

EMPLOYING PRISONERS

ON

PUBLIC WORKS

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COMPLIMENTS OF

F. G. PETTIGROVE,

General Superintendent of Prisons.

VARIOUS METHODS OF EMPLOYING
PRISONERS

ON

PUBLIC WORKS AND LANDS,

AS REQUIRED BY CHAPTER 52 OF THE RESOLVES OF 1897.

FEBRUARY, 1898.

BOSTON:
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
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SPECIAL REPORT

OF THE

GENERAL SUPERINTENDENT OF PRISONS OF
MASSACHUSETTS

UPON THE

VARIOUS METHODS OF EMPLOYING PRISONERS

ON

PUBLIC WORKS AND LANDS,

AS REQUIRED BY CHAPTER 52 OF THE RESOLVES OF 1897.

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Commonwealth of Massachusetts.

OFFICE OF THE GENERAL SUPERINTENDENT OF PRISONS,
STATE HOUSE, BOSTON, Feb. 1, 1898.

To the Honorable the Senate and the House of Representatives in General Court assembled:

In conformity with chapter 52 of the Resolves of 1897, I have the honor to submit herewith a special report on the various methods of employing prisoners on public works and lands.

FREDERICK G. PETTIGROVE,
General Superintendent of Prisons.

REPORT
ON THE
VARIOUS METHODS OF EMPLOYING PRISONERS
ON PUBLIC WORKS AND LANDS.

The annual report of the General Superintendent of Prisons for 1895 contained a suggestion as to the employment of certain prisoners in preparing materials for the highways and in reclaiming waste lands. This suggestion was not considered by the Legislature of 1896; but early in the session of 1897 Mr. William H. I. Hayes, a member of the House of Representatives, procured the passage of an order directing the legislative committee on prisons to inquire into the employment of prisoners on State highways. Mr. Hayes explained that the purpose of his order was to ascertain if such employment was practicable; and he suggested the appointment of a commission to examine into the matter and report upon it. The committee agreed that such an inquiry was desirable; but, as the superintendent had considered the subject in two annual reports, it was decided to be as well to entrust the examination to him as to create a special commission for that purpose. Consequently the committee reported the following resolve, and it was adopted by the General Court:—

Resolved, That the general superintendent of prisons be directed to make an examination of the various methods of

employing prisoners on public works and lands, and to submit a special report thereon to the general court in the month of February in the year eighteen hundred and ninety-eight. The said general superintendent, with the approval of the governor and council, may expend a sum not exceeding nine hundred dollars for carrying out the purposes of this resolve.

It is well known that more important enterprises have been prosecuted with convict labor in England than anywhere else, and therefore it may appear to some member of the General Court that the inquiry should have included an inspection of the methods of public work in that country. It will be seen, however, from the amount of the authorized expenditure, that the committee did not contemplate any extended tour of personal investigation, and certainly did not anticipate an examination of public works abroad. Reference to this matter is merely intended to show that all the sources of information have been considered; and it will appear on another page that an effort has been made to obtain, by correspondence, sufficient data to give a view of the present methods of employing prisoners on public works in England.

In the preparation of this report all the later documents dealing with convict labor have been consulted, but the greater part of the help in that way has been derived from the second annual report of the United States Commissioner of Labor. That document, issued in 1887, summarized about everything of any value that had been written on this subject up to that time. Some more recent publications contain fuller discussions of the employment of prisoners in making highways and in similar work, but the reports are exceedingly uninformative in relation to the methods of guarding prisoners employed

in that way. For the purpose, therefore, of gathering reliable information concerning the safe custody of convicts engaged in such work, visits have been made to New York, Virginia, North Carolina and Georgia; and materials for this report have thus been secured from the actual view of convicts at work outside of prison walls. Acknowledgments of assistance rendered in this examination should be made to the officials of these States; and thanks are also due to the prison officials of other States for their prompt and courteous replies to inquiries upon this subject.

Agreeably to the intention of the committee, it is proposed to make this report as brief as may be consistent with a reasonably comprehensive statement of the subject. To that end the accounts of farming and road making will be restricted to the existing methods of such work. In the part relating to public works generally, however, allusion will be made to some enterprises completed many years ago.

It should be borne in mind that this report is designed, according to the order of the General Court, to give an account of methods of employing prisoners, and that a reference to any system does not imply an endorsement of it. To emphasize this point, and to avoid any ground for a misapprehension, it is declared, at the outset, that there is no purpose in this document to suggest the use of any means of custody that would offend the public sense of this community. In other words, there is no intention to approve the use of the lash, the chain-gang or the bloodhound. Nevertheless, there will be shown in these pages a strong disposition towards more rigor-

ous treatment, by proper methods, of the sturdy beggars, tramps and other misdemeanants.

For the sake of convenience, the report is divided into three principal parts, as follows: first, farming; second, road work; and third, public work in general. In the concluding pages there will be found observations and suggestions in regard to available methods of work for prisoners in this State.

FARMING.

No better illustration of the practicability of employing convicts in cultivating land can be found anywhere than is afforded at the State Farm in Bridgewater, nor would it be possible to find more humane and successful methods of control than prevail here. It is therefore unnecessary to devote much space to an account of the manner of keeping convicts who work at farming elsewhere; but, for the purpose of giving a general view of farming operations by prisoners, a brief account of that work in some other States is presented.

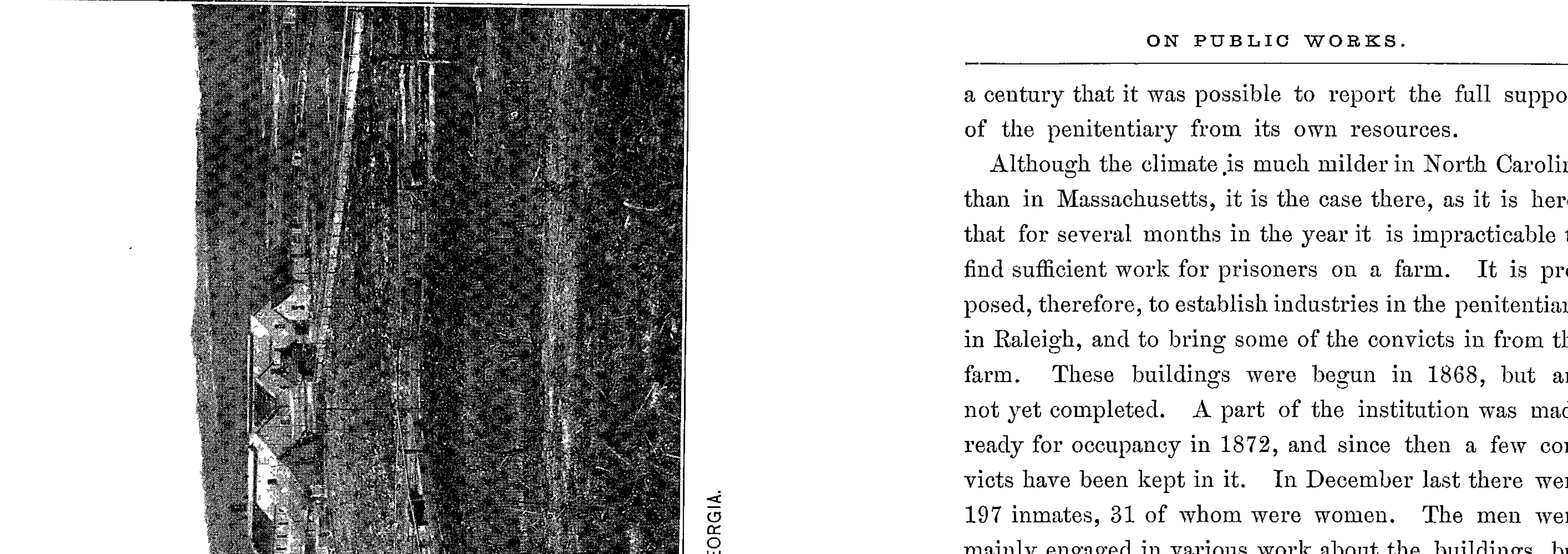
The most extensive farming operations by convicts in this country are to be found in North Carolina. It appears by the report of the board of directors that 14,600 acres of land were under the control of the penitentiary by lease or otherwise in 1896. The area cultivated in all crops that year was estimated to be 11,300 acres. Nearly 900 convicts were employed on this land. The bulk of the products consisted of cotton and corn. The farming operations were so profitable that in 1896 the penitentiary paid all its expenses. This was the first time, however, in its history of more than a quarter of

a century that it was possible to report the full support of the penitentiary from its own resources.

Although the climate is much milder in North Carolina than in Massachusetts, it is the case there, as it is here, that for several months in the year it is impracticable to find sufficient work for prisoners on a farm. It is proposed, therefore, to establish industries in the penitentiary in Raleigh, and to bring some of the convicts in from the farm. These buildings were begun in 1868, but are not yet completed. A part of the institution was made ready for occupancy in 1872, and since then a few convicts have been kept in it. In December last there were 197 inmates, 31 of whom were women. The men were mainly engaged in various work about the buildings, but a few were employed in making wagons for use at the farm. The women were employed in laundry work and in the manufacture of clothing for the prisoners. A phosphate mine has recently been purchased, and this also will be worked by convicts.

The state of affairs in North Carolina indicates that, even under especially favoring conditions, agricultural employment cannot be relied upon to furnish full occupation for convicts; it is available for only part of the year. While, therefore, it may be made exceedingly useful in connection with other forms of work, it can never become wholly a substitute for mechanical or other industrial employment.

In Georgia, prisoners are employed in outdoor work, but none of the State convicts are engaged in public work of any kind. The only reason for mentioning that State under this head is that some of the leased convicts



A CONVICT CAMP IN GEORGIA.

are used in farming operations. Although they work in that way for private individuals, the method of guarding them is of as much interest as if they worked for the State; and it may be useful to refer to the conditions of the camps established and maintained by the lessees. The lease system has been so often fully portrayed that only a short account of it is needed here.

Under this method the State turns over to lessees the care, the custody and the discipline of all its convicts, receiving a stated sum annually as compensation for their services. The State has no prison buildings of any kind, but there is an official known as the principal keeper of the penitentiary, who exercises a general supervision over all convict camps, and who inspects them frequently in person or by deputy. The officers who have the immediate charge of the convicts are appointed by the lessees, and, although these appointments are subject to the approval of the principal keeper, any one of the appointees may be removed without such approval.

There are twenty-five convict camps in Georgia, and at eight of them farming operations are carried on. There is also one camp where the sole occupation is the working of a turpentine farm, and another where part of the convicts are engaged in the same way. At the other camps the work consists of brick-making, mining, logging, operating sawmills and making railroad ties.

The principal camp is at Oakdale, about eight miles from Atlanta. At this place there are 160 prisoners employed in brick-making. Machinery is used, and the output is a large one. In some other places in the south brick-making is done by convict labor, without the use of machinery. None of the convicts work in a chain-

gang, but at night they are fettered to a chain extending along the row of bunks where they sleep. This precaution against escape is made absolutely necessary by the insecure condition of the buildings, a view of which accompanies this report, and serves to illustrate not only this place, but to give also an idea of the primitive construction of prison buildings in that State. Another thing that tends to prevent escapes is the presence of the dogs, that are always ready to be put on the track of a fugitive. The punishment of refractory convicts consists of whipping, administered with a leather strap by the superintendent or "whipping boss." A report of all punishments is made each month to the principal keeper.

The governor of Georgia, in his message to the General Assembly last October, advocated a change, by which the State would take full control of the convicts. In the report of the principal keeper the governor's views are amplified, and a plan is outlined for the creation of a prison system. Neither the governor's message nor the report of the keeper advocates the employment of convicts in farming. The principal keeper argues against that work, because, in his opinion, the expense of procuring sufficient land for a State farm would be disproportionate to the benefit from it.

Some farming is also done by prisoners from the State Penitentiary in Richmond, Va. This work was undertaken as a means of relieving a crowded prison. In the prison buildings at this place there are 1,200 inmates kept in less than two hundred cells. About 900 of the prisoners are engaged in the manufacture of boots and shoes. The State has recently leased a large tract of

land a few miles from Richmond, and about 150 convicts are at work there. The product of the land will be greatly increased when it has been put into good condition. Much of the work now consists of clearing and draining.

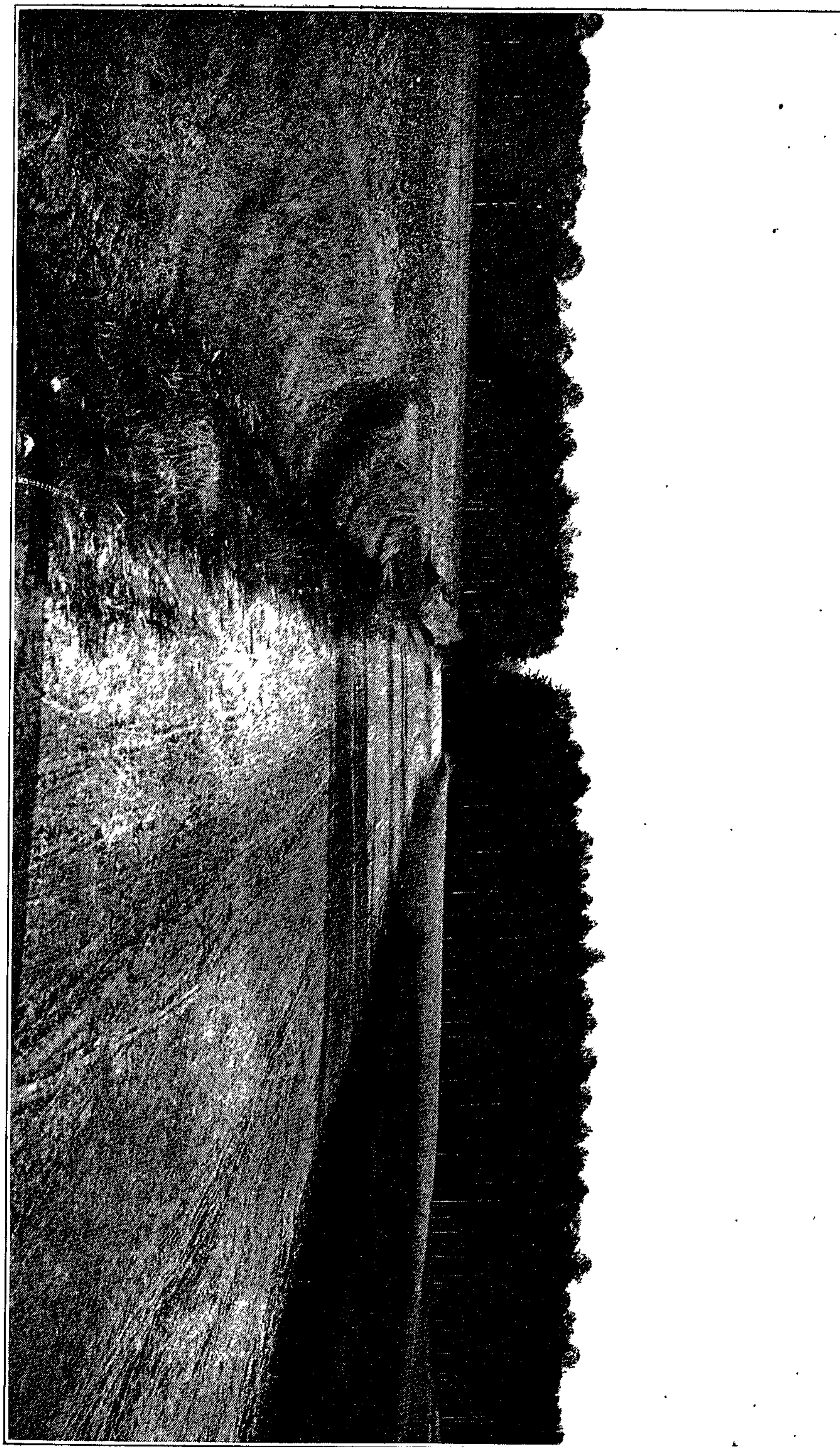
There are no other farming operations by convicts of sufficient extent to furnish information other than that readily obtained by observation in this State. At many prisons small tracts of land are cultivated by the prisoners. A good example of this kind of work can be seen at the Massachusetts Reformatory in Concord. Farming with the help of the inmates is also carried on at the Reformatory Prison for Women in Sherborn. At some of the houses of correction similar work is done, notably at Fitchburg, Ipswich and Greenfield.

ROAD WORK.

Among the documents consulted for information as to public work for prisoners is one of especial value, issued by the United States Department of Agriculture, under the title of "Notes on the Employment of Convicts in Connection with Road Building." This pamphlet was prepared in 1895 by Gen. Roy Stone, special agent and engineer. It gives a complete view of the legislation in North Carolina, but since it was issued the California law has been amended, as will be noted in the reference to road work in that State.

In North Carolina it is said that the problem of providing public highways has given the people more concern than any other subject, and that the question of

ROAD NEAR RALEIGH, NORTH CAROLINA, BUILT BY CONVICTS.



convict labor is second only to that of the roads. The Legislature of that State attempted a solution of both problems by adopting what is known as the "Mecklenburg law," authorizing the general employment of convicts in road-making, or the alternative system of building and keeping in repair public roads. It was passed to take the place of the old method, under which each able-bodied man was required to give a portion of his time each year in repairing the public highways. The citizen has now the option of giving his labor or of paying money instead of it. This law is in operation in thirty counties, and is broad enough to allow the employment of convicts in other counties than where they are convicted. The lease system is not permitted, and it is distinctly required that the prisoners shall receive proper care and custody.

Outside employment for convicts has not been a novelty in North Carolina for many years, for before this law was passed they were engaged in similar occupations. During the most active period of railway extension—from 1875 to 1887—a large number of prisoners was employed in railroad construction. When this work fell off there came the need of other occupations. It was obligatory upon the prison officials to provide remunerative employment, if possible, because the constitution requires that "it shall be steadily kept in view by the Legislature and the Board of Public Charities that all penal and charitable institutions should be made as nearly self-supporting as is consistent with the purposes of their creation."

One of the methods of preventing the escape of convicts employed on the highways near Raleigh is to place

upon the ankle of any long-term prisoner a shackle with a movable bar attached. The shackle is padded in such a way that it causes no injury to the wearer, and the bar does not interfere with the prisoner's movements while at work. If, however, he should move too quickly, as if to run away, the bar would immediately drop down and impede his progress. There seems to be no difficulty in guarding the prisoners who work on the roads; and when employed in the summer at a long distance from the barracks they are lodged in tents.

One of the views accompanying this report shows a section of a road built by convicts near Raleigh. The roadway is 16 feet wide, and the macadam material 8 inches thick. Roads have been built there as cheaply as \$800 a mile, and the most expensive of them cost only \$1,800. This furnishes no criterion for Massachusetts, because it would be impossible here to guard, shelter, clothe and feed convicts for 21 cents per day, which is about the average cost in that county.

In Georgia many county prisoners are employed on the highways. In Fulton County all prisoners are thus engaged. Some of the city convicts also work on the streets of Atlanta. These prisoners do not work in a chain-gang, but are constantly guarded by officers armed with rifles. It is unnecessary to give a full description of their work, as the conditions are substantially like those already referred to in the report on North Carolina. There is a great difference, however, between the roads in the two States. In this report there are given two views of the road work by convicts in Fulton County, Ga. The chairman of the department of public works

ROAD BUILT BY CONVICTS IN FULTON COUNTY, GEORGIA.



in that place estimates that the entire cost of building these roads was about \$3,500 a mile. It will be seen from the pictures that they appear to be of superior construction, and fully equal to the requirements of a good highway. While the prisoners here are not supported as cheaply as in North Carolina, the expense of keeping them is yet much below the cost of maintaining prisoners in Massachusetts.

In Delaware a new road law was passed in 1893. It directs that the "Levy Court of Newcastle County shall advertise bids and proposals for the building of a suitable structure for confining prisoners, the same not to exceed in cost the sum of \$20,000." The number of prisoners for whom it is proposed to furnish accommodations is not stated, but it would be interesting to see what kind of a prison for any considerable number of inmates could be provided for that amount, if attention were given to the sanitary features which are considered indispensable to our jail construction. This statute directs also the purchase of a quarry and the employment of prisoners in breaking stone.

It does not appear to be the purpose of the law to put any prisoners at work on the highways, but only to utilize their labor in preparing materials for macadam roads. The law further declares that eight hours shall constitute a day's work, and hard labor shall be performed between the hours of eight o'clock in the morning and five o'clock in the evening. This provision is of especial interest in view of the proposal, several times made in Massachusetts, to restrict by statute the day's work for prisoners.

In June last His Excellency the Governor appointed the General Superintendent of Prisons as a delegate to the National Conference of Charities and Corrections in Toronto, Ontario, and advantage was taken of the opportunity to visit the St. Vincent de Paul Prison in Montreal when returning from that meeting. This prison contains about 400 inmates, but no mechanical industries are maintained. About 20 prisoners are engaged in breaking stone with hammers, and the others are employed in various duties about the prison buildings. The stone breakers work the entire year, and are kept employed in a shed that can be sufficiently warmed in winter. This instance is an exceedingly useful one, because it proves that convicts could be kept at breaking stone in Massachusetts all the year round, if such work can be carried on in Canada, where the climate is more rigorous than ours; and it entirely refutes the theory that it is impracticable to employ prisoners under the hard conditions which free workmen are compelled to endure in the pursuit of a livelihood.

The latest and most comprehensive law on the subject of employing convicts in road work was enacted a few years ago in California. In General Stone's pamphlet this law is briefly explained, but it has been changed in some particulars since that document was published. For the purpose of giving a comprehensive idea of the present California law enacted in 1897 its provisions are briefly summarized as follows:—

The State Board of Prison Directors have control of the rock or stone crushing plant established at Folsom.

The plant must be operated by convict labor and by the application of the mechanical and water power belonging to the prison. The only free labor authorized in connection with it is such as the Board may deem necessary for superintending and guarding the convicts.

In selling the product, preference must be given to orders received from the Bureau of Highways.

The selling price shall be the cost of production, with 10 per cent. added, provided that no rock shall be sold for less than 30 cents per ton.

The two sections following direct the manner of ascertaining the cost, and authorize the directors to lease railroad cars for the delivery of the product.

There are no other provisions in the law that seem to be peculiar to this industry, but it contains one proviso as to appropriations which deserves especial mention, because it is a great improvement on our method of maintaining the industries. The law sets aside the sum of \$5,000 as a permanent revolving fund for operating and maintaining the rock-crushing plant.

In order to obtain the latest and most reliable information concerning the operation of this law, a letter was addressed to the warden of the State Prison at San Quentin, who kindly secured the following statement from the warden of the Folsom Prison, where most of the work is done:—

OFFICE OF WARDEN, STATE PRISON AT FOLSOM, CALIFORNIA,
REPRESENTING SACRAMENTO CO., CAL., Dec. 13, 1897.

FRED. G. PETTIGROVE, Esq., *General Superintendent Prisons, Boston, Mass.*

DEAR SIR:—Your letter of December 6 to Warden Hale at San Quentin Prison has been referred to me. We have a

rock-crushing plant at this prison; it has been in operation now about eighteen months, crushing a blue rock into macadam for road purposes. The original act of the Legislature, passed two years ago, contemplated that we should deliver this rock for road purposes at cost. The idea was to secure good roads at the minimum price, and also give employment to the convicts. The last Legislature amended the law, and fixed the minimum price at 30 cents per ton, loaded on the cars at the prison. This leaves a profit of about 10 cents per ton to the prison, or perhaps a little more. Our plant is a large one, operated by water power from our power-house. We employ 300 convicts, and turn out about 500 tons of macadam daily. It is the best appointed plant of the kind in the country, and has had the effect of cheapening the building of roads very materially, *i. e.*, at Sacramento and Stockton, our nearest distributing points, macadam formerly cost \$1.70 per ton; under the present arrangement we deliver the macadam at Sacramento at 55 cents and Stockton at 70 cents per ton; this is a clear saving to these municipalities of \$1 per ton. We find this class of work better adapted to convict labor, as it requires no great amount of skill, and is healthful, outdoor work.

While this does not make much money for the prison proper, it saves a large amount to the tax payers, and it encourages the building of good roads in every direction; this is a direct benefit to the State, as a saving to the tax payers is a benefit and profit to the State.

Respectfully yours,

CHARLES AULL, *Warden.*

The Hon. W. E. Hale, warden of the San Quentin Prison, says that the only road work done at that place consists of breaking stone found in the immediate vicinity of the prison.

Last month a letter was addressed to the Superintendent of Institutions in Rhode Island, in reference to road-making by prisoners in that State. Mr. James H.

Eastman, the superintendent, kindly replied to queries, and the following extract from his letter is printed, to show what has been done there in connection with that work:—

The inmates of our workhouse and house of correction have been employed at various odd times throughout the last ten or twelve years upon the roads contiguous to or running through the State farm lands, but have not gone to any distance from the farm. There is what is known as the New London Turnpike, running in about a direct line from Providence through the farm and on toward the Connecticut line. This road where it touches the State lands has been thoroughly worked, underlaid with stone, and a road built upon the same in the most substantial manner. Probably there is a mile and a half of this road. Then on what is called Pontiac Street there is probably another mile and a half upon which our forces have been employed. A part of this was done by the short-term men from the Providence County Jail, under the direction of Gen. Nelson Viall, warden. And then all the roads or drives through the farm proper have been built by our forces, but never have they gone away any distance, as hereinbefore stated.

The employment of convicts on the roads has been tried in many other communities. In some States besides those named extensive experiments have been made in this direction. In New Jersey some of the county convicts have been engaged in quarrying and preparing road material.

A law authorizing this work was passed in New York, and some work of the kind has been done at Clinton. At Sing Sing a few convicts from the State prison were employed last summer in building a retaining wall on one of the public roads. In the second annual report of the State Commission of Prisons in New York the question of the employment of convict labor in building

and improving highways is considered at some length, and the commission express the opinion that in this way the prisoners can be made of the greatest service to the State and of lasting benefit to the farming community. It is said in the report that the prisoners in the jails of six counties were employed in breaking stone in 1896. It does not appear, however, whether this work is extended throughout the year, or pursued during the summer time only.

The opinion of the New York Commission is given as a typical instance of one side of the discussion. The other side of it is taken by many prison officials; and a brief reference will suffice to indicate the spirit of the objections.

At a joint meeting of prison officials, held in Lansing, Mich., Feb. 10, 1897, the president of the Board of Control read a paper on the employment of convicts. In considering the question of road-making, he expressed the opinion that this work would be unsuitable and expensive. He declared "The convicts can earn far more net income working in the prison than they can out of it." It should be noticed that he was viewing road work merely as a substitute for contract labor, which has been so managed in that State as to make some of the prisons self-supporting. This condition does not exist in many other States and his position might be justifiable in Michigan on the grounds of economy, while it would not be so in a community where the inmates of the prisons were engaged in no remunerative work.

The action of the legislature in causing a report to be made on this subject affords a possible opportunity of

finding some better work than cane-seating for the able-bodied misdemeanants who people the jails and houses of correction. It is not the purpose, however, in seeking a change of work, to recommend the employment of such prisoners on the highways. The public sentiment of Massachusetts would not permit the assembling of convicts upon any thoroughfare in this Commonwealth. The expense of properly guarding them in our thickly settled communities would be quite out of proportion to any advantage to be derived from their employment in that way. Furthermore, there would be the same objection on the score of competition with free labor if prisoners were engaged in actual road-making as if they were kept fully employed at mechanical work in the prisons. The building of State roads has become an established industry with free labor, and the putting of convicts at that work now would excite a great deal of opposition. It is, however, believed that they might, without reasonable ground for complaint, be engaged in preparing the materials for the construction of such roads, either by hand labor, as at the St. Vincent de Paul Prison in Montreal, or by operating stone crushers, as in California and some other States. In any event, the competition with free labor would be very slight; and the decision between hand work and machinery would turn upon the question whether this work should be undertaken merely with a view of furnishing occupation, or of lessening the expense of building State highways.

The opinions expressed in the annual report of this office for 1895 have been strengthened by observations since that time; and the following extract from that report is reproduced, to show the scope of any recom-

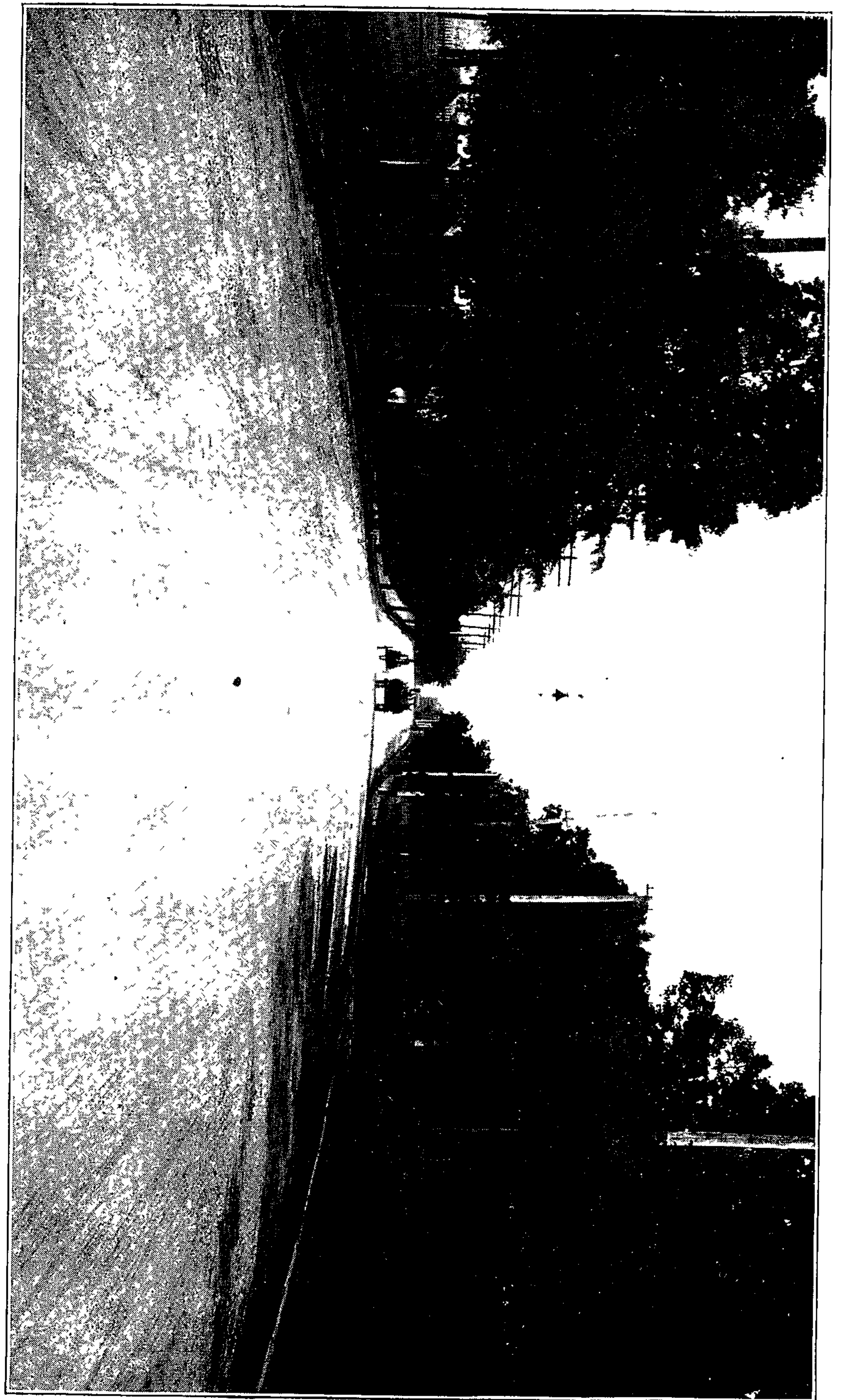
mendation the General Superintendent would now care to make in regard to the employment of convicts upon road work in Massachusetts: —

What has been written in favor of providing work for prisoners can be strongly applied to the class of persons who go to the houses of correction; and it recalls the recommendation in the report last year as to the imprisonment of tramps, vagrants, drunkards and other misdemeanants. For the public good these offenders should be treated more rigorously than at present; and for this purpose the terms ought to be lengthened and the work increased. The masters do everything that is practicable under existing conditions to discipline and improve their prisoners. But, unfortunately, to many of these misdemeanants the house of correction merely gives, during the winter months, only light work and very little of that.

It has already been shown why in most institutions mechanical instruction cannot be afforded. Nor is it desirable for some of these prisoners, because too many are beyond an age to be benefited by it. It seems to be good public policy, however, to insist that prisoners shall be compelled to contribute towards their own support, and that they shall be taught a useful lesson while under restraint. I respectfully suggest an inquiry as to whether these men may not be profitably employed upon public work, either in preparing materials for the roads and highways or in reclaiming waste lands. If either of these could be done, the Commonwealth would receive both financial and social benefit from this labor, which would be some compensation for what is now an unmixed evil.

Last year the commission on the unemployed considered, incidentally, the question of putting convicts at work on the highways, and decided against the plan. But their report was directed against a proposition to make this work an alternative for all labor in the prisons. The objections would not apply with equal force to the present suggestion, which proposes public work only for prisoners to whom other useful employment cannot well be given. This proposal does not contemplate a chain-gang, to which the commission very properly objected.

A POPULAR DRIVEWAY IN ATLANTA; BUILT BY CONVICTS.



Concerning the suggestion as to reclamation of lands, attention is directed to later pages of this report, where some account is given of similar work pursued in England and Italy. The utility of work of this kind may be apparent when it is noted that in Massachusetts there are tracts of land, formerly used for grazing beef cattle, now covered with a growth of wild vegetation. This growth could be readily removed, and, as the lands are in most cases accessible, tracts thus reclaimed might become valuable as homesteads. This would certainly be the case if the means of communication between the towns and cities of the Commonwealth were largely improved by a comprehensive scheme of State roads. Further work of a similar kind could be provided in places where it may seem practicable to build dikes for the purpose of converting marshes into arable land.

PUBLIC WORKS IN GENERAL.

Very few great public works have ever been attempted with convict labor in this country. Some buildings have been erected, and in a few States the convicts have performed all the work needed in their construction.

In Ohio the capitol was built by convicts from the penitentiary in Columbus.

The stone for the State penitentiary buildings in North Carolina was quarried and dressed by prisoners, and much of the work of construction was also done by them.

In Pennsylvania the larger part of the work on the great prison at Allegheny was done by the prisoners, and the construction of that building is in every respect

equal to that of any other public institution of this kind in the United States. The prisoners in the reformatory at Huntingdon have recently built a new cell-block. The brick for the building was made in the prison yard by the inmates.

In New York many prison buildings have been constructed and repaired with prison labor. A few years ago the Elmira Reformatory was enlarged in this way, and the work done by the prisoners is of as high grade as that upon any other part of the institution. Under the present law all similar work will be done by convicts. Last year the constitutional amendment became operative in that State, under which all labor on manufactures for sale is prohibited in the prisons; and it is provided that the inmates shall be engaged in public work of various kinds. The State prisons have made good progress in settling their difficulties by employing the prisoners in the manufacture of articles for public institutions and public departments. The county prisons, however, have not yet found work for their prisoners. In King's County the commissioners have made use of some of the inmates of the penitentiary there to do the needed work on the public grounds and parks.

Building work has been done to quite an extent by prisoners in Massachusetts. In 1866 the west wing of the State Prison in Charlestown was enlarged wholly by the labor of convicts. All the stone and iron work was done by them, and even the doors and locks were made by prisoners. In 1891 the north wing of the prison was extended, and the labor of the convicts was utilized for that purpose. It should be stated in refer-

ence to this piece of work that, while the building is substantial, it shows evidence of the unskilfulness of the convicts. Nevertheless, its rough appearance does not detract anything from the security, and furnishes no objection to the employment of convicts upon prison construction. A few years ago the east wing of the Massachusetts Reformatory was lengthened, to provide additional cell room. All the work of every kind, excepting only some of the iron work, for the building, was done by the inmates. The value of the instruction furnished in the trade school is proven by the fact that the work on the extension cannot from its appearance be distinguished from that done by free workmen on the original building.

Many more instances could be cited of the successful prosecution of public works by the labor of convicts, but those already given are typical, and furnish a reasonably correct view of such enterprises in this country.

The most important undertakings in public works by convicts are to be found abroad. There are many notable examples of such work on the continent of Europe; but the most comprehensive schemes of that kind have been tried in Great Britain and Ireland, and it will be of service to allude briefly to a few of them.

A very important public work in England was the construction of a breakwater at Portland harbor. This breakwater was recommended by a select committee on harbors of refuge in 1843. At that time the system of transportation was still practised, but efforts were being made to find something to supersede it. Portland was selected as a favorable place for making an experiment

with convict labor, because extensive quarries existed in the vicinity. The land was purchased in 1847, and the same year a prison building was begun. The building was completed in the following year, and convicts were moved into it. For almost twenty-five years an average of 1,000 convicts was employed in the construction of a breakwater extending nearly two miles into the sea and in water sixty feet deep in some places. It is stated that six million tons of stone were quarried and used in its construction, and that its cost was one million pounds. It forms the largest artificial harbor in the world. When the breakwater was completed the convicts were put at other work, including barracks and fortifications for the admiralty and war departments. The dockyards at Portsmouth and Chatham were enlarged by their labor. At Chatham the yard was increased to an area of 430 acres, being four times the size of the old dock, and the island on which it is situated was drained and surrounded by a sea wall nearly two miles in length. Other extensive works of a similar kind were also constructed at Portsmouth. The convicts have also been largely engaged in constructing prisons; but it is needless to particularize such cases as the work there does not differ from that already named in the references to prison buildings in the United States.

In a paper read before the International Prison Congress in 1872, Sir Edmund Du Cane said, among other things concerning these enterprises:—

In executing these works, every variety of mechanics' work necessary in building or engineering has been executed by con-

victs, — quarrying and dressing and placing the stone, all sorts of carpentry, casting and forging iron-work, and so on. The large and extensive plant has also been made by the convicts, and kept in repair, including the construction of the large cranes and derricks in the quarries, and the laying of the rails for the quarry wagons to run upon their way to the place for delivery of the stone.

Among these works the largest are: a new prison, for 700 women, built entirely by convicts; new wings to the prisons at Chatham and Portsmouth (of which a model is exhibited, showing a new mode of ventilation adopted). . . .

I have said that all the mechanics' work of these buildings is done by convicts. It must not be supposed that we found these mechanics ready to our hands among the prisoners. Out of 2,245 prisoners now employed at trades, 1,650, or three-fourths, acquired their skill in the prison; and these men will, it is thought, on their discharge, be less likely to relapse into crime, as they will have full opportunities of pursuing an honest calling.

The breakwater at Portland was constructed wholly by convict labor, but it may be of interest to notice that in other places public works have been carried on with the use of free labor in combination with that of prisoners. At Spike Island in Ireland, convict and free labor were for some time employed together, but were kept apart as much as possible. In many cases, however, there was necessarily such close proximity that smuggling, particularly of letters, became so easy that no vigilance of the warders could prevent it. The evil grew to be so great that it was proposed to discontinue the employment of free labor; but it was found impracticable to do so. The reason, it is said, for continuing the system, in spite of these objectionable features, was that it was devised to satisfy both the persons who claimed

that free laborers should have the work, and the class who objected to prisoners being kept in idleness. The work at this place consisted of excavating, quarrying and dressing stone. Some of the convicts also operated tram engines.

On the works at Portsmouth there were both free laborers and convicts, but they were kept entirely separate. Brick-making machines and locomotives were operated by the free laborers, and the other parts of the work were done by convicts. The same separation was enforced at Chatham, where free and convict labor were employed together from the opening of the institution. But at this place the prisoners included among their work that of brick-making and engine-driving.

In order to ascertain how much public work is being done by convicts in England at the present time, a letter was addressed last November to the Hon. E. Ruggles-Brise, chairman of the English Prison Commission, soliciting information on that subject. Mr. Brise visited Massachusetts in October, and kindly offered to furnish, upon his return, replies as far as possible to any questions that might be asked concerning this matter.

The queries were put on separate sheets, and the answers are reproduced in paragraphs, as they were written. The replies are made with such intelligence that they sufficiently indicate the questions, and it will be needless to print them:—

Assuming that the words "prison enclosures" mean "prison walls," there were in the year ending 31st March, 1897, a daily average of 957 convicts working outside, viz.: on public works for admiralty and war office, 554; farming and reclaiming land, 403.

These figures of course show a great reduction on previous years, owing to the great decrease in the number of sentences to penal servitude, viz., from 13.4 per 100,000 of population in the five years ending 1859 to 2.4 per 100,000 in 1896. For example, in 1887 there were 2,759 convicts employed outside the prison walls, of which number 2,232 were employed on public works and 527 farming and reclaiming land. In 1877 there were 3,081 employed outside the walls, 2,746 on public works and 335 farming, etc.

At the present time work outside the prison enclosures is carried on at Borstal, Dartmoor, Parkhurst and Portland. At Borstal the work consists of excavation for and construction of forts connected with the defence of London, the convicts being taken to their work in trains specially constructed for the conveyance of prisoners. There is also a small farm at this prison.

At Dartmoor the work consists of farming and reclamation of bog, and at this prison cattle, horse and other stock raising is also carried on.

At Parkhurst the work outside the walls consists entirely of farming.

At Portland the work is almost entirely for the admiralty, and consists in quarrying, raising and dressing stone for works in connection with the various dockyards and naval stations.

The temperature is that of the British Isles generally. As a rule, convicts are at work every day of the year, except Sundays, Good Friday and Christmas Day. The number of working days in the year ended 31st March, 1897, was 311.

There are regular scales of dietary framed for (1) convicts in separate confinement, (2) convicts at hard labor, (3) convicts at light labor. Those employed on public works and farming receive the diet for convicts at hard labor.

No, there are no dormitories; each man has a separate cell.

It is so very seldom that the state of the weather prevents the employment of convicts outside, that no provision is made for indoor work.

The ratio of warders (including guards) to convicts is 10 per cent. in public works prisons, compared with 5 per cent. in prisons where the employment is cellular.

The warders in convict prisons receive higher pay than those in the other prisons.

The death rate of the convict prisons during the year ending 31st March, 1897, was 9.7 per 1,000.

During the last year of each convict's sentence, special instruction in a trade is, if possible, given to him, with the view of his obtaining work when released.

In Scotland public work of prisoners has consisted mainly of constructing prison buildings; but for the last ten years a great breakwater has been under construction, partly by the labor of convicts, at Peterhead. For many years it was the custom to send male convicts from the Scottish prisons to the public works prisons in England. In 1881, as the public works in England were lessening, a committee was appointed by the treasury to inquire into the best methods of employing convicts. The chairman of the Scottish Prison Commission was a member of that committee; and the question was raised as to the advisability of using the labor of prisoners on a public work designed especially for the benefit of Scotland. This scheme was approved by the government, and, with the advice of a committee of technical officers, the construction of a national harbor at Peterhead was begun. The location was favorable to an experiment of this kind, because the quarries of Peterhead Bay afford an inexhaustible supply of granite. The proposed artificial harbor is to be formed by extending a breakwater across the bay.

When it was decided to enter upon this undertaking, some prison buildings were first erected by contract. Then convicts were moved into them, and the cell accommodations were provided by their labor. When the number of inmates increased, convicts were

sent to the admiralty workshops to labor on the works in connection with the breakwater. These convicts are provided with separate cells, but they work in association. All the privileges usually accorded in convict prisons are allowed to them. A careful record of the industry is kept, and a considerable reduction of sentence may be obtained by a well-behaved and industrious convict. Independent inspection of this prison is provided for by the appointment of county magistrates as visitors.

In their annual report for 1895, the commissioners say, respecting the prisoners here: "Their labour has been utilized in quarrying stone, dressing stone, preparing materials for concrete and mixing concrete. The majority are industrious, and take interest in their work; but, as might be expected, a considerable number are born to idleness, and require strict discipline." In the next report they say of the prisons generally: "The considerable proportion of licenses which have been revoked indicates the difficulty of reformation among the class of hardened offenders who have adopted crime as an occupation. . . . It is, however, gratifying that 370 men discharged from Peterhead have not as yet returned to penal servitude." There is quite a strong inference to be drawn from these remarks, and it seems that hard labor has still a deterrent effect upon certain classes of criminals. In 1896 the breakwater had not been completed, and some convicts were still employed in connection with it. Others were engaged in artisan work in the shops, and in erecting new tenements for the warders.

Some years ago prisoners were mainly employed in agricultural work at Lusk, in Ireland. They were kept in temporary prisons made of corrugated iron lined with wood; each building accommodated 100 prisoners and 3 officers. The prisoners were brought to this place from Mountjoy prison in Dublin, after they had served there the required period in solitary confinement. The agricultural prison was the second stage in their progress towards the remission of sentence which could be earned by good conduct. While, therefore, it was physically easy to get away from the prison at Lusk, very few prisoners attempted to escape, because, by the attempt, they would forfeit coveted privileges. Moreover, a fugitive was almost certain to be retaken, and, in that case, he would lose the right to a remission of his sentence. This made a part of the Irish system that has been so much commended, and has furnished both inspiration and example for the best reformatory movements throughout the world.

The foregoing accounts are designed to give information on the methods of employing prisoners in any manner that comes within the purview of the resolve. Nothing has been written of the system of confining prisoners in hulks or disposing of them by transportation beyond seas. Many experiments were made in England with those forms of punishment; but they have now been wholly abandoned for many years.

It may be useful to submit, for the consideration of the General Court, certain observations and suggestions

in regard to the employment of prisoners in the manner contemplated by the resolve.

The purpose of these suggestions is to give more vigor to the industrial effort in the administration of prisons. It is not intended to propose cruel or unjust treatment, or to advise any measures that can be considered inhuman in the least degree. There can be no inhumanity in urging that convicts should work; and it is believed that more severe and stringent measures would have a strong tendency to correct the idle habits that lead to prison.*

RECLAMATION OF LANDS.

An experimental undertaking in reclaiming land could be authorized by empowering the Governor and Council to acquire a tract of land for that purpose. The land should be chosen with a view to furnishing various kind of work, such as clearing, draining,

* In addition to the persons committed for tramping and vagrancy, there are, wandering about the State and frequently lodging in lockups, still others who, in police circles, are classed as tramps. The tramps and like misdemeanants might with great public benefit be subjected to more rigorous treatment; and for this purpose no better scheme could be devised than some plan of public work. A police official of Boston has recently declared that the ordinary tramp is a constant menace to the welfare of the community. It is not necessary to re-enforce this judgment by citing instances, for every person will readily recall some startling and atrocious crime committed by a tramp who had been preying upon the community, in apparently a harmless way, for a long time.

From a census, made by the Chief of the Bureau of Statistics of Labor, it appeared that 802 persons were furnished with lodgings in the lockups of the State on May 1, 1897. To ascertain how much the number would differ from that in the depth of winter, a request for similar information in regard to Jan. 31, 1898, was sent out from this office. On that day, it will be recalled, there swept over Massachusetts the most furious storm that has been known here for more than thirty years. That storm doubtless affected the number of applicants for lodgings, but to what extent and in what way must be purely matters of conjecture. From the returns it appears that 740 lodgings were furnished on that night in the police lockups in 127 towns and cities. One hundred and sixty-two reported no lodgers. On the same night 41 persons were sheltered at the Wayfarers' Lodge in Boston.

fencing, quarrying, etc. The stone work would be requisite, for without it the convicts could not be kept busy in winter, when they could break stone for the highways if material were at hand. The preliminary work could all be done by convicts drafted from the county prisons, who might safely be kept in buildings similiar to those at Lusk, described on a preceding page. Cells for permanent use could be set up in long iron buildings at a small expense.

This work, if properly directed, would accomplish two objects in addition to supplying occupation for the prisoners, namely: first, it would prepare the site for any needed public institution; and second, it would make available as homesteads some land that is now worthless.

For instance, the need of a new State prison may become imperative, and if so the location would be already prepared by the labor of these county convicts. To be sure, there does not now appear the same necessity of providing a new prison as seemed to exist in 1893, when a special committee of the Senate reported a bill tending in that direction. But it may be essential, on different grounds, to provide another place for the State Prison convicts, and it would be wise economy to prepare for that exigency.

A comprehensive scheme of the reclamation of lands for homesteads and the restoration of abandoned farms, if judiciously managed, would not involve the State in any loss; and it would confer a great benefit upon the community, both by furnishing prisoners with work not injuriously competitive with free labor, and by adding to the area of cultivable lands.

As already noted, the system of transporting convicts to penal settlements was wholly abandoned in England in 1867; and it was applied only to a very limited extent for more than twenty years before that time. But something similar has since been attempted in Italy; and, as the work there specially relates to the reclamation of lands, it may fitly be mentioned at this point.

In a report on the Italian system, in 1874, particular mention was made of the agricultural penitentiary colonies. They had then been established on Pianosa and Gorgona, two islands in the Tuscan Archipelago. Prisoners, who have served out one-half of their terms of sentence in the prisons of the kingdom, are removed to these islands as a reward for industry and good conduct; and the colonies thus constitute the intermediate stage in the Crofton system of dealing with prisoners.

Aside from the domestic work about the institutions, the labor is wholly agricultural, consisting of the culture of the vine, the olive and cereals. A later report says that the system of agricultural colonies has been enlarged by adding Monte-Cristo and Capraia; and that a fifth colony has also been created, which is designed for prisoners sentenced to the galleys, the severest punishment below that of death. At the latter place the prisoners are engaged in the cultivation of the fields, in drainage, the building of houses and the opening of new roads.

MAKING A SHIP CANAL ACROSS CAPE COD.

Nearly twenty years ago there appeared in a public document the suggestion that the labor of convicts might be profitably used in digging a canal across Cape Cod;* and last year a proposition to that effect came before the General Court by petition. At the hearing on the petition the General Superintendent of Prisons expressed the opinion that it would be practicable to thus employ county prisoners. Investigation since then has strongly confirmed that view. In December last he addressed to His Excellency the Governor a letter containing a reference to this report, as follows:—

Incidental to the preparation of the report . . . which it will be my duty to submit to the General Court next February, I have considered the employment of prisoners in constructing a canal across Cape Cod. The proposition to build this canal by convict labor was first referred to in a public document about twenty years ago, and was before the General Court last year; but, owing to the representations of private persons who promised to build it as a business enterprise, the suggestion of making it a public work has never been fully considered. The various charters granted have been made nugatory by failure to fulfil their conditions, and it seems to be demonstrated that capitalists cannot be induced to undertake this work, which, while it would be a great public benefit, yet offers no certainty of a reasonable return upon private investment. The employment of prisoners here would not displace free workmen, because it is unlikely that the State would embark in such an enterprise if it were necessary to expend a large amount of

* The tenth annual report of the Bureau of Statistics of Labor contained quite a lengthy account of convict labor, and this suggestion was one of many then offered on the subject.

money for labor. By utilizing the work of the prisoners, the actual outlay would be comparatively small.

In my special report I shall set forth in detail a plan for carrying on this work, if it should be decided to undertake it.

To prevent any possibility of a misapprehension, as to the scope of the suggestion relating to the employment of prisoners in building this canal, it is positively stated that the proposition does not contemplate the taking of convicts from the State Prison for that work. It would be too expensive to guard them; and, besides, not more than five hundred men could be drafted from that place. There ought to be at least two thousand prisoners engaged on the work, if it is to be completed within a reasonable time.

The suggestion for the employment of prisoners is based on the assumption that the State would not attempt this work except as a means of utilizing their labor; and that consequently the plan would not interfere with free labor. Convicts must be supported whether they work or not; and the State might wisely use their services to secure improvements that otherwise could not be obtained within a reasonable limit of public expenditure.

The outlines of a plan for using the work of prisoners from the jails and houses of correction in the construction of a ship canal across the isthmus of Cape Cod, and for their custody and seclusion, are presented as follows:—

Direction and Supervision.—The work to be under the control of a board of managers, consisting of the Harbor and Land Commissioners, the General Superintendent of Prisons and one member of the Executive

Council, appointed by the Governor annually in January. This board to take a location for a canal, by purchase or otherwise, if the preliminary official survey shall show the scheme of building it to be practicable. The Governor to designate the chairman of the board; and to appoint a superintendent, who shall have the charge and custody of all convicts, and be the executive officer of the board. All other officers, guards, overseers and foremen to be appointed by the superintendent, with the approval of the board. The Commissioners of Prisons to have the same powers of inspection and supervision that they now have over county prisons.

Classes of Convicts.—This proposal does not contemplate the employment of any convicts from the State institutions; but the court should be authorized to sentence directly to this place. Transfers could be made by the Commissioners of Prisons, upon the request of the managers, from the county prisons of such offenders as are in physical condition to do useful work on the canal. On September 30 last, there were in custody in these prisons 4,483 male prisoners under sentence, only 1,631 of whom were employed, and not all of even that small number were engaged in work of any value or benefit. It is estimated that, at least, two thousand able-bodied men, having sentences of six months or over, could be drawn from the jails and houses of correction for the proposed work.

Accounts of Construction and Maintenance.—Keep two sets of accounts, to be known respectively under the heads of construction and maintenance. The expense of construction should be provided for by a loan

called the canal construction loan. Under this head all expenses of materials, cost of buildings and enclosures and transportation of prisoners should be charged; and, as the cost of guarding would probably exceed that in the county prisons, there might also be added a moiety of that item to the construction. The maintenance account should include the balance of the expenditure for salaries and the entire cost of feeding and clothing the convicts. A record of the number taken from each county would be kept, and the amount of their support could be collected annually in the State tax. This would add nothing to the county expenses, because the prisoners could be supported at a cheaper rate per capita than if kept at the different jails and houses of correction.

Custody and Buildings.—The most important detail of the plan relates to the custody; and the proposed method is intended to guard the convicts in such a way as to avoid offence or annoyance to the citizens. Make an enclosure, covering in width the full location of the canal and in length not less than two thousand feet, with a corrugated iron fence ten feet high. Construct of corrugated iron, inside the enclosure, buildings to be used exclusively as dormitories. To facilitate removals, there should not be erected on the land any building that could not be easily transported.

There should be, however, one secure place for the confinement of long-term offenders, and all others who show themselves unfit, for any reason, to be kept in the dormitories. This could be secured by housing over a scow, and placing within that structure a cellular prison of iron and steel. The scow should be long enough

to give space for five hundred cells. Another scow would be needed for the steam-heating plant, the electric lighting plant, the engine, the infirmary and quarters for the superintendent and engineer. The reason for having all the heavy parts of the equipment water borne would be that they could be removed from one point to another without trouble; and the offices of the superintendent and engineer should be put on this structure because the accounts, records and plans could not safely be disturbed while the work was in progress.

If cellular separation were considered indispensable for all the convicts at the camp, the buildings for that purpose should be put on floating bases, to avoid trouble and expense in moving them. It might be possible to obtain old vessels for this purpose. But if the dormitories were made into small rooms, with gratings across the end to give facility of observation, they doubtless would afford enough security. Escape from them might be comparatively easy, but if a system like that at Lusk in Ireland were adopted, escape would rarely be attempted. One safeguard would be found in a liberal commutation of time for industry and good conduct.* There would be, however, no great difficulty in keeping the prisoners within this enclosure by either day or night. Guard towers could be erected at proper intervals along the line of the fence. The opportunity of segregating such

* The indeterminate sentence for convicts, sent directly from the courts, would serve the same end if it were so administered that discharge from imprisonment could be earned wholly by satisfactory behavior while in custody. But if release should depend upon the consideration of other circumstances, the inducement to good conduct would be sensibly diminished. To make the plan effective in the largest degree, a convict should be assured that by his own obedience and hard work he could surely shorten his term.

convicts as prove unruly would contribute to good order; besides, if necessary, additional security could be furnished by putting along the top of the fence a wire carrying an electric current of low voltage, but yet of sufficient power to prevent a prisoner from going over it.*

It will be obvious that the dormitories would not be disturbed every time a removal was made. When the fence was put up the buildings would be placed at the easterly end of the enclosure; and when it was moved, the buildings would remain at the westerly end. Only persons having short terms would be engaged in making the removals, and their visible presence for the short time required at that work would offer no more of a spectacle than can be witnessed at the State Farm, or at many of the houses of correction in the summer.

Transportation. — The means of transportation would properly be decided by the managers after a careful calculation of the relative expense of land and water carriage. Both means would naturally be employed for materials and supplies; but it would be cheaper and better, for other reasons, to rely upon the railroads to move prisoners than to maintain a steam vessel for that purpose. In the interest of economy, it would be wiser to depend in all cases upon established lines of transportation.

Expense of Buildings and Custody. — The estimated

* The idea of substituting the electric wire for a high wall, as a protection against escapes, is borrowed from a prison official of this State; and when it is added that the official is the honored and respected chaplain of one of the largest penal institutions of the Commonwealth, it must be admitted that the suggestion did not originate in motives of inhumanity.

cost of providing dormitory accommodations for the prisoners is about \$20 for each man.

The expense of building the iron fence would not exceed one dollar a running foot. This includes the cost of material and labor.

The floating structures would be quite expensive, but the iron and steel building would add so much to the facility of guarding that it seems almost indispensable. Moreover, part of the expense would be offset by the reduced number of officers required to guard prisoners kept in such a building. It is estimated that these buildings could be made for the sum of \$135,000. This figure is named after consultation with competent builders, and submission of the plan to the inspection of two builders of iron prisons. The iron and steel work can be made in such a way as to be readily taken apart and used elsewhere for prison purposes.

The expense of guarding prisoners here would be greater than in county prisons, where they are kept in close buildings or within high walls. The Public Works Prisons in England allow one officer for ten prisoners. This number need not be exceeded on the canal work, even if all the labor were done by convicts; and if free laborers were employed to any extent, the number of officers could be substantially reduced.

The consideration of this enterprise in connection with a report on employing prisoners is prompted by a desire to provide hard labor for county convicts; but it would be inconsequent to treat the subject from that view alone. A brief reference to the other aspects of

the undertaking should therefore be included in the consideration of it.

The first charter to build this canal was granted nearly thirty years ago, and since that time six like charters have been obtained from the General Court.* With the exception of some work done by the company that received a charter in 1883, no systematic effort has ever been made to open the canal.

The frequent grants of permission to build have proven that the General Court considers such a waterway as desirable; and that in its judgment the canal could be made without detriment to the public interests. The weight of opinion is, apparently, strongly in favor of the canal, if it is a practicable undertaking.

Practicability as applied to a public work relates to the feasibility and usefulness of it, and does not necessarily involve, as in a private enterprise, the matter of revenue. Reports of engineers agree that there are no physical obstacles to the work. But objections have been raised on the ground of variance in the tides on the two sides of the isthmus, and there is a difference of opinion as to the extent of the difficulty on this score. The doubt, in this respect, could easily be resolved by a thorough examination, made under the direction of the Harbor and Land Commissioners.

This examination should be directed solely to an as-

* The question of a small waterway across Cape Cod was before the General Court of Massachusetts more than two hundred years ago. In 1697 a committee, consisting of one resident of Barnstable and two residents of Sandwich, was appointed to consider the matter. As far as known, that committee never reported.

certainment of the physical features of the location on Cape Cod. It would not be necessary to incur the expense and delay of personally inspecting the construction of canals in other countries. Full and explicit reports upon various forms of canal construction are easily accessible here, and elaborate details can be obtained without going to the trouble of even writing for them. The account of the Suez Canal, for instance, shows the practicability of connecting two bodies of water of unequal height by an open waterway. (It is just one hundred years since Napoleon conceived the idea of connecting the Red Sea and the Mediterranean Sea by a canal. Under his order a survey was made, but the engineers reported that there was a difference of more than thirty feet in the height of these bodies of water. For more than forty years this report prevented any further movement. In 1841, however, an English engineer made a real survey, and found that the difference was only a few feet.)

Official surveys, of the proposed location of the canal between Buzzard and Barnstable bays, have been made by engineers on behalf of the Commonwealth, and their reports, as well as those of United States engineers, can easily be consulted. In 1860 Governor Banks alluded to the scheme in his annual address; and in the same year a committee was appointed by the General Court to examine into the subject. The work of the committee was continued by vote of subsequent Legislatures, and the final report was submitted in 1864. It embodies full and detailed information as to the tides, the temperature, the formation and all features of the

location, which was thoroughly examined by experts under the authority of the committee.

As to the utility of this means of communication, there is no need of argument, for it has been generally conceded that it would cheapen many commodities brought to this Commonwealth by vessels from the south and west. And it is also admitted that it would serve the higher purpose of lessening the danger to human life. Opinions on these points differ only as to the degree of benefit from the work.

There is not intended to be here any pretence to a belief that the canal would be remunerative. If the tolls were placed at a rate to provide a return on the investment, they would be partially prohibitive, and much traffic would continue in its present channels. This condition may be illustrated by a reference to the North Sea-Baltic Canal. For more than a hundred years a small canal has been maintained to connect Kiel Bay in the Baltic with the River Eider, by means of which vessels of about one hundred tons pass across Holstein, and avoid the circuitous voyage around Jutland. It has never been considered practicable to deepen this canal, or to provide a waterway of great capacity, as a commercial enterprise. Some years ago, however, when it was proposed to increase the naval armament of Germany so as to provide a fleet for the North Sea as well as one for the Baltic, it was discovered that if the additional ships were built there would be no sailors available to man them. Attention was then drawn to the project of opening a large canal between the two seas. This canal was built as a war measure, but is

now open to the commerce of the world. The tolls have been fixed at thirteen cents per ton for summer and seventeen cents in the winter. It is largely used by vessels at the cheaper rate, but in the winter time it is found that ships can make a saving by going the additional distance, of more than two hundred and fifty miles, to avoid the tolls.

But, although the Cape Cod Canal would, probably, never pay a sufficient return upon the private capital needed to build it, there might be enough revenue, derived from vessels that would seek it for convenience and safety, to pay operating expenses, keep it in repair and pay the interest upon the cost of construction. It is also possible that a sinking fund could be created for the gradual extinction of the debt. If the sanguine hopes of some of the early promoters were realized, the State would be a large gainer in a financial sense.

Cost of Construction and Duration of Work.—In this connection it should be said that the canal ought to be built by co-operation with the national government. At least the needed breakwaters and harbors of refuge should be provided at the expense of the United States. If help from that source is obtained, the canal when opened should be at the service, on equal terms, of all American vessels. If, however, the Commonwealth bears the expense alone, a discrimination in the rate of toll should be made in favor of vessels bound to and from the ports of this State.

The most expensive open waterway ever known in the world is the Suez Canal, and it may be said also that it has been the most successful in a financial way. This canal is ninety-nine miles long, and has cost up

to the present time upwards of one hundred and twenty-five million dollars. It has been widened and deepened twice since it was opened. If it had been made of sufficient capacity in the beginning, the expense would have been much smaller. It is interesting to notice the usefulness of the electric light at this place. In 1895 more than ninety-four per cent. of all the vessels entering the canal passed through it in the night. The time was chosen to avoid the great heat which, in the daytime, obscures the buoys and marks, and makes the passage difficult.

The original work on the Suez Canal employed about twenty-five thousand men for a period of nearly ten years. There was some interruption, owing to the refusal of the viceroy of Egypt to honor the concession made by his predecessor.

The North Sea-Baltic Canal may be cited as an instance of thorough construction and careful expenditure. This canal was opened by a great ceremony at Kiel in June, 1895. It connects Kiel Bay with a point near the mouth of the Elbe River, is sixty-two miles long, with a waterway eighty-five feet wide, at the bottom, and of sufficient depth to permit the largest war ships to pass readily. Its cost was forty million dollars, including the expense of locks at either end to control tidal changes, and of breakwaters to protect the mouth of the canal. Great difficulties were experienced with the sand, and dredging is now necessary to keep the place open. The authorities hope, however, that this will decrease as time goes on. There was no rock work in its construction, but deep cuttings were necessary. Eight thousand men were en-

gaged for eight years in building it. Engineers and masons were paid \$1.50 a day and laborers \$1.

Another useful illustration may be drawn from the Amsterdam Ship Canal, begun in 1865 and opened in 1876. It unites the Zuider Zee with the North Sea. The top width is one hundred and eighty-seven feet, the bottom eighty-nine feet, and it is twenty-three feet deep. It is seventeen miles long, and cost thirteen million dollars. It has locks at each end, with gates opening both ways, to control the level of the water. Two converging breakwaters protect the entrance channel, which was dredged through the shallow, sandy foreshore of the North Sea. The condition presented in the Cape Cod location, on the Barnstable Bay side of the isthmus, is similar to the sea approach of the Amsterdam Canal.

One canal enterprise in this country may be mentioned as affording the best illustration of the cheapness of the new methods of excavating. The Chicago drainage canal is to connect Lake Michigan with a tributary of the Mississippi River. It was begun in 1892, is now nearly completed, and will be opened this year. The excavation amounts to forty million cubic yards, but the entire cost of the work will not exceed thirty million dollars. Nine miles of the canal consists of a cutting through solid rock, one hundred and sixty feet wide and an average of thirty-three feet deep. Six miles of the cutting is, also, through earth underlaid by rock.

From the reports that have been made on the location of the Cape Cod Canal, it appears reasonable to believe that it could be constructed for a less amount

than any canal, of the same length, has cost up to the present time. Some estimates have recently been made as to constructing this canal; and it is believed that with the labor of two thousand prisoners it could be completed within six years. A calculation, based upon the amount expended for like purposes elsewhere, leads to the opinion that, if the State should employ the labor of convicts in doing the work, incurring only such expense for free labor as might be needed to facilitate the safe custody of the prisoners, the cost would not exceed in any event two millions of dollars. This is exclusive of the breakwaters and harbors of refuge, which would doubtless be provided by the national government. It might not be feasible to build the canal entirely by the labor of convicts. Other help would perhaps be needed, as at Portsmouth, England, to perform such parts of the work as must necessarily be done at a distance from the enclosure. It might be required also that machinery should be under the charge of free laborers exclusively, as at Spike Island, in Ireland. Nevertheless, the greater part of the work must be done by convicts, to keep the expense within a reasonable limit. If the estimate of cost should include large payments for labor, the expense of the undertaking would alone defeat it.

But few public works are undertaken as remunerative enterprises. The State annually expends large sums in building roads, in abolishing grade crossings, in improving the harbors, and in various other ways that give no return, except by adding to the safety and comfort of the people.

This work would be one of great commercial importance to the State and a priceless boon to mariners in avoiding the often perilous and difficult passage across Nantucket Shoals and around the Cape. Therefore, in view of the large number of idle prisoners who might, by their labor on this canal, contribute something to the public good, I earnestly recommend the passage of an act to authorize the construction of a canal across Cape Cod according to the plan presented in this report.

Respectfully submitted,

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General Superintendent of Prisons.

