrown into large casks placed on end, each of which has a double top. The inner covering is pierced with holes, and is fitted in about one-third lower than the outer top, which is made air-tight. During the fermentation nothing but juice and gas can pass through the holes in the inner covering, which sinks in proportion as the juice rises. A curved tin pipe two inches in diameter is introduced into the air-tight cover, the lower end of which rests in a pan filled with water, which is changed every day. By this simple apparatus the escape of the alcohol with the carbonic acid gas that develops itself in the fermenting process is prevented, and the too rapid fermentation being checked, the mixture remains sweeter than it would if fermented in open vessels. The transition of the sugar in the grape to alcohol is prevented in Italy by closing the cask entirely, and not allowing even the carbonic gas to escape. In this manner the Aleatico and other sweet red wines that do not keep are prepared. On the Rhine the grower strives to produce a rich beverage, and at the same time wine that will stand the test of time.

Red wines are fermented before the grapes are pressed that the colouring matter may be extracted from the skin. White wines are pressed first and the juice only is usually set to ferment. At Rudesheim the juice is drawn out of the fermenting casks by means of a pipe communicating with the cellar below. The residue is then pressed, and the juice is added to that previously obtained, or kept

separate according to the taste of the grower. After fermentation the red wine is kept till March when it is drawn off into fresh casks. White wine is drawn off somewhat later.

The white wine made of the Orleans grape at Rüdesheim is more fiery in its nature than the riesling wine, which is mild. Both are equally well flavoured when the grapes have attained perfection, and then the grapes are also a delicious table fruit. Rüdesheim is one of the places to which patients resort who are recommended by physicians to take *a course of grapes*. This pleasant medicine is somewhat expensive, the grapes being valued at 8*d.* or 9*d.* per pound in the vineyard, while the prescription runs for several pounds in the day. Weak stomachs are soon regenerated by this course. The fine Orleans and riesling grapes ripen too late to be used in this manner; and earlier kinds, all of which are of inferior flavour, are substituted for them, such as the Kleinberg, and a delicate kind of green grape termed "gutedel." The muscatel grape, called on the Rhine "traminer," notwithstanding its luscious flavour, does not equal the riesling when the latter is fully ripe; and, although the small wine growers are fond of introducing the traminer into their vineyards, yet it is not used anywhere in the Rhinegau for the fine wines. The Rüdesheim is one of the high-priced growths, and is sold of fine quality at 90*l.* to 100*l.* per pipe by the growers. A choice wine is now constantly made in all the best sites by the larger growers, who cause the grapes that first attain perfection to be gathered separately. The winzers go for this task armed with a thin sharp iron resembling a packing-needle and pick the ripest grapes off the sunny side of the branches.

A pipe of wine so made is called "Auslese," and sells sometimes for 400*l.* and 500*l.*

Adjoining Rüdesheim lies Geisenheim, which is conspicuous from far by the neat Gothic towers that have been recently added to its old church, which is well worth visiting. The Taunus summits recede here from the river's bank, and the alluvial intervening soil at their foot obtains some breadth. The choice site at Geisenheim is the "Rothenberg," on the fall of one of the undulating projections which slopes somewhat steeply towards the village, forming an angle of 20 degrees with great depth of soil. The Duke of Nassau, Count Ingelheim, Baron Zemierlein, M. Dresel, a wine-merchant, and M. Gergens, are the principal proprietors of the southern aspect of the slope, where the rood of land ($\frac{1}{135}$ of a morgen) formerly sold for 80 and 90 florins (1600*l.* and 1800*l.* per acre). The value of these sites has considerably declined of late years; and a few years back some land in a favourite site at Rüdesheim was purchased by the Duke of Nassau at the rate of 6000 florins per morgen, or 800*l.* per acre. In Geisenheim the traveller can see at M. Gergens', or at Dresel and Co.'s, the arrangement of a private cellar, and form some idea of the capital required to grow and manage these fine wines. The houses seldom afford any idea of the extent of subterraneous space devoted to the wine. Several vaults from 80 to 200 feet in length, and broad enough to admit of two rows of double pipe casks to lie on each side and leave a convenient passage in the middle, are a common appendage to a very unpretending domicile. So much money is made by keeping the wine to the proper moment for selling it, that the grower becomes naturally a wholesale wine-merchant. He, however, is

charged with a responsibility which does not attach to the retailer; for his growth must preserve its character, whereas the retailer shifts the burden of his sins upon the grower. Wine bought in these cellars is therefore unadulterated, and is a delicious and most wholesome beverage in that state; but it is rendered difficult for private consumers by the immense size of the casks; since few private consumers can make use of 100 dozen of a wine that costs four pounds per dozen in the grower's cellar.

After passing Geisenheim, the traveller turns up a road that leads to the left directly from the river, in the direction of the mountains, and after winding up a steep ascent about three quarters of a mile, finds himself upon a small plateau that stretches like a neck from the Taunus towards the river, and drops with a sudden slope, presenting a rounded front to the level of the villages on the river's bank. This is the celebrated Johannisberg, the pearl of the Rhinegau, and one of the most delightfully situated mansions in Europe. The full advantage of the situation can be supposed from a distant view of the commanding site, retiring, as it were, from the brunt of the storm between the projecting eminences on the east and the west, and presenting its full breadth to the sun which shines upon it from its rise to its setting. The attention that is paid to the direction of the rows in the Rhenish vineyards is perceptible even to the traveller as he passes before it in the steam-boat. The rows open one after another as the boat advances like the meridians on a map, and the want of picturesque effect which their regularity supposes, is not regretted where art has so evidently sought to court the co-operation of Nature in a

useful task. To return to the summit of the eminence—all these advantages are imperceptible on first reaching it, because the castle, with its spacious court-yard, covers the whole breadth of the brow of the hill. It is not until we arrive at the balcony of the first floor that the beauty of its position bursts upon us. Whoever chooses a bright day for the excursion will be repaid with a view that is scarcely to be surpassed. The vale of the Rhine, from Bingen to Mayence, lies under the spectator like an unrolled map. Clear and bright the Rhine presents its broadest mass to the view, but studded with islands of various sizes, on which the luxuriant foliage of forest-trees refreshes the eye, and contrasts softly with the extent of lands, "rich in corn and wine," that cover both banks as far as the eye can reach. To the right, Rüdesheim, with its hill, and opposite to it Bingen with its "Scharlachberg," both places crowned with ruins of ancient date; at the base of the hill Geisenheim, the village of Johannisberg, and Winkel, whose name is said to indicate the spot where Charlemagne had fixed his cellar; on the opposite bank Ingelheim, embosomed in a hollow covered with vineyards, the favourite summer abode of that great man and mighty potentate; on the left, the long vista of undulating heights, varying with vineyards and forests skirting the bright broad stream until the banks seem to close upon its course, with numberless additions which the observer can note at his leisure, compose a view of inexpressible beauty—grand from the extent of the scattered signs of richness that it develops, but soothing rather than startling in its general effect. The interest attaching to the vines which run up to the walls of the houses, of course, is rather of an

economical nature than derived from anything ornamental they present. Their value is best appreciated in the cellar, which, like the whole estate, is managed with almost military precision. Prince Metternich's cellar at Johannisberg, and that of the Duke of Nassau at Eberbach, of which we shall presently speak, are most useful establishments, serving as models for the country, with the especial advantage of being most economically and profitably conducted. Every experiment that promises to be an improvement is sure to be tried, and the result is made known with the greatest liberality. Both establishments have long been under the direction of excellent administrators, whose services are proved by the fact that none of all the competitors in the same line have been able to produce wine at all equal to the choice vintages of Johannisberg and of the ducal estates. That the excellence of the wine where soil and situation are nearly equal is decided by the treatment in the cellar, is proved by the care taken to preserve unvarying method and unrelaxing diligence in all the processes. The cellar at Johannisberg occupies the basement story of the whole building, and consequently consists of a front equal to that of the castle and two extensive wings. The entrance is on the western side, by a spacious staircase into the wing that forms the bottling department. A considerable store of bottles and packing-cases in all stages, filling, applying the etiquettes, winding paper and straw round each, and packing in the cases, first attracts attention; especially as the packers, to show their skill, make no scruple of jumping on the open cases and pressing the bottles down with all their weight. The cellar itself is a more imposing object, presenting a long vista of double pipes, ranged

in three rows sufficiently wide apart to allow a double pipe to be rolled between them; each is marked with a number stamped on a tin plate corresponding with the entry in the cellar-book. The stranger who enjoys the patronage of the cellar steward, can here form an acquaintance with the genuine hock wine that he can only extend in the Duke of Nassau's cellar at Eberbach, which is, however, on a much larger scale. The value of the wine contained in upwards of 100 double pipes may be estimated from the price of the general run of the wine, which varies from 400*l.* to 600*l.* A double pipe of 1822 was sold to the Court of Berlin for 12,500 florins, or 1440*l.* The vintages of 1811 are said to have produced 48 of these double pipes: 1818 yielded 47; 1819, 52; and 1833, 57 double pipes, or nearly one to the morgen, being equivalent to three pipes per acre. These were extraordinary vintages, and there is reason to believe that the average of the Steinberg vineyard obtains here, being about a pipe per morgen. The vineyards now contain 62 morgens, or about 40 acres. Connected with the castle is a farm comprising 450 morgens of arable and 70 morgens of meadow land, together 300 acres. A large stock of cattle is kept to furnish cow-dung for the vineyards.

The Johannisberg was founded as a Benedictine abbey in 1106, by Ruthard, Archbishop of Mayence. In the last century it was bought by the Abbot of Fulda, Prince Walderdorf, who, in 1717, built the castle as it now stands. It fell during the confiscations of the clerical lands to the house of Orange Nassau, and was taken from that house by Napoleon, after the battle of Jena, and conferred upon Marshal Kellermann, the

present perhaps involving a pun upon the name, which in German signifies Butler. In 1813 the castle was taken possession of by Austrian soldiers, and was presented to its present owner, Prince Metternich, by the late Emperor Francis.

Adjacent to the castle stands the seat of M. Mumm, an extensive wine-merchant of Mayence, who owns an excellent vineyard on a rise behind the hill we have described, and all around the slopes are covered with vines that arrogate the name of the celebrated site, and the product of which, if treated with the same care, might easily be raised to a high value. That this care is not bestowed may furnish matter for a few observations in passing rapidly by excellent sites at Winkel, Orstrich, and, farther back in the bosom of the hills, Kiderich and Gräfenberg. The produce of all these vineyards seldom meets the public under the real name, but is christened after the more select growths by wine-merchants who are bound to follow their customers' whims, and to furnish them with an excuse for decorating their tables with the names at least of wines that never find their way there. Why sufficient outlay is not bestowed upon the adjacent growths to raise the whole value of the Rhinegau to the value of which it is capable, seems easily accounted for. The prices we have quoted show that on the most favourite sites the choice wine that can be made is very dear. The market is consequently very limited; and by the increasing difficulty annually experienced in all European lands of providing subsistence for an increasing population, bids fair, without exchange in our present systems, daily to diminish. Such wine is a luxury that, until necessities are superabundantly ap-

plied, cannot be indulged in; and until bread and cheese cheapen and become more accessible than at present, the fine sites of the Rhinegau, that cannot meet the treatment they deserve, must lie neglected.

At Erbach, where also choice wine is grown, the road once more branches off to the left, and continues ascending for more than a mile and a half until the traveller reaches the border of the forest-covering that tops the Taunus, here at its greatest distance from the Rhine. A narrow glen, like a cleft in the hill, leads him to the ancient Abbey of Eberbach, in former times one of the most important clerical foundations of Germany. Since its confiscation the building has been made to serve as a house of correction. But a very large edifice is now erecting in the vicinity to supply its place. The Abbots of Eberbach were prouder of nothing amongst their extensive possessions than of the "Steinberg" vineyard, which may be called the *diamond* of the Rhinegau, if the Johannisberg be entitled its *pearl*. This vineyard lies at the greatest elevation of all in the district, being upwards of 200 feet above the level of the Rhine, whereas the Johannisberg castle stands 150 feet above the river. The whole vineyard comprises 100 morgens, of which 80 are under cultivation, and is surrounded with a stone wall 12 feet high, which renders it conspicuous from the Rhine, although at a distance of two miles from the river. The vineyard has various slopes, however, that are only perceptible on entering it. That which has the most southern aspect is named the "golden cup," another is called the "Rosegarden;" then come the "Friedrichshöhe" and the "Pflanzer." The last-named slope furnished, in 1819, the celebrated pipe of wine

which sold some years back for 11,000 florins (916*l.* 12*s.*). The management of this vineyard, with which, as at Johannisberg, a farm is connected, is a perfect pattern of rural economy; leaving nothing to desire that science, experience, and diligence can dictate. It is managed as a private domain of his Highness the Duke of Nassau, and under the direction of the present manager, Mr. Köpp, serves as a model for the winzers of the Rhine. As at Johannisberg, everything proceeds in military order. The men who work in the vineyard are enlisted rather than hired, and are furnished with instructions which, as they are well paid, they fear to disobey. The predominant grape in the vineyard is the Riesling; but the immense extent of wall furnishes a large quantity of nearly every description of grape, and its produce would soon undeceive such as suppose that grapes can be raised under glass to vie in flavour with those grown in a favourable climate in the open air. The view from this vineyard is more extensive than that from the Johannisberg, but is different, inasmuch as the Rhine is more distant from the spectator.

If the Steinberg vineyard is on a larger scale, the cellar at Eberbach surpasses that of Johannisberg still more. The visitor is admitted from the court-yard into a vaulted basement story which has an extensive anti-vault; and if he has any claim on the hospitality of the place, he there sees the cellar in its whole extent, lighted up by numerous lamps flickering on the butts like spirits, in a manner that recalls the well-known bacchanalian scene in 'Vivian Grey.' But this cellar contains not the choice of a single growth alone. The ducal vineyards run through the Rhinegau from Hochheim to Assmanns-

hausen, and of all the growths the best and choicest are to be found at Eberbach. In going through the whole for the course of the last forty years it is interesting to see how the palm was successively borne away by each. Thus, in 1822 it was Johannisberg, in 1819 Steinberg, in 1825 Hochheim, in 1829 Rüdesheim, in 1834 Steinberg again, that excelled. We were fortunate enough to taste the delicious cask of Hochheim, 1825, which from its smoothness, with surpassing bouquet, was christened "the Bride." It was sold in the present year for 12,500 florins, having, in the opinion of judges, reached its acme of perfection. We ventured on that occasion to name the Rüdesheim, 1829, in which the fire of the Orleans grape was perceptible, with little inferior bouquet to the former, "the Bridegroom." But we fear we have dwelt too long upon the details respecting wines; all correct descriptions of which cannot but appear exaggerated to those who have no opportunity of convincing themselves of the truth of what we asserted some pages back—that if the Rhenish is the dearest, it is beyond all dispute the finest wine that is made.

From Eberbach the road joins the high road again near Hattenheim, adjoining which lie the Marcosbrunn vineyards, much nearer to the Rhine than the Steinberg, and with southern exposure. The Duke of Nassau, Count Schönborn, and a few private owners, possess all the upper, that is to say, the best sites. In the cellars of M. Heymes at Hattenheim, and of Dr. Gräfe at Eltville, a few miles farther on, strangers may again see the extensive arrangements and cellarage which private

wine-growers who enjoy celebrity find it necessary to keep up.

At Walluf the mountains take a direction nearly at right angles to the Rhine, and leave the bank unprotected against the north and east winds. The soil grows lighter, and although vineyards still follow the course of the stream to Schierstein, yet no wine of note is produced until we reach the river Maine. At Mayence the Rhine again turns southward, and the Maine runs into it with a westerly course. Near its mouth an offset from the higher Taunus range slopes to the river with a full southern aspect, and on its brow stands the Cathedral of Hochheim, whose "close," in German the "Dom Dechanei," furnishes the wine that has supplied us with a general appellation for all Rhenish wines. That the name of "Hock," from Hochheim, has been so long used in this sense in England, may be perhaps explained by the circumstance that the Rhinegau being no thoroughfare for travellers, and anciently shut in by a wall strictly guarded, strangers had only access to Hochheim, and that this lies on the road between Mayence and Frankfurt. Next to the Cathedral close, the best vineyards at Hochheim are at the bottom of the hill near the river. Through one of these the railroad between Wiesbaden and Frankfurt was carried, and the enormous sum demanded for compensation formed the subject of a law-suit, that was last year decided against the Company. We believe the award was not much below 1250*l.* per acre.

With Hochheim we take leave of the choice growths that give merited celebrity to the Rhenish vineyards.

The famous sites all belong to one principality, the Duchy of Nassau. Nor should it be omitted here that the Government has had no small share in improving the cultivation of this valuable part of its territory. Not only have the greatest improvements been made in the ducal vineyards and cellars; the means of improving were here early afforded to all by an easy and moderate plan for commutation of the tithe. Very few vineyards are now saddled with tithe, and the Government encourages as much as it can the commutation of what remains. The land-tax is, moreover, in Nassau exceedingly light, and wine is free from excise duty. Absence of restrictions in the vineyards and in the cellar is the great promoter of improvement, and every day shows that this truth is here fully appreciated. The following statistical details may be interesting as regards the land-tax levied in the Rhinegau:—

Districts.	Total number of all kinds.	Morgens of vineyards.	Simple rate of land-tax.
Hochheim . . .	48,372	2477	8298 florins.
Eltville	41,313	4466	6222
Rüdesheim . . .	57,435	4500	6732
	147,120	11,443	21,252

The whole Rhinegau, consisting of 90,000 acres, pays in a year, when five rates are levied, the sum of 106,260 florins, or about two shillings per English acre, which, considering the enormous value of great part of the land, must be considered very moderate.

The left bank of the Rhine, from Bingen upwards, forms the boundary of the Rhenish province of the Grand Duchy of Hesse Darmstadt. Immediately opposite the Rhinegau there are two sites favourable for wine; the

Scharlachberg near Bingen and the hills near Ingelheim. On the former a lighter wine than the fine Rhinegau growths is produced, but of delicate flavour. At Ingelheim very pleasant red wine is grown, that is treated in a similar manner to the Assmannshausen. The heights in both these places are considerable and sufficiently steep, but it would appear that the want of radiation from the surface of the Rhine is perceptible on the Hessian side. The vineyards are also more exposed to the north and east winds than those of the Rhinegau. Above Mayence, near Oppenheim, the traveller again finds good sites and names that he frequently meets with in his way. Nierstein and Laubenheim both lie near Oppenheim. Near Worms he finds the celebrated "Liebfrauenmilch" in the church close of "Our Lady." The vineyard is small, but its produce very delicious. The principal inn at Worms is, however, the worst place at which the Liebfrauenmilch can be asked for.

Rhenish Hesse (Rhein Hessen) has a greater extent of surface under vines than Nassau, but the value of the produce is very different in the two countries. The total area is 27,842 morgens, of which 2773 morgens fall to Bingen and 4741 to Oberingelheim. Oppenheim has 6247 morgens. In the Rhenish province of Bavaria, or the "Palatinate," the area is still greater. The vines cover in that province 33,048 morgens, or 20,000 acres. These vineyards are not visible from the Rhine, the banks above Oppenheim being flat, and varied only by undulating hills like those near Worms. From Oppenheim the heights stretch westward from the river to the Mont Tonnère, or Donnersberg, the chief mountain-chain that stretches onward and seems to join the Vosges. The

eastern declivities of these hills, where the vineyards of Forst, Wachenheim, Deidesheim, and other good growths are found, lie at distances varying from 10 to 20 miles from the river's bank. These wines are mild and without acid, but possess little flavour.

The banks of the Rhine on our left, when ascending from Mayence, are also flat; but the beautiful Oden chain of mountains accompanies this part of the river at a considerable distance from its winding course. The base of this chain, which is skirted by the well known "Bergstrasse," is clothed with vineyards of no celebrity, which only help to garnish the tables or to furnish the evening cups of the richer peasants of the neat villages that lie along the road. The farming of this district is managed with considerable dexterity in choosing crops and rotations suited both to the soil and to the local demand. But the scattered grounds, the small size of the parcels tilled, and other economical faults, are here still perceptible, and thwart the efforts made by the government to spread theoretical knowledge by the means of an admirable agricultural college established near Darmstadt. Several of the Grand Duke's private estates are managed as model farms; not that any display of expensive instruments can be found in them, but experiments in rotations, in the quality of seeds, and in the manures best suited to various soils, are made on them for the benefit of the adjacent country, where the value of such practical aid is well understood. The disinclination to generalise, and to lay down rules for cultivating whole provinces upon one system, is perceptible along the whole course of the Rhine, and lends to its agriculture a peculiar character that heightens the inte-

est with which the observer studies it. The disposition to treat every farm and even every field individually as regards rotation, crops, and manure, is nowhere more strikingly evident than in the two Grand Duchies of Hesse and Baden. If clearer views of the advantage that might be drawn from this disposition on the part of the small landowners could be formed and spread abroad, the agricultural wealth of these districts would be great. But here, as elsewhere, too much labour, capital, and time are spent in procuring the necessaries of life ; and both the government and the governed turn their attention too little to the fact that soil and climate here are adapted to luxurious cultivation of the soil. To secure the means of prosecuting the luxurious agriculture suited to small allotments and a dense agricultural population, in which the vineyard would find its place as a prominent feature, means must be devised for cheapening the cost of the food, the fuel, and the forage indispensable for the daily consumption of the people.

CHAPTER X.

THE commencement of the beautiful part of the valley of the Neckar is a common resting-place in a tour through the Rhenish districts. Few travellers have time to inquire into the causes of the celebrity of the University of Heidelberg ; but all can feel the majestic beauty of its ruined castle leaning against its green background of forest-clad hill, and reflected in the bright waves of the rushing Neckar. We choose, therefore, this charming spot for a survey of the agriculture of the Upper Rhine, which, from Bingen onward, has maintained a constant character that will be found to continue to the foot of the Alps. The leading feature of the system of tillage found throughout is, as we before observed, a minute study of the position, soil, and other capabilities of every separate field, as well as of the markets, near and distant, where the produce has to be sold. Where these primary conditions are found to be similar on several farms, a like treatment of crops will be found to prevail. The mode of tillage is generally such as is recommended by agricultural authorities, and (under the limitations that we have all along noted of minutely divided and scattered lands, as well as low prices arising from over competition) will be found satisfactory. If the crops are not so abundant as fine soils and a propitious climate would induce us to expect, it must not be forgotten that

the state of the home as well as of foreign markets, clogged with duties, does not remunerate any extraordinary outlay in artificial means, excepting where the density of the population ensures a sale for the increased production. The plain at the mouth of the Neckar, between Weinheim, Heidelberg, Leimen, and the Rhine, is even more populous than Rhinehessen on the left Rhine-bank. On a space equal to 90 square English miles, Professor Rau in 1830 estimated there were 73,000 inhabitants. At present there are not fewer than 80,000, or 900 to the English square mile. It will, therefore, excite no surprise that the subdivision of the soil is very great. The same author, in his interesting treatise on the agriculture of this district, gives the following as the division of landed property :—

Size of estates.	In Handschuhsheim. No. of landowners.	In Neuenheim. No. of landowners.
More than 20 morgens	12	5
From 15 to 20	7	1
„ 10 to 12	13	1
„ 5 to 10	41	3
„ 3 to 5	34	1
„ 1 to 3	108	37
Less than 1	163	73

The 378 landowners in Handschuhsheim held estates of the following dimensions :—

12 large estates, making together	504 morgens.
7 estates from 15 to 20 morgens	121 „
10 „ „ 10 to 15	140 „
41 „ „ 5 to 10	250 „
34 „ „ 3 to 5	120 „
108 „ „ 1 to 3	180 „
163 „ „ under 1	65 „
Inhabitants of other parishes	20 „
<hr/>	
1400 morgens.	

The Heidelberg morgen corresponds precisely with the English acre.

With this dense population the small number of draught cattle is strongly contrasted, and points to the hand-labour employed in cultivating the soil. It is here calculated that 21 acres require a pair of horses; 14 to 17 acres give work for 2 oxen; and 7 to 10 acres to a pair of milch cows. Dossenheim, with 300 families, has but 30 horses and 14 draught oxen; the other lands were ploughed with cows. Handschuhsheim possessed 56 horses and 10 draught oxen on its 937 acres of land. As a result of the study of the nature of the soil combined with the influence of trade, a great deal of land in the immediate neighbourhood of Heidelberg, Mannheim, and Schwetzingen is under vegetables. On the sandy heights between Schwetzingen and the Neckar tobacco is largely grown, while ordinary green and grain crops cover the land of better quality that surrounds the town on all sides. A similar calculation might almost be supposed to have dictated the size of farms, which are small near the heights, where a rich soil is found, and the cultivation of small plots yields a subsistence; whereas they grow larger in the plains that have a sandy soil, as well as at a distance from the towns. Both this division of property and the cultivation of market crops in great variety, including madder, woad, and tobacco, existed here in the beginning of the last century, in spite of the constant wars with France and the notorious devastations which accompanied them. History has preserved, as a contrast to the generals who burnt the villages of the Palatinate, the name of a peasant, David Möllinger, of Mausheim, near Worms, as the man who first used liquid manure,

and this novelty was early adopted in the Palatinate, of which the district we are now in formed a part. If the traveller will stroll out to the villages of Handshuhsheim and Weinheim, or along the river's bank to Wiblingen, he will find that green crops, as manures, are perfectly well understood, and in constant practice amongst the intelligent peasantry. On entering the small inns of the villages, he will be treated with very fair wine of the growth of the adjacent hills, which, with little flavour, has less acid than the Rhinegau wines. He will on this excursion observe with pleasure an absence of total destitution in any class of the inhabitants; but that a large portion of the population stands on the verge of great poverty, while a still greater number is involved in privations inseparable from the increase of mouths without a corresponding augmentation of the field of labour, will not escape him. Agriculture alone cannot confer wealth; and if the agricultural population anywhere exceeds a fair proportion of the whole, there will arise distress. In another volume we shall inquire why it has been found so difficult to introduce manufactures amongst these intelligent and industrious peasants. Here we shall only remark, that, for want of other occupations, the wages of labourers are exceedingly low, averaging from 10*d.* to 1*s.* per diem for men, and 7*d.* to 8*d.* for women. If food be given, 10 kreutzers, or 3½*d.*, is all that is added in money. On the larger farms 4*l.* per annum is the pay of the farm servants, whose board is valued at 5*l.* From this and the adjacent districts the greatest number of emigrants proceed annually to America. The pleasing part of the prospect afforded by these villages, is the evident economy and exertion on the part of individuals to build

or preserve houses of good size for their families, in which sufficient and substantial furniture is also found. The description of a village on the Lower Rhine will perhaps in many details be recalled here to the memory, by the extent and irregular plan of the farm-offices, the straggling position of the houses, the neglected state of the streets, roads, and other passages, with the never-failing accompaniment of countless dunghills, which meet the gaze in their unvarnished impurity here as there. The houses are, however, usually larger than on the Lower Rhine, and both soil and climate remunerate the cultivator's toil with a richer return. A few years back the estimate of the rental of the families of Handschuhsheim, according to which they were taxed, averaged 180 florins, or 15*l.*, for each household, as revenue drawn from the land and the occupations that it furnished. We have seen that in this village 378 landowners possessed 1400 Heidelberg morgens; the average was, therefore, to each nearly 4 morgens, or something less than four English acres. If anybody should wonder, therefore, that a family can exist without distress upon 16*l.* per annum, they must find it still more wonderful that where this is practicable anybody can earn 4*l.* per acre, and, still more, make this an average return for 378 families in one village, even with the assistance of the little trades and occupations which a village commands. The agricultural system must be worth studying that can boast such a result.

In the instruments used the peasants of this neighbourhood show their willingness to adopt improvements where they are practically useful. Their own plough, although in appearance much lighter than that we have described as common on the Lower Rhine, is well

suited to the soil, which is generally light, and demands a wheel-plough. But even the plough is suited to the soil for which it is made, and on stiffer soils has a deep mould-board well curved; while on the sand near Friedrichsfeld the mould-board is narrow and almost straight. On some of the larger farms, the Strassenheim Hof for instance, a heavy subsoil-plough is used when tobacco is to be planted. This plough is only the common plough of the country on a larger scale, that opens a furrow $1\frac{1}{2}$ to 2 feet deep. The subsoil is of such quality on that farm, that turning it up is equivalent to manuring the surface. On other farms the land is carefully ploughed for tobacco twice in autumn, and three times or oftener in the following spring. The winter corn is usually ploughed in. Summer corn is harrowed under; clover is often sown after the barley has been harrowed and the ground is rotted. Dung is copiously distributed, and is required for the exhausting crops taken off the soil. Although the number of draught cattle is not great, yet cows are very numerous, and it has been calculated by M. Rau that one head of cattle was kept for

$2\frac{3}{10}$	morgens at Dossenheim and Handschuhshheim.
$5\frac{3}{10}$	„ at Kirchheim and Wiblingen.
$6\frac{3}{10}$	„ on 8 small farms from 30 to 75 morgens.
$9\frac{7}{10}$	„ on 2 farms of 162 and 180 morgens.

As the calves are not included in this estimate, and the dung of the pig-sties, that are very numerous, as well as that from the sheep-folds, have also to be added, it is supposed that one head of cattle may be assumed for every $2\frac{1}{2}$ English acres. Liquid manures are in great use in this neighbourhood, and the dung-heap,

which is raised in an enclosure of mason-work on good farms, has a wooden pump attached to it to raise the liquor into the carts with barrels affixed for its conveyance. An ohm is considered equal to $1\frac{3}{4}$ cwt. of cow-dung, and 32 barrels of 5 ohms are used to the morgen, or 48 barrels to the acre, when no other manure is applied. The effect of the liquid manure is, however, limited to the one crop, and is not felt in those succeeding. A cow is reckoned to give 21 ohms or $4\frac{1}{4}$ barrels in the year. Sheep-folding for manure is common, and the money paid for the benefit is a great inducement to those who keep sheep. A calculation has been made for the soil of Wiblingen, according to which 400 sheep must be folded for tobacco ten nights, for spelt six nights, for barley four nights on the acre. In Schwetzingen 150 sheep are folded eight successive nights upon an acre of land for barley.

In the course of the stroll that we have suggested the stranger may make himself acquainted with many plants that are not common objects of farming in England. Instead of wheat, spelt (*Triticum Spelta*) is the common bread corn. It suits a dry climate, and, like the hard Odessa wheat, contains more nourishing particles than the ordinary wheat. It is, however, encumbered with a husk which makes the cleaning and grinding expensive. Rye is common on the sands. Maize or Indian corn is very frequent as a fallow crop, and is daily increasing in use. Ingenious machines have been invented to shed the grains, but it still remains a difficult process. The fallows are here covered with cabbages, carrots, and beet-root that attains an extraordinary magnitude. In good seasons the potatoes

grown are also very fine. For cattle-feeding the turnip-cabbage is much in use. Of this plant there are two sorts: one in which the turnip is formed over the surface of the ground, and this is the most tender, and serves for table use as a vegetable. The other kind is coarser; its turnip is formed under ground. Stubble turnips and Swedes are in general use. Amongst the novelties for an Englishman the poppy must be ranked, which may here be seen to cover whole acres. The seed is not only crushed to give salad oil, but is often strewed over cakes, to which it imparts very little flavour, and it seems to have no effect as an opiate. Tobacco is a favourite fallow plant. M. Rau gives the following rotations on three farms as specimens for the district:—

A. 180 morgens in stiff lowland soil.

1. Fallow . . .	18 morgens	tobacco
" 5 "		rape
" 7 "		beet-root
" 20 "		clover
2. Winter corn	50	spelt
" 6 "		rye
3. Summer corn	20	barley
" 16 "		oats
" 4 "		tares for seed
" 17 "		potatoes
" 17 "		lucern

—
180 morgens.

B. 54 acres on the Bergstrasse.

1. Fallow . . .	8 morgens	poppies
" 7 "		clover
" 1 "		Indian corn
2. Winter corn	16	spelt and rye followed by turnips
3. Summer corn	10	barley and oats
" 6 "		beet-root and potatoes
" 6 "		lucern

—
54 morgens.

C. 162 acres on the Bergstrasse.

1. Fallow . . .	10 morgens	poppies
" 15 "		rape
" 4 "		hemp
" 6 "		mangel-wurzel
" 10 "		clover
2. Winter corn	50	spelt and rye; partly followed by turnips
3. Summer corn	15	barley
" 20 "		oats
" 8 "		potatoes
" 24 "		lucern

—
162 morgens

On these three farms, therefore, the proportion between the crops was—

	A.	B.	C.	
Grain . . .	53	48	52	parts.
Fodder . . .	34	37	30	"
Market crops .	13	15	18	"
	—	—	—	
	100	100	100	

On well-managed soils where two bushels of seed are sown per morgen, or per English acre, spelt will yield 15 to 16 malters of 115 lbs., or 28 to 30 bushels, as an average crop. On the light soils near Seckenheim and Kirchheim the return is but 11 malters to the morgen. The yield of rye on good soils is 10 malters of 115 lbs., or about 36 bushels, to the acre: oats yield 9 to 10 malters. Maize is chiefly used for the pigs and poultry. It is found to exhaust the soil very much, and sells for the price of rye. Beet-root, estimated at 10,000 plants to the morgen, is calculated to give 200 cwts. return: the leaves picked off for the cattle in autumn are estimated at $\frac{1}{2}$ of the weight of the roots. Potatoes give 80, sometimes 100, malters per morgen; turnips, 60 to 75 cwts.

Tobacco is more extensively grown in the Palatinate, on both banks of the Rhine, than in any part of Germany. Here, as on the Lower Rhine, it is an expensive crop, and remunerates less on the rich soils than on the sandy grounds. M. Rau estimates the labour at $17\frac{1}{2}$ florins, or about 1*l.* 10*s.*; the dung at 10 florins, or 16*s.* 8*d.*; and the plants at $2\frac{1}{2}$ florins, or 4*s.* 2*d.*, per morgen. The yield is about 7 cwts. of leaves, which sell for 6 dollars per cwt., leaving a return of 42 dollars, or 7*l.* 15*s.*, for an outlay of 30 florins, or 2*l.* 12*s.* The price is higher if the fermenting process described at page 33 is undergone, which is not always the case, as the leaves are marketable after being merely dried.

As the land on which tobacco is grown in the Grand Duchy of Baden pays no extra land-tax, its area is not exactly ascertained. Official estimates state it to be 13,500 morgens of $\frac{3}{8}$ acre, the yield of which averages 110,000 cwts., being 8 cwts. per Prussian morgen, or 14 cwts. per acre.

The following is the Official Return of the area of land under tobacco in the Zollverein:—

	Morgens.	Produce	Cwts.
Bavaria	19,455		101,171
Saxony	186	„	1,116
Wurtemberg . . .	10,000	„	60,000
Baden	13,447	„	110,000
Electorate of Hesse.	1,540	„	8,001
Grand Duchy ditto	2,268	„	13,608
Thuringia	1,082	„	4,513
Enclosures in Prussia	555	„	..
Kingdom of Prussia	37,809	„	242,985
			<hr/>
			541,394 cwts.
	86,342 Prussian morgens,		
	53,900 acres.		

The total average of the Zollverein is thus little more

than 10 cwts. per acre, according to the estimate of M. Dieterici. In good years it is undoubtedly higher. Of this quantity a large proportion is exported from South Germany to Prussia and other northern states, on which, although within the Zollverein, a duty is levied of two shillings per cwt., to meet the higher land-tax levied on tobacco-lands in Prussia. In 1842 the importation into the northern states amounted to 97,000 cwts. on which 64,774 dollars were paid as duty.

Between Carlsruhe and Baden-Baden the traveller passes one of the richest agricultural tracts of country in Europe. The valley, or rather plain, that lies stretched at the foot of the Black Forest chain, is well watered by the streams that fall from this chain of hills, and its soil is an alluvial deposit of a very fertile nature. Farms are something larger in this part of the Rhine than lower down the river, and the marks of ease and even of wealth are easily distinguished in the houses of the greater landed proprietors, although their peasant-like appearance and manner rather belong to a poorer class. Respecting the management of the peasants' estates little remains to be added to what has been said. The crops grown here are the same with those of the Palatinate; poppies for oil, rape, Swedish turnips, tobacco, cabbages, and carrots, divide the fallow with the potato. The nature of the soil is here also minutely studied. The village system, however, is in full force in the whole of Baden, and it is rare for a peasant proprietor to live upon his land. On the other hand, there are many large estates in this neighbourhood, belonging to the members of the reigning family, and to some noble families, which are excellently managed by men who have been brought up in some of

the agricultural colleges that we have mentioned. One of these colleges is at Darmstadt. A useful polytechnic school has recently been founded at Carlsruhe. The fruit of these excellent establishments has been chiefly to lay a foundation in the minds of a large class of the people that disposes them to industrious activity, and has prepared highly useful agents both for the management of farms and of manufacturing establishments. Few young men would now think of offering themselves for the place of bailiff or farming agent, without possessing testimonials of their fitness from some of these colleges. The scientific explanations which any inquiring traveller can receive at the hands of almost any young men so occupied on large estates, respecting the soil, climate, manners, &c. of the locality, will often perhaps excite surprise, and no less so the calculations by which they judge whether improved processes ought to be adopted, and where additional outlay or increased economy is the more judicious plan to follow.

Besides the large estates in the Grand Duchy of Darmstadt that we have already noticed as under scientific management, we may name the estate of Baron von Babo, near Weinheim, as very accessible from Heidelberg. From Baden-Baden excursions may be made to Rothenfels and Augustenburg, country-seats belonging to the Margrave William of Baden, which have long served as pattern farms. Baron von Babo is an author on agricultural subjects, and the result of a few out of numerous experiments that he has caused to be made with ploughs, will both show the interest with which intelligent farmers follow improvements in Germany, and will throw

a useful light on the plough of the Palatinate, which we before praised as well adapted to the soil. One of these, with a plough in use on the Bergstrasse, a Flemish wheel, and a Flemish swing-plough, being tried against each other in a dry stony soil, the result was:—

Plough used.	Depth of Furrow.	Breadth of Furrow.	Power used in draught.	Remarks.
	Inches.	Inches.	Cwts.	
PALATINATE. (Ladenburg)	6	9	4·9	Furrow clean, and clod well turned.
(Strassenheim)	6	9	3·3	Furrow not clean or well turned.
BERGSTRASSE. (Wiesloch) .	4	7	3·5	Furrow shallow, well turned.
Flemish with Wheels . .	6	9	3·0	Not so well cut or turned as in the following, which was the best.
Flemish Swing	6	9	2·7	

Sowing-machines are only in use for rape, and occasionally for turnips. Where seed is abundant and labour cheap, the outlay for expensive machines is not repaid, as is the case where labour is dearer. This principle is further confirmed by experiments that have been made with the Scotch threshing-machine as modified by M. Dombasle, in Alsace. For small quantities the advantage of machinery is scarcely apparent; but machinery applied to large quantities produces a great saving. Experiments made in Germany have shown that where—

If the production is 5000 sheaves	The produce in Wheat costs to thresh:—	
	With the Machine.	By Hand.
	93 florins.	135 florins
„ 10,000 „	116 „	270 „
„ 20,000 „	163 „	541 „
„ 40,000 „	265 „	1082 „

Supposing the outlay for a threshing-machine, of 4-horse power, to be 70*l.*, it is reimbursed in one year in a farm producing 40,000 sheaves. A farm producing only 5000 sheaves would not admit of sufficient saving to pay the interest on the investment.

Flax-mills are unknown in Germany for a similar reason. Every peasant grows a small portion of flax, which he can heckle himself, or his servants can do it, in winter, when also it is spun by the females of the family. The saving that might be effected by the agency of machinery would, in a country where the cultivation and treatment of flax are so well understood, be an object of first-rate magnitude, if the division of labour that must follow on the introduction of machines were not prevented by the feeling of insecurity that has so long induced the people to regard land as the only secure investment of their savings. A machine, of simple construction, and demanding little outlay, has been invented by M. Kuthe, of Lippe Detmold. Its utility in heckling and scutching flax has been carefully tested, and may be estimated from the accompanying table.

The improved instrument affords a gain of 50 per cent., which, as in the case of the threshing-machine, is of no importance on a single morgen, and would not even be realized on so small a scale; but on 500 morgens the saving amounts to no less a sum than 1000*l.* This mode of arguing, according to which the cultivation of crops that can be aided by machinery ought to be carried on upon a certain scale to admit of a large return, is not common in Germany. The only mode of securing an independent position to the mass of the people, is there supposed to lie in the subdivision of the soil. To far-sighted observers this subdivision is already carried on the Rhine

EXPERIMENTS MADE IN DRESSING THE FLAX OF ONE MORGEN.

Steeped in	Common Land Brake.				Flemish Brake.				Kuthe's Brake Machine.			
	Water.		Dew.		Water.		Dew.		Water.		Dew.	
Scutched .	Flax	Tow	Flax	Tow	Flax	Tow	Flax	Tow	Flax	Tow	Flax	Tow
Heckled .	284	140	285	144	293	80	311	57	320	72	298	42
	148	132	140	142	157	132	149	158	163	154	154	141
Dressed lbs.	148	272	140	286	157	212	119	215	163	226	154	183
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Market Value .	7	10	0	7	4	6	9	2	2	8	17	4
Cost of Dressing }	1	15	4	1	11	7	2	7	10	2	9	8
Profit . . .	5	14	8	5	12	11	6	14	4	6	7	8

as far as it is practicable, and some have suggested that it should be authoritatively, limited. But even these have brought forward no resource for those who, by such a measure, are deprived of their share of the land. It has not been pointed out that the land is only one part of the capital of a nation, and that as much folly lies in devoting all energies to its cultivation as would be shown by attempting to carry on trade or manufactures in a large state to the exclusion of agriculture.

The notion that the capitalist puts the whole profit on a large estate into his pocket without sharing it with his neighbours, is at the bottom of this wish to encourage small properties in land and small manufacturing establishments. Those who advocate this system point to large estates where a number of labourers are poorly fed and live in dependence, while the owners live in power

and splendour. They forget that the desideratum is not to take away from any one what he can gain, but to discover new resources that raise his poorer neighbours to an equality with the rich. In agriculture it is not desirable, *per se*, that the profits should be divided only amongst one-third of the inhabitants of a country; but it is not only desirable, but necessary, if the profits arising from manufactures and from trade are to be gained in addition, and if the country is to retain hands wherewith to gain them.

On the large estates it is common to hire a *traiteur* to supply the farm-servants with their meals, which are contracted for at so much a head. The following bill of fare forms the basis of the contract made at Roshenfels, the seat of the Margrave of Baden. The *traiteur* has a lodging, with garden and pig-sty, wood for warming the dining-room in which the work-people are allowed to remain during the hours of rest; oil to light the same until nine o'clock p. m. He is also allowed to graze some cows with those of the landlord, but must milk them himself. For a fixed tariff he furnishes the meals as in following page.

A condition is imposed on the *traiteur* that, in addition to the fluids here named, potatoes are to be served every evening as long as they can be had. We must also suppose that black or rye bread, ad libitum, is served, although it is professedly limited at supper to half a pound of bread for three men. The portion of meat at dinner every second day is half a pound per man. The *traiteur* receives

For breakfast, dinner, and supper, per man $2\frac{3}{4}d.$

For hired labourers $3\frac{1}{4}$

Meals furnished by the Traiteur.

Days.	Morning.	Noon.	Evening.
Sunday .		Meal porridge, pork and potatoes, and sour cabbage.	Bread or sour milk or potatoes.
Monday .		Rumford soup, and hasty pudding.	Sour milk with bread.
Tuesday .	Alternately dry bread, and bread and milk, or boiled potatoes, each day.	Soup, meat, potatoes or peas, lentils, &c.	Potato porridge and sour milk.
Wednesday		Hasty pudding and meal porridge.	Meal porridge, and sour milk.
Thursday .		Barley broth, meat, and potatoes.	Sour milk, and meat browned with fat and boiling water.
Friday . .		Rumford soup and meal porridge.	Bread and milk or sour milk.
Saturday .		Broth, with bread and meat.	Meat porridge or sour milk.

Although these meals will bear as little comparison with those of the Margrave's table as the meals of agricultural labourers in any country with those of the landlords, yet they stand very near the general food of the peasant landowners on the Rhine. There are many exceptions no doubt; and the peasant's coat and hat is often worn by people who live very much at their ease. This is

especially the case in Baden, where there is a very wealthy peasantry. As, however, the population increases faster than the profits in agriculture can follow, there is no prospect for any country that depends solely on agriculture but that of increasing poverty; and it is clearly to be wished for our Rhenish neighbours that other sources of employment could spring up with the growth of their active youths and maidens. They will certainly be gainers when they cease to measure the respect to which a man is entitled exclusively by the broad acres that he happens to possess, and begin to calculate the various other sources of wealth that are placed by a benignant Providence at their command. We mentioned in a former chapter, that various contracts on joint account for the keep of cattle occur in the Rhenish districts. Occasionally a cow is kept by the owner of a stable for the milk and one of the first two calves that fall. The following is a contract made between Count Görnitz, of Schlitz, in the grand Duchy of Hesse, and his head shepherd. The entire management of the flocks is left to him, and three men are given to him as assistants, who have the right of grazing—the first 25 sheep, the second 20 sheep, the third 15 sheep, with their lambs. The head shepherd receives wheat, rye, barley, peas, lentils, and fire-wood, delivered at his house, and spirits occasionally. He has, besides, five beds for potatoes, one for cabbages, two for flax, a small garden, and a cow. From the flocks he receives three-fourths of the profits as his share; and if this share does not bring him the sum of 180 florins or 15*l.*, he is guaranteed a money payment of 2*l.* to make good the deficiency. By this arrangement, his attention to the improvement of the flock is secured. The shepherd

is, moreover, intrusted with the care of folding in such a manner as to manure thoroughly the lands appointed by the land steward, who is bound to designate daily a spot for the fold.

Similar calculations of the quantity of fodder consumed by sheep in proportion to their size have been made to those for oxen already noticed. According to these the daily weight of hay or equivalents for sheep is—

Weight of Carcase.	Bare nourishment.	Ewes suckling.	Sheep fattening.
50 lbs.	1·25 lbs.	1·875 lbs.	2·375 lbs.
75 „	1·87 „	2·875 „	3·562 „
100 „	2·50 „	3·750 „	4·750 „
120 „	3·— „	4·5 „	5·7 „
150 „	3·75 „	5·5 „	7·125 „

The yield in washed wool is estimated as follows :—

Fine and half Merinos	1½ lbs. to 3½ lbs.
Country Sheep	. . 2 „ 4 „
Long-woolled ditto	. 5 „ 7 „
Late Winter Lambs	. . . . ¼ „
Early ditto ditto	. . . . ¾ „
Summer ditto	. . . . 1½ „

The change in the value of long wool in consequence of the improved method of combing, has not much served Germany, where the common sheep have very coarse wool. It has, however, created a great change, inasmuch as the Germans who long supplied us with fine wools, have become dependent on us for long wool, of which a great deal is now shipped from England to the Continent.

If our space allowed, we could add largely to the few calculations of German scientific agriculturists that we have given. The inquiring traveller will soon be led from contemplating their results to consult the publications of these authorities, and will find them replete with instruction.

CHAPTER XI.

OUR observations hitherto have been confined to the position in which the Rhenish landlord and farmer stand with respect to that open field of exertion in which success depends upon a skilful use of natural advantages. That all soils and situations have either peculiar advantages, which may be turned to good account by clever farmers, or are saddled with drawbacks that demand no less exertion of skill to compensate, is a fact to which we have seen the Rhenish farmer is keenly alive. He suits his mode of cultivation where he can to his resources, and where he cannot choose he follows the demand to his best ability. The chief obstacle to his success we have also seen consists in the imperfect division of labour that prevails in Germany, and which makes nearly every man a producer of the objects of general consumption : by which means the home-market is almost annihilated in times of abundance, while in periods of scarcity there is no surplus of produce to look to.

We have now to consider the burthens that press upon the land from a quarter that is beyond the cultivators' reach—the taxes levied for general State purposes, as well as for local expenditure. The two heads must be taken together, because many things that in England are left to private management form in Germany objects of solicitude for the government.

In the administration of justice, although the forms are occasionally dilatory and demand a sacrifice of time, yet the public functionaries diminish very much the outlay that attorneys' and counsels' fees occasion in England. We have already noticed the inexpensive and satisfactory mode of transferring land and real property by entries made in the parish books under the control of chosen assessors. In criminal cases an advocate is appointed amongst the members of the board that takes cognizance of offences for any party who is unable to pay the moderate remuneration demanded by advocates for drawing up papers. All police enquiries and pursuit of offenders are carried on at the charge of the State. The sanatory and other preventive police enquiries are discharged by officers paid by government. The provision for the clergy, for the poor, and for schools, where they are not drawn from funds set especially apart for the purpose, form items of local taxation, while a considerable sacrifice of time is demanded in the personal attendance on the military exercises required of every individual during a portion of his life; and no small share of trouble devolves upon the respectable inhabitants of both towns and villages, who are called to fill the office of assessors at local courts.

Direct taxation is a prominent feature in the budgets of all the German States. According to the last published budget of supplies and ways and means for Prussia, the land-tax yielded 10,497,944 dollars, or one-seventh of the whole revenue; being about half as much again as the interest of the national debt, which amounted to 7,253,000 dollars. The trading and manufacturing portion of the population contributed 2,435,460 dollars, and

the class-tax, levied on adult males of all ranks, in rates fixed by their wealth, yielded 7,188,107 dollars. As this last may be considered a general property-tax, the direct taxes in Prussia amounted in 1844 to 19,000,000 dollars, or 3,000,000*l.* sterling; being more than one-fourth of the whole revenue of 70,000,000 dollars. The Royal forests and domains contribute 9,000,000 dollars to the revenue of the state, on which there is a perpetual rent-charge of 2,573,000 dollars (400,000*l.*) for the civil list. This sum is no other than an absorption of rents that are drawn from the land for the benefit of the revenue—a payment in kind which it might be difficult to obtain in another shape.

We happen to be well informed concerning both the amount of the land-tax in the Rhenish province of Prussia, and the basis upon which it is levied, from a critical inquiry into the mode of levying, published some years back by the late Burgomaster of Aix-la-Chapelle, M. Hansemann. The actual measurement of the land for the purpose of taxation was begun while the Rhenish province on the left bank of the river was under French sway. It has since been completed, and the rate divided according to the statistical survey, or as it is called in Germany, the cadaster (from *κατα* and *σπερειω* oddly combined), in which the supposed quality of the soil is registered, together with the divisions of property. The land is classed according to this supposed quality at the time the cadaster was formed, about 20 to 15 years ago. Of course no other standard could be taken than the value of the produce which the average skill of the farmer at that time could raise from each field assessed at an average market price. Where parties were dissatisfied with the

award of the government commissions of arbitration were deputed to inspect the land, and occasionally to repeat the experiments on which the valuation was founded. The result is thus stated by M. Hansemann. “The estimates made by the Prussian commissions raised the land and house tax 20 per cent. above the valuation assessed by the French authorities during the occupation. This resulted from the commissioners’ taking the price of corn at too high a figure, while they undervalued the cost of cultivation. The deduction of 25 per cent. from the rental of a house for repairs is said to be also too low an estimate. The rates now levied may be seen in the table on the following page, which will serve the traveller as a guide in his inquiries in Rhenish Prussia.

The district of Aix contains soils and situations of the most varied and contrasting kinds, from the mountainous declivities of Montjoie to the alluvial deposits in some of the valleys. As the average of every parish in the following table shows a different figure, it will testify to the care bestowed on the valuations. The value of all kinds of produce has, however, varied and considerably augmented since the present rates were fixed, and the farming processes have improved no less. The profits accruing to the cultivator in 1828 are expressed by the number of groschen (30 gros. = 1 shilling) and varies from 24 or 27 groschen (2*s.* 2*d.* to 2*s.* 5*d.*) per morgen, or 3*s.* 6*d.* per English acre, to 119 groschen per morgen, or 16*s.* 4*d.* per English acre, for arable land. This estimate, besides assuming a very indifferent style of farming, deducts all the value of the peasant landowner’s labour from the profit as a charge included in the cost of cultivation. It may therefore be assumed as repre-

Official Estimate of the net Produce of Land in the following Parishes of the District of Aix-la-Chapelle.

Names of Parishes.	Arable, Morgens.	Net Produce, gros.	Meadows, Morgens.	Net Produce, gros.	Gardens, Morgens.	Net Produce, gros.	Heath, Morgens.	Net Produce, gros.	Forests, Morgens.	Net Produce, gros.
Aix-la-Chapelle, town district.	3,369	119	2,228	118	1,404	157	79	1½	4,184	18
Aix-la-Chapelle, without the walls	53,218	98	21,924	64	11,720	137	2,773	2¾	30,873	19
Düren	122,545	77	20,322	54	5,963	119	6,147	2	39,228	18
Erkelenz	70,669	98	3,364	75	3,808	134	16,490	3	15,656	14
Eupen	4,393	82	25,217	107	1,820	176	3,465	3	13,070	14
Geilen Kirchen	49,130	86	5,235	78	5,853	112	5,279	1½	9,202	17
Heinsberg	53,022	72	13,107	48	4,042	101	11,465	3	9,808	16
Lübeck	85,695	105	9,474	55	6,156	135	649	1½	23,667	20
Malmédy	55,250	24	33,013	28	1,523	54	126,743	2	63,669	9
Montjoie	31,277	27	10,123	31	1,800	34	30,600	1½	25,640	6
Schleiden	81,419	27	42,995	31	2,170	71	32,735	2	67,683	12
	609,987	72	187,002	53	46,261	13	16,854	12	292,610	13

senting what, under other circumstances, a tenant could afford at the time of the valuation to pay as rent to a landlord, nor has there been such a change since 1828 as to justify our considering this too low a valuation. The peasants have increased in number, and in all probability their holdings are smaller now than ever. As the peasants hold the bulk of the land, all legislation must look chiefly to their necessities, and on their small patches they assuredly do not grow corn more economically than they used. In 1828 the cultivated land in the district of Aix-la-Chapelle counted 1,230,276 estates on an area of 1,624,252 morgens, each allotment consequently averaging about two-thirds of an English acre.

The estimated returns from these 1,624,252 morgens was 2,198,086 dollars, averaging, consequently, 1⅓ dollars per morgem, or 5s. 4d. per English acre. The net return from houses is stated at 503,844 dollars, to add to the above. On these the land-tax charged was 445,393 dollars, or 16 per cent. The land-tax charged on the agricultural returns is stated on good authority to amount to 12 per cent on the peasant's crops. Of the produce of large well-managed estates, of course, the land-tax consumes but a slender proportion; but of these a great many enjoy an immunity from taxation that is regarded with sore feelings by their poorer neighbours, and allusions are frequently made to the promise of the late king to abolish privileges and concede rights as their substitute. The sum levied for land-tax, although small, is felt to be oppressive, as it must be paid in hard money; and although practically redeemed by transfer and inheritance, yet the tax-gatherer's call haunts the

peasant's mind throughout the year, and checks improvement, which, it is feared, would only create a higher rate.

A fixed land-tax is, in a prosperous country, absorbed in the profits realized, and is virtually redeemed by purchase and inheritance. The Prussian government has not raised the actual land-tax since 1838, when M. Hansemann gives the amount at 10,163,000 dollars. The published budget for 1844 states the land-tax receipts to be 10,427,944 dollars, so that at least no augmentation has taken place. The people have, however, no guarantee that it will not be raised, as the crown exercises an undisputed right of taxation, and in times of State emergency it is only on this field that the government can fall back.

In the land-tax here stated, the county and parish rates are included, on the plan of the "centimes additionels" in France. The contribution raised in this manner from the land is small in proportion to the great objects obtained through its agency. But the circumstance of its being levied from the small landowners makes it oppressive, and the government early found that it could only be raised in this manner. There is little doubt, therefore, that the land-tax in Prussia has the same effect that it has in Bengal; and in both countries the individual energies of the people are paralyzed by the encouragement of small holdings to the detriment of all accumulation of capital.

In the Duchy of Nassau a similar state of things prevails. The land-tax is rather below the rate in Prussia, but the principle of periodical revisions has been spoken

out by the Chambers. In 1848 the land-tax rate is to be reconsidered. The cultivated area of the country is 1,812,541 Nassau morgens, and is held by 42,676 landed proprietors cultivating their own land. This area is equivalent to 1,103,000 English acres. Considerable improvement has no doubt taken place in the mode of farming, and both the fields and the vineyards yield a much higher return than was formerly obtained. But that the great evil of the subdivision of the soil is increasing in the duchy, as elsewhere, is shown by the annexed little historical sketch of the division of property in the Rhinegau, which we owe to the kindness of an observing friend in office:—

Number of Landed Properties in the Rhinegau District of Rudesheim.

Parish.	Size.	Years.		Land under Vines.	
		1833.	1844.	Morgen.	
1. Rudesheim .	less than 2 morg.	441	472	720	720
	2 " 5 "	89	96		
	6 " 10 "	46	44		
	11 " 20 "	17	13		
	21 " 35 "	3	4		
	more than 100 "	1	1		
		597	631	720	720
2. Assmannshausen . . .	less than 2 "	108	108	236	238
	2 " 5 "	10	9		
	6 " 10 "	9	13		
	11 " 20 "	5	5		
	21 " 35 "	2	2		
		134	137	236	238

Number of Landed Properties in the Rhinegau District of
Rüdesheim—continued.

Parish.	Size.	Years.		Land under Vines.	
		1833.	1844	Morgen.	
3. Aulhausen .	less than 2 morg.	182	239	21	21
	2 " 5 "	70	49		
	5 " 10 "	9	5		
	10 " 20 "	5	4		
	21 " 35 "	2	1		
	51 " 70 "		1		
	above 100 "	1	2		
		269	301	21	21
4. Eibingen .	less than 2 "	304	338	255	245
	2 " 5 "	19	27		
	6 " 10 "	4	4		
	11 " 20 "	1	1		
		328	370	255	245
5. Geisenheim	less than 2 "	225	234	612	580
	2 " 5 "	123	107		
	5 " 10 "	46	52		
	10 " 20 "	29	27		
	21 " 35 "	6	8		
	36 " 50 "	1	2		
	51 " 70 "				
71 " 100 "	1	1			
above 100 "	2	2			
		433	433	612	580
6. Johannisberg	less than 2 "	94	123	214	218
	2 " 5 "	55	47		
	6 " 10 "	24	25		
	11 " 20 "	5	4		
	21 " 35 "				
	36 " 50 "		1		
		178	200	214	218

Number of Landed Properties in the Rhinegau District of
Rüdesheim—continued.

Parish.	Size.	Years.		Land under Vines.	
		1833.	1844.	Morgen.	
7. Lorch. .	less than 2 morg.	227	285	531	595
	2 " 5 "	140	149		
	6 " 10 "	88	78		
	11 " 20 "	23	20		
	21 " 35 "	13	14		
	36 " 50 "	2	2		
	51 " 70 "	1	1		
	71 " 100 "	1	1		
	more than 100,,	2	2		
			497	553	531	595
8. Lorchhausen	less than 2 "	114	149	224	227
	2 " 5 "	25	39		
	6 " 10 "	18	27		
	11 " 20 "	16	11		
	21 " 35 "	2	2		
		175	228	224	227
9. Winkel. .	less than 2 "	228	278	520	500
	2 " 5 "	107	132		
	6 " 10 "	24	40		
	11 " 20 "				
	21 " 35 "	19	24		
	36 " 50 "	4	6		
	more than 100,,	1	1		
		383	482	520	500

Taxation of Vineyards.

	Cap.	Simplum.	Fl.	krs.
Under 2 morgens	50 fl.	" "		12½
2 " 5 "	100	" "		25
5 " 8 "	200	" "		50
8 " 11 "	300	" "	1	15
11 " 14 "	500	" "	1	45

rising afterwards 200 florins for every 3 morgens.

From this table we see that the annual return from a morgen, two-thirds of an acre, is estimated very low. The average of the Steinberg vineyards for twenty years is half a pipe per morgen : now as the cheapest wine is worth in the Rhinegau 200 florins per pipe, the valuation at 50 florins, on which the simple rate amounts to $12\frac{1}{2}$ kreutzers, or 4*d.* English, is very moderate. When five simpla, as they are called, in the year are required, the majority of the Rhinegau vineyards do not pay more than about 2*s.* 6*d.* per acre. In the same manner the return supposed to be derivable from arable land is rated very low in all the German States, although the Governments went to vast expense and trouble, when the land-tax was regulated, to discover what the cost of cultivation under its rudest form amounted to. Prices also ranged generally low in the years in which this regulation was effected, and the result has been a very moderate assessment. In Nassau, Hesse, and Baden, the return having been determined by commissions of inquiry, and established at something like the rate found in Prussia, a tax of one kreutzer in the florin, or one in sixty, was levied upon the supposed net produce, to form what is called the simplum. The number of simpla to be levied for the year's expenses is determined in Nassau, Hesse, and Baden by a vote of the Chambers. The direct taxes, and not the indirect taxes and excise duties, form the fluctuating items of the budgets of these States. The customs' duties are regulated by the periodical congresses that assemble to fix the tariff of the 'Zollverein.' On adhering to this customs' league each of the German States that has representative assemblies was obliged to resign, by a vote of the Chambers, the arrangements of the customs' duties to the executive, and

they are managed in diplomatic form like treaties of peace and war. The Chambers have given up their claim to control the import, export, and transit duties, but retain the privilege of voting the number of simpla of which the land-tax is to be composed.

As the Government undertakes the charge of many things that in England form objects of local taxation, what we should call county and even parish rates are usually included in the consolidated tax raised from the land, and from the traders and industrious classes generally, whose assumed profits have been calculated, like those of the farmer, at a very low rate. In all the Rhenish States the care of the high roads is undertaken by Government. In Prussia a charge is specified for this purpose in the provincial budget. In Nassau there is a foundation fund, appropriated from the proceeds of the alienated church lands confiscated during the revolutionary wars. This fund furnishes a sum annually for the care of the high roads, another for augmenting the revenues of the poorer clergy, and a third sum in aid of education.

We have already noticed the excellent system of schooling that is met with everywhere in Germany, and must here point to a feature that has been generally disregarded by both French and English writers on this interesting subject, but which seems to us to form the mainspring that causes the German system to work so well. The schoolmaster in Germany is a public officer placed in the district to which he devotes his labour. His importance is in no way dependent upon the power of courting parents or of tyrannising over children. His acts are all public, and he is under the constant control of public opinion. But with these restraints against mis-

conduct, he has a powerful motive to exert himself. The expectation of promotion is ever before him. All the higher scholastic charges are filled by men who rise as it were from the ranks. In the grammar-schools young men from college enter as ushers and rise to be head masters. In the village schools skilful masters are promoted from places with small salary to larger schools where the remuneration is better. A meritorious teacher is sure to obtain an increase of salary where no opportunity of promotion presents itself.

By this excellent system not only is a vast amount of talent secured for the important office of public teacher, but the hope of advancing to the higher posts in the scholastic career induces a number of clever young men to devote their time to the tasks of ushers or under-teachers at low salaries. Thus a sufficient number of teachers can always be found, and the schools are well supplied with men who, not being fatigued with incessant labour, carry a freshness and cheerfulness to their classes that is highly beneficial. It is in this manner that with a very small expenditure a highly valuable course of education is now at the command of every German. The system of instruction at the village schools is admirable, and at the grammar and polytechnic schools in the larger towns it must be pronounced first-rate.

The common principle in Germany is to recognise no distinction of rank. The school is open to all, and the small fees (in villages, not amounting to many shillings; and in towns, but to one or two pounds annually) are paid by all alike. In the Duchy of Nassau a change has been attempted at Wiesbaden, which, by giving a select education to those who are willing to pay the small sum

of two pounds annually, allows a poorer class of scholars to be educated almost without fees.

The rates levied for making roads do not exempt those who use them from paying toll. The gates are usually met with at distances of 1 German or $4\frac{1}{2}$ English miles apart, and the toll on a two-horsed vehicle is generally about twopence. In the towns a much higher toll is commonly levied for paving-money. Roads between villages are made by aid of local contributions, and are kept in repair by the respective villages. The poor are also maintained by their fellow-villagers under various local arrangements, but food is happily not too dear anywhere on the Rhine to render it impracticable for the aged and even the partially infirm to earn in some manner their daily bread, without the aid of workhouses. There is a great deal of home-relief distributed in the towns by the overseers, partly from the voluntary contributions at churches, and partly derived from sums drawn from the revenues of the respective towns. A pauper is, however, unhesitatingly removed to his parish, and mendicants are in general not tolerated.

The prisons are also a charge on the general revenue. Their cost is diminished by a good system of prison-labour, out of the proceeds of which, too, a small fund is provided for discharged prisoners, a regulation which has a most salutary effect. Excellent prison discipline is established at Cologne and at Eberbach in the Rhinegau, at which places the system of secondary punishments is admirable. The charge for the police establishments is one of the heaviest, and in its present shape the police system is the most doubtful, as to any good resulting from it, of all the German institutions.

Besides the land-tax there are, in Prussia, some produce-taxes that press on the cultivation of the soil. One we have noticed, that on tobacco. In Prussia tobacco grown in portions of land exceeding six roods (about $\frac{1}{40}$ acre) is taxed at four different rates according to the soil. The first-class soils pay about $7\frac{1}{2}d.$, the second $7d.$, the third $6\frac{1}{2}d.$, and the fourth $6d.$ per six roods, or from $1l. 5s.$ to $1l.$ per acre. The immediate effect of this tax is to exclude tobacco to a great extent from the rotations of the farmers in Rhenish Prussia. In Baden, Hesse, and Rhenish Bavaria, where no tax is incurred by its cultivation, tobacco is extensively grown, and is found to be a very profitable crop.

Wine is also taxed in Prussia, after fermentation, at rates varying according to its quality, from $3s. 6d.$ to $9d.$ per eimer (fifteen English gallons). For the sake of these two duties, which bring in about $60,000l.$ annually to the Prussian exchequer, the whole principle of the 'Zollverein' is set aside, and the free internal traffic between the various States is constrained. Tobacco and wine pay a differential duty on importation into Prussia from the other German States that have not adopted the same system of taxation. Large quantities of tobacco are annually sent into Prussia from Baden and Bavaria. In the greater number of German States there are taxes on the transfer of land and houses, that would very much interfere with the marketable value of land if the forms of transfer were not otherwise easy, and the titles consequently good and clear. The stamp paid in Prussia for the contract of sale which, when registered, forms the title-deed or conveyance, is one per cent. on the purchase-money. In Nassau a tax of two per cent., besides

a stamp of $\frac{1}{4}$ per cent., is levied on transfers of land and houses. Similar charges are made in Hesse, Baden, and Bavaria.

In Prussia there are several towns which still retain a tax upon the grinding of flour, at the rate of $1s. 6d.$ for every scheffel of wheat, and of $3d.$ per scheffel for other grain. This tax is equivalent to nearly $8s.$ per quarter on wheat, and $1s. 4d.$ on the quarter of rye. About one-seventh of the towns of Prussia adopt this in lieu of an income-tax, which has been introduced into the other towns.

In general, we may remark that the taxes raised directly from the land and its produce in Prussia, furnish one-half of that portion of the revenue derived from taxation, and two-fifths of the whole revenue of the State. Amongst these must also be included the tax upon all malt used in brewing and distilling, although this tax is not raised until the malt is put into the mash-tub. Distillers then pay a duty of $\frac{1}{15}$ of a dollar, or $2\frac{1}{2}d.$, for a space equivalent to 20 quarts of mash room, from which it is calculated that one quart of whiskey, of 50 per cent. strength, can be extracted. For brewing, malt is taxed by weight, at 20 groschen, or $2s.$ per cwt., which is, perhaps, equivalent to $6s. 4d.$ per quarter. The small stills and breweries which we have mentioned as being frequently attached to farms, pay only five-sixths of the duty levied where distilling and brewing are independent trades. Beer brewed in small quantities, and for domestic consumption, is exempt from duty.

All the rates of taxation that we have named are very moderate where the system of cultivation is good, and the size of farms admits of a sufficient profit being

drawn from them by the cultivator. But in the present minute division of the soil they are felt to be very heavy, except where superior intelligence enables the farmer to study his market and suit his crops to it. Where this is not attended to, the profit that we have assumed as being common upon the Rhine, and which is very considerable, is, of course, not obtained. Where intelligence has been stimulated by accompanying prosperity in trade and manufactures, our calculations of the farmer's profit will often be found to be under-rated.

The following details of some large estates in Southern Germany will best serve to show the skill that is exerted in the management of large properties as compared with the peasants' system of cultivation. The morgen is that of Wirtemberg, and is to the English acre as 71 to 40, or nearly three-quarters of an acre.

Hipfelhof, near Heilbronn on the Neckar, contains—

490 morgens arable.
55 „ meadow.
15 „ vineyards.
250 „ forests.

Rotations.

87 morgens winter corn.
170 „ summer corn.
43 „ rape and poppies.
43 „ potatoes and turnips (Swedes).
103 „ clover and lucern.
44 „ tares (green), clover, and fallow.

490 morgens.

Stock: 7 horses, 14 oxen—in winter only 4 to 6 oxen.

Ibingerhof, near Weil :—

534 morgens arable.
83 „ meadow and garden.
28 „ common pasture.
325 „ forests.
85 „ fields let off.

1055

Rotations.

117 morgens spelt.
78 „ oats and barley.
52 „ rape-seed.
26 „ potatoes and Swedish turnips.
26 morgens tares and peas.
92 „ clover and lucern.
78 „ clover pasture.
65 „ clean fallow.

534 morgens.

Cattle: 12 horses, 6 oxen.

Details of Cultivation.

No. of Morgens.	Crop.	SPRING PERIOD, 50 Work-days.	
		No. of Morgens worked.	No. of Days with Team.
26	Barley.	Twice ploughed (a third time in autumn) 1 day to $\frac{2}{3}$ morgen. Harrowing and rolling 4 times, 4 morgens daily	52 87
39	Oats.	1 ploughing, 3 times harrowing	104 94
13	Ditto on fallow.	3 harrowings (broken up in autumn).	39 10
26	Peas and tares.	1 ploughing, 2 harrowings 2 ploughings (1 in autumn)	78 52 87
			360

No. of Morgens.	Crop.	SPRING PERIOD, 50 Work-days.	No. of Morgens worked.	No. of Days with Team.
		Brought forward		360
26	Potatoes.	4 harrowings	104	26
		3900 cwt. dung, 60 cwt. daily . . . . .	..	65
30	Meadows	(half in winter) 3600 cwt. or 115 loads of compost top dressing . . . . .	..	57
23	„	Manured with dung, 115 loads . . . . .	..	60
52	Rape-seed	Fallow-ploughing, 1 harrowing . . . . .	..	100
40	Lucern.	Four horse-harrowings. Carting green fodder, 2 horse-loads, 20 days	80	60
		Various other work . . . . .	..	50
				778
SUMMER PERIOD, 70 Work-days.				
52	Rape.	Twice fallow-ploughing	104	174
		Four times harrowing	208	52
		Manuring with 10,530 cwt dung, 60 cwt. daily . . . . .	..	175½
52	Rape.	Turning stubbles	52	87
13	Spelt.	Breaking up fallow, 2 ploughings	26	43
		Two harrowings	26	6½
18	Potatoes.	Earthing 3 morgens twice, per horse	36	12
83	Meadows	Housing hay and after-grass, 37 cwt. per morgen, 3071 cwt. . . . .	..	61½
92	Lucern and Clover.	¾ green } 2904 cwt . . . . .	..	58
		¼ hay }		
263	Corn and Rape.	Carting 3191 cwt. corn, 4806 cwt. straw = 320 loads . . . . .	..	160
	Green Fodder.	70 days, two horses . . . . .	..	140
		Sundry jobs . . . . .	..	100
		Carting tithe produce . . . . .	..	4
				1073

No. of Morgens.	Crops.	AUTUMNAL PERIOD, 55 Work-days.	No. of Morgens worked.	No. of Days with Team
117	Spelt.	1 ploughing	117	195
52	Ditto.	Ploughing in seed, twice harrowing	286	145½
13	Fallow.	Carting dung, 78 loads, 30 cwt. . . . .	..	39
13	Stubbles.	Carting dung after clover-seed, 52 loads . . . . .	..	26
18	Potatoes.	Ploughing up twice, 1 harrowing	54	64½
		Carting in 2704 cwt. . . . .	..	45
13	Fallow } idle }	Turning	13	22
52	Rape.	Ditto	78	130
26	Potatoes.	Ditto		
		40 days' green fodder carted, two horses . . . . .	..	80
		Sundry jobs . . . . .	..	60
				807

The calculation resulting from these data show

In Spring 778 days' work in 50 days = $\frac{778}{50} = 15\frac{1}{2}$ horses
 In Summer 1073 ditto „ 70 „ = $\frac{1073}{70} = 15\frac{3}{10}$ ditto.
 In Autumn 807 ditto „ 55 „ = $\frac{807}{55} = 14\frac{6}{10}$ ditto.

The above rotations are supported with 33 cwt. per morgen of horse and cow dung, which are carted out in 149 days by two-horse carts, at 120 cwt daily.

Carting and Spreading Manure.—The contract for manure at the Steinberg vineyard is 12 florins (1*l.* sterling) per morgen = 1*l.* 10s. per acre.

In the difference that lies between the profits to be

drawn from the system of cultivation adopted on large farms and that which the land-tax estimate assumes as the peasant's return, lies the whole secret of the slow accumulation of capital in Germany.

THE END.