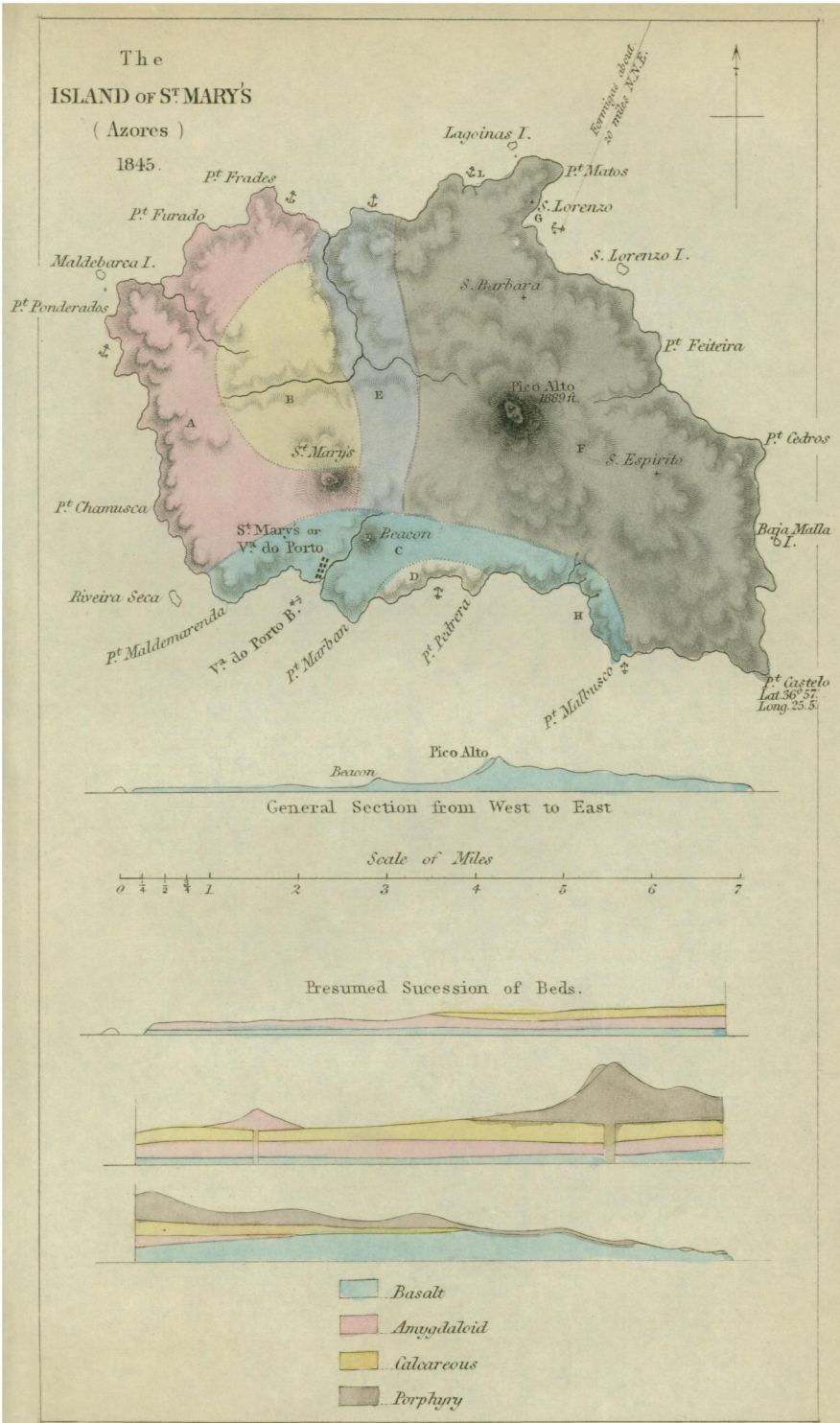
The greatest part of the logwood, however, is cut, and the land cultivated, by people who are in a state of modified slavery; and women are to be had as domestics under the same system, both in the state of Tabasco and Oaxaca; and it exists in other parts of the Republic. It happens in this manner—when a person is employed that is clear of debt, the first object is to obtain as much money and goods as they can from their employer; which they will take up, if allowed, often to an extravagant amount; and instead of endeavouring to pay their debt they in general get further into it. As the laws of Mexico compel the debtor to work out the debt, the party becomes bound to his employer; and it often happens, if either the man or woman are good hands at work, that they are induced to involve themselves so far as to have no power of clearing off their account for a length of time, or perhaps for ever: by this means their services are secured, and they are likewise compelled to work at the general rate of wages; should either party, however, be desirous of parting, the employer gives a paper stating the amount that is due; and with this the servant looks for another master, who has to take up the bill, and by paying it the servant becomes, until it is discharged, that person's property. If a man thus circumstanced leaves his employer and works for another without permission, he is liable to be punished by the alcalde's orders; and he may complain to the same authority against his master for ill treatment. And it is often the case that their value for service is represented by the amount of the debt. It is not unusual for a woman to be in debt from 200 to 300 dollars, and a man from 400 to 500, and sometimes much more. Employment being plentiful and food cheap, they could keep out of debt if they chose; and they occasionally work hard, but it is only by fits and starts: and there is a great want of habits of industry and economy among them.

VI.—*A Description of the Island of St. Mary (Azores).* By CAREW HUNT, Esq., H. M.'s Consul for the Azores.

THE Azores, or Western Isles, consist of nine islands, which occupy an irregular line, at unequal distances, stretching from the intersection of 37° N. with 25° W. (the situation of St. Mary's) in a W.N.W. ½ W. direction, to the intersection of 39½° and 31° the situation of Flores. The distance between these two points is about 400 geographical miles.

The names of the islands, following them from E. to W., are St. Mary's, St. Michael's, Terceira, Graciosa, St. George's, Pico, Fayal, Flores, and Corvo: the two first and the two last being



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separated by about 100 miles from the others, which form the central group of the Archipelago. Their aggregate area has been variously estimated by different authorities; but taking the trigonometrical measurement of the outlines laid down in Laurie's last chart of the Azores as a guide, the account of the Portuguese engineers may be considered correct, and the whole be stated at about 700 square miles. A more accurate statement may, perhaps, be given when the survey, which has been commenced by our Government, under the command of Captain Alexander Vidal, R.N., has been completed.*

The aspect of all the islands is very similar in general characteristics, presenting an elevated and undulating outline, with little or no table land; and rising into peaks, of which the lowest (that of St. Mary's) is nearly 2000 feet, and the highest (that of Pico) nearly 8000 feet above the level of the sea.† Their lines of seacoast are, with few exceptions, high and precipitous, with bases of accumulated masses of fallen rock; in which open bays, or scarcely more enclosed inlets, form the harbours of the trading towns. Their surface is irregular like their outline; an ascent leading from the sea to the central ridge, broken into successive acclivities by the manner in which the ejected volcanic matter has been deposited; and the communication between two such lines of ascent being frequently interrupted by the occurrence of deep ravines, cut by the rains of winter through the yielding soil.

The first discoverers of the Azores admiringly mention in their histories their densely wooded state, and the great size of the trees and shrubs. This is no longer a true picture. Great havoc was made by the discoverers themselves in burning down extensive tracts, as an easy mode of clearing the land; volcanic eruptions must have overwhelmed much of the remainder; and the demands of an increasing population probably completed the destruction of what these two causes had spared. Forests there are now none: small and young plantations, the property of private individuals, and occasional wilds of heath and shrubs, with orange gardens and a few straggling rows of poplars, make up the present phase of the "densely-wooded Azores." Some of the masses of lignite found in the ravines, where they protrude from the high side walls of pumice, tufa, and scoriæ, in which they are embedded, show to what a size the present species of myrica, cedar, myrtle, and Erica arborea once attained; trunks of the two first being found of 3 feet diameter, and of the last more than 12 inches, presenting their peculiar marks of growth, and being easily recognised in their state of lignite.

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* This excellent survey has been completed since the present paper was written.—Ed.

† The exact height of Pico Alto at St. Mary's is 1889 feet, and that of the Peak of Pico 7613 feet, both measured barometrically by Capt. Vidal.

It will be seen in the separate accounts of the islands* that there is little that is striking in their natural history, except, perhaps, the apparent inconsistency of its classes, in their geographical relation to each other. The animals and birds, few in number, are those of Britain; the fishes of a mixed British and West Indian character; the insects and plants partly British, partly peninsular (Spanish and Portuguese); but in no class are there types which exclusively ally this archipelago with either southern or medio-European localities.

The climate is particularly temperate and equable, the extremes of sensible heat and cold being however increased by the degree of humidity present in the atmosphere. The range of the thermometer is from 45° Fahrenheit, the lowest known extreme, or 48°, the ordinary lowest extreme of January, to 82°, the ordinary, or 86°, the highest known extreme of July, and near the level of the sea. Between these two points (both taken in the shade) there is, from month to month, a pretty regular gradation of increase or decrease, amounting to somewhat less than four degrees. Of other points in the meteorology of the Azores an account will be found under the heads of some of the particular islands; the separate description of which commences with the following account of St. Mary's.

St. Mary's.—The island of St. Mary is about 7 miles in its greatest, and 5 miles in its smallest diameter, and contains an area of 36 square miles, or about 27,000 English acres. It has nearly in the centre the double-peaked mountain of Pico Alto, 1889 feet in height, which falls on the E. and W. sides to a shelving base of about a mile in breadth, and 850 feet above the sea. To the N. and S. it throws out a range of undulating heights, which terminate at the sea in lofty mural cliffs of more than 200 feet in elevation. The E. side of this range is covered with hills, diminishing in altitude as they recede from the centre, and intersected by numerous gorges of increasing width and depth, the channels by which the heavy rains of winter reach their points of discharge. The W. side is a slightly inclining and undulating plain, also cut by ravines, terminating in cliffs more than 100 feet high. The aspect of St. Mary's is therefore on all sides perfectly bold; the central peak distinct, the subordinate range high and of varied outline, and the coast abrupt, precipitous, and based by the usual accumulation of fallen masses.

The surface on the W. side is much overlaid with stones, and bears a spare vegetation of the grasses and weeds of argillaceous soils; the central range is covered with the common heath, myrtle, and arbutus of the Azores, and the E. side is occupied for the

* Mr. Hunt kindly promised to communicate to the Geographical Society accounts of the other principal islands of the group, and has since sent home a description of St. Michael's.—Ed.

most part with the agricultural produce of the island. Of trees there are a few in small plantations, and there is an increasing inclination to extend the culture of the orange; but the shrubs of the mountains, which now contribute most to the wooded appearance of the surface, are fast disappearing under the axes of the fuel-cutters, and the demand for land suited to the cultivation of corn.

In its geology St. Mary's is not like the other islands, where the surface is of recent volcanic matter which conceals whatever may have been their original constitution, or the progress of their growth. It is of trap formation, and contains in its beds of marine shells proofs of its elevation from the sea. It is necessary to observe with respect to its exceptive nature, that the basalt, columnar and massive, which appears as its base, is also found in a narrow locality at St. Michael's, and gives reason to suppose that the two islands may have a mutual origin. There is also an exact identity in the older porphyry or porphyritic lava of St. Michael's and that which has formed the mountain of Pico Alto; while the decomposed syenite described lower down, as found at the latter place, closely resembles some of the ejected masses of that island.

Count Vargas de Bedemar, a Swedish naturalist, who published an account of the Azores in 1837, is of opinion that St. Mary's is a fragment of Madeira. There is certainly a resemblance in the predominance of pectinal shells in their marine deposits; but the former has no beds of helices or other terrestrial shells, nor does its calcareous matrix, which is of much harder consistence than that of Madeira, enclose any vegetable remains. On the other hand, there is a great similarity in these respects between St. Mary's and Sicily (a circumstance which deserves further investigation), whose testaceous remains include all the species which have been recognised here.

The lowest bed, which is of somewhat different elevation at the E. and W. sides, is a blackish basalt, glittering with minute crystals of iridescent olivine. It is in most parts massive and compact; but on the S. shore occurs in contorted and irregular columns, and, in a small division to the eastward of Villa do Porto, in a distinctly prismatic form. In the last locality the columns rise to a nearly even height above the field in which they appear, inclining towards the N. at an angle of about 30°. It would seem that they had originally a level upper surface, and that they were thrown into their present position with the same general shift which takes place in the partial upset of a lose pack of cards.

In more than one part of the base are dikes of a harder and lighter-coloured basalt, varying in thickness from 2 to 5 feet, which, however, have not divided the overlying strata.* A fur-

* A dike crosses the bay of Villa do Porto, running from S.W. to N.E., in the direction of the Beacon Hill, with which it may possibly be connected.

ther change was effected by the creation of new and extensively ramified fissures in the base, and the injection of a fused calcareous substance, which has taken the semi-crystalline texture, and has much the colour of the Lisbon limestone. These veins are less abundant on the W. than on the E. side, from which they are doubtless continued to the N.E.; the Formigas rocks, at a distance of 20 miles, being equally full of them.

The character of the lower bed having been described, the relative position of the others will be better pointed out in the following Table, and by a reference to the accompanying map.

Letters of Reference.	SECOND BED.	UPPER BED.	SURFACE.
A.	A blackish porphyritic amygdaloid, passing into coarse red wackè—the amygdaloid possessing but a small proportion of carbonate of lime; the wackè abounding in augite and imperfectly crystallised hornblende.		A strong greyish argillaceous soil, mixed and covered with small decomposing basaltic pellets, which display a concentric laminated structure.
B.	A scarcely penetrable concrete of marine shells of the Tertiary period, so firmly imbedded in a granular semi-calcareous cement as in no case to come out entire. The species recognised are as follows:—Pecten jacobæus—Tornatella fasciata—Turbo rugosus—a natica? a cytherea? and a turritella? Rounded nodules of the preceding amygdaloid are found imbedded in this concrete; probably derived from its surface, and a proof of its existence below.		The same.
C.	The columnar basalt (prismatic near D) before described. It is uncertain whether it is a part of the base or a more recent bed.	A new porphyritic amygdaloid, containing perhaps 50 per cent. in nodules of carbonate of lime.	The soil the same as before; but having loose masses of cellular amygdaloid not porphyritic—the cellules encrusted with zeolites and other trappean minerals.
D.	The new porphyritic amygdaloid appears, here and there, to have forced itself between the base and the shell-bed.	A confused concrete of sand, shells (of the species described), and a fine-grained tufa, with horizontal layers of carbonate of lime. The shells very brittle.	The same.
E.	The same as at A.	The porphyry of Pico Alto.	A friable scoriaceous soil, coloured deep red by iron, and very barren.
F.	The only discoverable bed above the base in this division is that of Pico Alto; composed of a light brown porphyry, the base trachytic, and containing crystals of dark red and glassy felspar.		A fertile argillaceous soil, occasionally strewed with loose masses of basalt.

These data render it probable that the beds of the island lie in the successive order displayed in the section subjoined to the map. And it would appear, with respect to the course of changes, that

the fundamental bed of basalt, when forming the bottom of the sea, was not level, but ascended to the eastward, as if it had flowed from that direction; that a submarine eruption produced the second beds of amygdaloid and wackè, and that to this succeeded a deposition of marine shells. From the partial fusion of these may have been derived the calcareous veins now found in the basalt, and from a mixture of the fused matter with sand, the cement which now so firmly holds the shells together. The elevation of the whole, and the formation of the porphyritic mass in the centre, perhaps concluded the series of operations; which of the two last had precedence, there might perhaps be found positive indications to prove. There are no marks of marginal erosion by water, which would have been left if the appearance of the higher parts of the island had long preceded that of the lower. If the rounded nodules of amygdaloid, now embedded in the shell limestone in great numbers, and larger pebbles found in other localities, are to be regarded as proofs of marginal water-wearing, it would appear that the island has been subjected to an alternation of elevation and re-immergence in water of great depth and consequent pressure.

Near the base of Pico Alto, by the side of the road leading from the tower to Saint Lorenzo, is a high bank of soft composition, which, at a few feet distance, much resembles syenite. It is possible that this may be the decomposed remains of a syenitic dike, and that Pico Alto was not without its eruptive disturbance before it issued from deep water. Some of the ejected *débris* of the quiescent volcanoes at St. Michael's exactly resemble the substance of this bank, except that they have lost little of their original hardness and consistence. The dikes which have been left after the later of the operations described might perhaps be discovered in a boat; but the height of the perpendicular cliffs renders the search by land equally dangerous and uncertain.

The large masses, which now appear as small islands off different parts of St. Mary's, form a striking feature in its geology; presenting as they do proofs of the immense force by which they were detached. The largest, to the westward, appears to have sunk on one side; while another on the eastward, which contains a cave full of stalactite, would seem to be a fragment fallen from the semi-circular and crater-like excavation at G.

On the N. and E. sides and near the S.E. angle are copious springs of excellent water; in the other parts of the island there are none of any volume, and the inhabitants of the town suffer great privations in summer in consequence. The largest springs are found at H. and L., where they are of sufficient power to turn a common overshot mill-wheel, and prove, by their undiminished

flow in summer, that they are the regular discharges of large subterraneous reservoirs. In the heavy rains of winter the ravines all over the island carry off torrents of water; leaving, however, sufficient to percolate through the higher strata to keep the regular springs open all the year round. At Villa do Porto a ravine has been cut out about 80 feet in depth, the water escaping by a similar cavity in the dike which leads to the Beacon Hill

The simple minerals are not numerous, but they are in general excellent examples of their species. The augite of Villa do Porto occurs in splendid and well-formed crystals, many of them more than three quarters of an inch in diameter. To the eastward small but well-defined crystals of analcime and sarcolite are found in the cellular amygdaloid; on the sea-shore E. of Point Malbusco are beautiful specimens of stilbite; while on the northern side and near Saint Lorenzo there is an abundance of large mesotype, thomsonite, and arragonite, but, unfortunately, so firmly retained by a hard matrix that the specimens extracted are seldom satisfactory. Near the parish-church of Santo Espirito subterraneous deposits of a soft ochrey earth are explored by the native masons for use in making cement; and the sea-sand abounds in grains of specular and octahedral iron.

The plants do not differ from those of the other islands, of which a list will be given under the head of St. Michael's; but the number of aloes in flower (exotics), and prickly-pear cactus in fruit during many months of the year, give to St. Mary's at first sight a more tranquil appearance. Roccella tinctoria grows to a larger size here; while of the Algæ, largussum vulgare and vacciferum, so abundant at Flores, appear to be unknown, and Zonaria pavonia grows in greater luxuriance. Is it Humboldt who mentions that various arborescent ferns of great size are found here? None exist at present.

No proper account of the climate can be given, as no one has either a barometer or a thermometer. The larger springs of water have at their points of discharge an uniform temperature of 68°, which would prove that the mean annual heat is not much greater here than in the other islands. It is said that less rain falls than at St. Michael's, for which the proximity of that island and the greater height of its mountains (4000 feet) may be a sufficient cause.

The population was taken by census in 1840, when the total number was 4666 souls, living in 1081 houses. About one-half this number of houses forms the small town of Villa do Porto and the hamlets of Santo Espirito and Santa Barbará, the remainder consisting of single dwellings built on the farms cultivated by their respective occupiers. A further reference to the official returns

shows the people to be chiefly engaged in agriculture. Of the whole number there were—

	Males.	Females.
Under seven years of age . . .	494	472
Above „ „ „ . . .	1719	1981
Proprietor farmers and their families .	59	64
Non-proprietor ditto „ „ . .	369	406
Agricultural labourers „ „ . .	954	1108
Making a total of	1382	1578
	2950	

The predominance in the number of females over males, which, it is to be observed, is confined to the ages above seven years, is to be attributed to the annual emigration of agricultural labourers of the latter sex.

There were in the year preceding the census, 195 births, 29 marriages, and 173? (the official number 73 must be an error) deaths. At this rate population should be increasing; but the contrary is stated to be the fact. The author of Boid's Account of the Azores (published in London in 1837, but written about 1832) states, without giving his authority, that the population of St. Mary's was then 5500 souls, and that it had decreased very much during the preceding twenty years. It is difficult to ascertain the truth of this, as the census was formerly much neglected in these islands, and the authorities being opposed to the emigration of the inhabitants, it is carried on in a great measure clandestinely. The proportion of births to marriages would show that there is a pretty equal number of the former legitimate and illegitimate.

The people are generally well-formed and active, and their complexion and cast of features partake more of a northern character than is generally seen in the Portuguese. The men are of good height and muscular, although frequently exposed to scarcity of food. In their manners they are mild and engaging, ready to lend each other services or provisions, and scrupulously exact in salutations, to which they give greater apparent cordiality than is observed in the neighbouring island. They are of grave temperament, and disinclined to popular sports and amusements, owing probably to the constant and sensible difficulties of their existence, and the ever-present reflection that they are, in their own words, "very poor." Yet, superficially, there are no indications of this poverty: their dress is whole and cleanly, and their houses are well kept, both inside and outside, and in good

repair. The cheapness of lime, pottery, and tiles enables them, at a trifling cost, to provide themselves with a sufficient stock of necessary household utensils, as well as to preserve the roofs and plaster of their houses. Indeed, there is perhaps no country of the same resources where the external appearance of the houses lends a more cheerful air to the landscape, or shows more outward signs of prosperity and generally diffused wealth.

Their language shows the effect of their insular situation in a number of local terms not understood elsewhere. They are also distinguished by a peculiar plaintive pitch of voice in speaking, which is more strongly perceptible when they are excited or angry.

Judging from the opinions expressed by the people as to the state of public morality at St. Michael's, it would seem that vice is not prevalent in their character. Nor do the annals of the island exhibit any recent examples of grave crimes, or any great amount of minor offences. The prison of the place, intended for the confinement alike of debtors and offenders, is seldom tenanted. Such an apparent result might arise from other causes than a high state of morality in the people; but those causes would be known, and if they comprehended neglect of their duties by the authorities, the general complaints would be too distinct not to be well known. Will not this be considered an unusual state of things, when it is added that St. Mary's is made, by the judicial authorities of the other islands, a kind of penal settlement for the transportation of minor offenders?

The dress of the men is a coarse woollen or linen jacket, waistcoat, and trowsers, of domestic or British manufactured materials; the feet are bare; the hair cut; and the head covered with a carapuça. The carapuça is a close skull-cap, with a very large front, useful in shading the eyes from the sun, and a back curtain which falls on the shoulders, while it is brought round to the front and fastened under the chin. The dress of the women is of the same materials, closely covering the person; the feet are bare; the hair braided and plaited down the back; the head-dress the same as that of the men, but sometimes exchanged for a plain white handkerchief.

The schools of public education established by government (at the expense of the local funds) are not attended by more than fifty-two pupils, all males; nor is there any growing disposition to increase this number. The course of education does not comprehend more than the rudiments of reading and writing, and after making a little progress in these branches, the boys are removed, in order that they may enter upon those occupations by which they may earn their subsistence. A few, the children of persons in better circumstances, complete this rudimentary course.

The religious duties of the people are, as to externals, fulfilled with great exactitude and regularity, and more personal respect is paid by them to their clergy than is observed in the neighbouring island. They are, however, aware that this body, in receiving salaries, small though they be, from government, no longer depend exclusively on their parishioners for support; and they therefore contribute few voluntary offerings to increase the pittance paid to the clergy.*

The people do not appear to be subject to severe internal diseases; but some of an external eruptive character are both widely spread and aggravated. As a consequence perhaps of their poor diet, the summer no sooner sets in than the itch becomes almost universal, exciting no remark, and causing no feeling of disgrace. The local pharmacopeia, which is composed chiefly of herbs, is insufficient to check its progress; and the only cure expected is the return of winter, with its specific of colder weather.

In investigating the occupations of the inhabitants, nothing is more striking than the tenure by which the agricultural portion generally hold their land. The farmer is a tenant-at-will, paying to the landlord in the nature of rent, after deduction of tithe from the whole, *one-half* of the produce in kind. An average rent of between five and ten bushels of wheat per acre (the wheat selling for about 6*s.* the bushel) is sometimes paid; but the average of production being no more than fifteen bushels per acre, the tenant, in common years, gains nothing by this commutation, and is a decided loser in times of scarcity. The old system of a partitive rent naturally finds support from long-established custom, and the cases in which rateable rents are paid must be viewed in the light of individual experiments. Such a mode of tenure is obviously ruinous to the cultivator, while it enhances the income of the proprietor, and gives him a despotic influence over his tenantry. If the numbers of the population have decreased, and still continue to decrease by emigration, the radical cause will be found in this tenure of land; for while the peasant of St. Mary's can earn a comfortable subsistence at St. Michael's, or become wealthy in the Brazils, he is not likely, with the knowledge of those results of emigration, to prefer an existence bordering on starvation in his own island.

The whole quantity of agricultural produce is comprised in 2500 quarters of wheat, 2500 quarters of Indian corn, 200 boxes of oranges, and a small quantity of wine, potatoes, beans, and other articles not registered. About half the wheat and all the oranges are exported; the remaining provisions are consumed on the

* The superior priest receives 40*l.* a-year, the inferior priests 30*l.*, and the curates 20*l.* a-year each.

island. To the growth of this produce is appropriated one-sixth of the whole area; the remainder is sterile. Of the western plain the greater part is fit only for pasturage, the rest being either barren mountain-land or underwood. There are about 2800 head of horned cattle, 2000 sheep, 1200 pigs, 600 goats, and 100 horses and asses. For these the grass and other fodder of the island do not afford a sufficient supply of food; and they are therefore fed in winter on the bruised leaves of the aloes, which are cultivated for the purpose on the stony ground and the otherwise unprofitable sides of the ravines.

The land communications are extensive, and in dry weather excellent; the nearly exclusive use of ox-carts for transporting produce maintaining a good width, and the firm consistence of the soil giving them a resisting and durable foundation. The island is on all sides easy of defence against external attack, the various landing-places being close to and commanded by high positions, and without cover for a disembarking force. The artificial defences are at present insufficient in number and in bad repair, and the number of landing-places would render a large force necessary for the repelling of invasion; as may be seen on reference to the map, on which they are marked with an anchor.

The best internal positions are those on the eastern side, except that any attempt to cross the deep ravines of the western in the face of an effective enemy, would be very disastrous. The deepest of these lies close to the town, and would be easily defended under cover of the houses; while in turning it, a force would be commanded by the adjacent Beacon Hill to the eastward. There are several disused convents and other large buildings in good repair, which would serve as good and easily-defended quarters for an occupying force, and the surplus production of corn and cattle would give for their use an abundant first supply of provisions. On the whole subject, however, the best information could be given by Captain Vidal, whose name has already been mentioned, and whose profession and experience in surveying would render him a high authority on a question of this nature.

VII.—*A Description of the Island of St. Michael (Azores).* By Mr. Consul CAREW HUNT.

1. THIS island, as delineated in the accompanying map, lies between the 25th and 26th meridians of W. long., a little S. of the 38th parallel of N. lat., describing a curved figure of pretty regular breadth as a whole, and occupying an area of 224 square miles. The chief town, Ponta Delgada, is at the W. side of a