UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 414

Contribution from Office of Public Roads and Rural Engineering
LOGAN WALLER PAGE, Director

Washington, D. C. PROFESSIONAL PAPER December 15, 1916

CONVICT LABOR FOR ROAD WORK

By

J. E. PENNYBACKER, Chief, Division of Road Economics, and H. S. FAIRBANK, Highway Engineer, Office of Public Roads and Rural Engineering, and DR. W. F. DRAPER, Passed Assistant Surgeon, United States Public Health Service

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INTRODUCTION.

Within recent years the policy of utilizing convict labor in road construction or in the preparation of road materials has received serious attention by State legislatures, and a number of the States are now actively employing convicts on road work, while other States are earnestly seeking information on the subject.

Among the many problems involved are the following:

(1) Whether it is profitable to use convicts for road construction, and if so, under what conditions;

(2) The systems of discipline and management productive of the best results;

(3) The character and economy of structures and equipment best adapted to conditions in various sections of the country;

(4) The character, preparation, and cost [1] of food;

[1] It must be borne in mind that all prices of foodstuffs, clothing, and camp equipment herein quoted are those prevailing in 1915.

NOTE.—This bulletin is intended to give State officials in charge of road work accurate and comprehensive information on the use of convict labor for building roads.

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(5) The steps necessary to secure proper sanitation and hygiene;
(6) The most suitable system of cost keeping and record;
(7) Detailed and comparative cost data on every phase of the subject.

As no single State can answer these varied and perplexing inquiries, an exhaustive investigation has been conducted by the Office of Public Roads and Rural Engineering in cooperation with the United States Public Health Service during a portion of the calendar years 1914 and 1915. Personal visits were made to convict camps and conferences were held with State highway and prison officials in the States of New York, New Jersey, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Alabama, Florida, Mississippi, Louisiana, Texas, Michigan, Colorado, New Mexico, Arizona, Utah, Wyoming, California, Washington, and Oregon. On these visits the most searching inquiries and inspections were made covering administrative, engineering, economic, disciplinary, and health conditions at the camps.

These personal investigations were supplemented by correspondence with prison and highway officials in all parts of the country, and in addition many Government publications, State documents, treatises, and reference works were consulted in the preparation of this bulletin.

It is the purpose of the authors to cover as nearly as possible all questions that might arise in connection with either the adoption of a policy relating to the use of convict labor in road work or the actual working out of such a policy. To this end a presentation and discussion of the principles involved, a digest of convict road laws, and a discussion of every phase of operation are embodied in the bulletin, together with specific detailed instructions for the carrying out of all recommendations which the authors make.

In the course of the investigation much valuable and detailed information was obtained which could not be brought within the limits of a bulletin. This information, however, is filed in the Office of Public Roads and Rural Engineering, and inquiries which may not be answered with sufficient completeness in the bulletin may be covered adequately by correspondence.

SYSTEMS OF CONVICT LABOR.

In order to weigh the relative advantages and disadvantages of utilizing convict labor in public highway construction and other occupations, a knowledge of the systems of convict labor in operation is helpful. These systems, six in number, are known as the lease, the contract, the piece-price, the public-account, the State-use, and the public-works-and-ways systems, respectively, and are explained as follows.

LEASE SYSTEM.

Under this system the State disposes of its convicts to private lessees, who agree to become responsible for guarding, clothing, feeding, transporting, and giving medical attention to the convicts under rules specified by the State. The lessees provide steady employment for the convicts and pay to the State an agreed amount, the State providing for adequate inspection to insure enforcement of its rules. This system, formerly widely practiced, has been abandoned in all States except Florida, and exists there in only a modified form. It is therefore unnecessary to set forth its intrinsic defects.

CONTRACT SYSTEM.

Under this system the State sells the labor of the convicts, but does not relinquish its care or control. As generally practiced, the State maintains an institution and guards, feeds, clothes, and houses the convicts, and provides medical attention, while the contractor supplies the raw material, superintends the work, and pays a stipulated amount per capita for the labor. This system is now practiced in whole or in part by the following 18 States: Alabama, Connecticut, Delaware, Indiana, Iowa, Kentucky, Maryland, Missouri, Nebraska,[1] New Hampshire, North Carolina, South Carolina, South Dakota, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

The contract system is an advance over the lease system, as the contractor assumes the responsibility for profit and loss, the State is assured a definite income, and the interests of the prisoners are safeguarded by the prison officials. There is, however, a tendency to conflict of interests and responsibility between the representatives of the contractor and of the State. In addition, a most powerful objection to the contract system is advanced by organized labor and by manufacturers, to the effect that its product comes into direct competition with the product of free labor.

PIECE-PRICE SYSTEM.

This system differs from the contract system only in the manner of payment for and supervision of the work. The contractor, instead of paying for the labor of the convicts, pays an agreed amount for each piece or article manufactured. Usually under this system the State supervises the work, but this is sometimes done by the contractor. Under the former plan the prison officials must possess ability to manage the industrial as well as the penal features of the work. At present this system is practiced in whole or in part in Alabama, Connecticut, New Jersey,[2] and Rhode Island.

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[1] The contract system is now being discarded in Nebraska in favor of the State-employment plan, and experiments are being made with road and farm work.

[2] The piece-price system was abolished in New Jersey by act of the legislature in 1911, but no fund was provided for any other system, hence it is still in force on a day-to-day basis.

PUBLIC-ACCOUNT SYSTEM.

Under this system the private contractor is eliminated entirely, as the State, in addition to maintaining its own penal institution, conducts all of the industries in which the convict labor is utilized, and maintains its own selling organization to dispose of the product. The principal difference between the piece-price system and the public-account system is that in the latter the profit derived from convict labor goes to the State instead of to the private contractor. This system is now followed in whole or in part by the following 19 States: California, Illinois, Indiana, Kansas, Maine, Massachusetts, Michigan, Minnesota, Mississippi, New Mexico, North Carolina, North Dakota, Pennsylvania, South Dakota, Tennessee, Texas, Washington, Wisconsin, and Wyoming.

STATE-USE SYSTEM.

The only difference between this and the public-account system lies in the disposal of the product, as under the public-account system the product is sold and under the State-use system it is limited to the use of State institutions. This system is more widely followed than any other, and is now in effect in whole or in part in the States of Arizona, Arkansas, Colorado, Connecticut, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Mississippi, Montana, New Hampshire, New Jersey, New Mexico, New York, Nevada, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

A smaller measure of competition with free labor is involved in this system than under those already described, and it encroaches in a lesser degree upon the field of the private manufacturer. The serious objections to the system are that the State institutions require a great variety of articles, while the demand for each individual article may be quite limited. Obviously, the State can not equip its penal institutions to manufacture all of the articles used by State institutions, and if it devotes its efforts to the production of a few of such articles the demand may not be sufficient to furnish full-time employment for the convicts.

PUBLIC-WORKS-AND-WAYS SYSTEM.

This system, which has been gaining ground in recent years, involves the use of convict labor in the construction and repair of public buildings, public highways, breakwaters, levees, drainage and irrigation ditches, and similar works rather than in the production of marketable articles or merchandise, and it is under this system that the prominence of convict labor as a factor in highway improvement finds its place. It can be seen readily that under this system there is

less competition with free labor and none with manufacturers, but, on the contrary, the creation of public utilities by means of convict labor is more than likely to give greater employment to free labor and to create a greater demand for the products of the manufacturer. This system is now practiced in whole or in part by the following 27 States: Arizona, Arkansas, California, Colorado, Delaware, Florida, Georgia, Illinois, Kentucky, Louisiana, Montana, New Jersey, New Mexico, New York, Nevada, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

The above list includes only those States in which prisoners of the State penitentiary are being employed under the public-works-and-ways system and not those, such as Alabama, Maryland, Michigan, and others, in which county convicts or prisoners of State institutions other than the penitentiary are so used.

TREND OF THE WORK SYSTEMS, 1885-1915.

In order to indicate the trend of convict labor under the systems above described, Table 1 has been prepared, in which the statistics for 1885 and 1903–4 were compiled from annual reports of the Commissioner of Labor, and the statistics for 1914–15 were obtained by correspondence conducted by this office with 186 of the 296 institutions mentioned in the 1903–4 report of the Commissioner of Labor. The statistics in the table are based upon the daily average number of inmates engaged in productive work under the respective systems.

TABLE 1.—*Convicts employed under various systems from 1885 to 1915.*

System of work.	1885		1903–4				1914–15	
			296 institutions.		186 institutions.		186 institutions.	
	Number.	*Per ct.*	*Number.*	*Per ct.*	*Number.*	*Per ct.*	*Number.*	*Per ct.*
Lease	9,104	20.1	3,652	7.1	2,925	8.4	950	1.4
Contract	15,670	34.6	16,915	33.1	12,126	34.7	6,981	10.6
Piece price	5,676	12.5	3,886	7.6	2,000	5.7	1,193	1.8
Public account	14,827	32.8	8,530	16.7	6,128	17.6	11,807	18.0
State use	.....	.....	12,045	23.5	7,152	20.6	33,805	51.4
Public works and ways	.....	.....	6,144	12.0	4,542	13.0	11,063	16.8
Total	45,827	100.0	51,172	100.0	34,873	100.0	65,799	100.0
Total of public-account, State-use, and public-works-and-ways systems	14,827	32.8	26,719	52.2	17,822	51.2	56,675	86.2

In 1885 the State-use and public-works-and-ways systems were not reported separately, as all such work was then classified under the public-account system. Therefore, in order to render a comparison practicable, the table shows for each of the periods mentioned the total number of convicts employed for the benefit of the State. It should be noted that the table shows quite clearly the

decline in the number of convicts employed by private industries under the lease, contract, and piece-price systems, and the increasing tendency to adopt those systems under which the convict is employed entirely for the benefit of the State.

ROAD WORK FOR CONVICTS.

In much of the discussion of the proposition of road work for convicts, there is evident a popular belief that the employment of convicts in the open air, which such work entails, is a radical departure from well-established principles and a development of very recent origin. Nothing could be further from the truth. Such employment has been in practice at one time or another in all countries, and among the ancient nations no other method of employment was known. The ancient prisons were places of detention and torture only; labor formed no part of their regimen. But there are numerous references in history to the employment of prisoners of war and of criminals on the public works of the ancient kingdoms and almost invariably these works were performed necessarily in the open air. In fact, the provision of indoor labor is of comparatively modern origin and dates back no further than the development of the workhouse in the sixteenth century, while the penitentiary, as now known, is practically a product of the nineteenth century.

In America perhaps the earliest record of the employment of prisoners on public works is found in statute 29 of the Virginia Colonial Assembly, enacted in 1658.

Somewhat later in the French colony of Louisiana, it is recorded that "Bienville, reappointed governor (1718), intending to found a town on the river, set a party of convicts to clear up a swamp—the site of the present city of New Orleans." [1]

However, the criminal class in the majority of the colonies, with the exception of those convicts who were sent to them by the mother country as "servant criminals," was very small, and there seems to have been no general system of labor as a punishment for those convicted within their boundaries. Indeed, as all who are familiar with the colonial history of America are aware, the barbarous practices of tongue splitting, branding, burning at the stake, whipping, ducking, and exposure to the public gaze in the stocks and pillory were the methods most favored by the good colonists for the punishment of their own offenders, and the number of crimes for which the death penalty was prescribed was very large.

After the close of the Revolution, one of the earliest measures in Pennsylvania "was in the direction of reforming the Penal Code, and in 1786 an act was passed providing that certain crimes, which until

[1] History of the United States, by Rich and Hildreth, vol. 2, p. 281.

then had been capitally punished, should thereafter be punished by labor 'publicly and disgracefully imposed.' Under this law the convicts were employed in cleaning streets, repairing roads, etc., their heads were shaved, and they were clothed in a coarse uniform."[1]

But as will be noted, the motive which inspired this early experiment in convict road building in the United States was wrong, and its effect is best described in the words of "a most respectable eyewitness," as reported by William Crawford, esq., in his report "to Lord Viscount Duncannon, His Majesty's principal secretary of state for the home department" in 1834 on "The Penitentiaries of the United States." He said:

> The directions of the law of 1786 were soon found to be productive of the greatest evils, and had a very opposite effect from what was contemplated by the framers of the law. The disorder in society, the robberies, the burglaries, breaches of prison, alarms in town and country, the drunkenness, profanity, and indecencies of the prisoners in the streets, must be in the memory of most. With these disorders the number of criminals increased to such a degree as to alarm the community with fears that it would be impossible to find a place either large or strong enough to hold them. The severity of the law and the disgraceful manner of executing it led to a proportionate degree of depravity and insensibility and every spark of morality appeared to be destroyed.

For these reasons the law of 1786 was repealed and in 1790 the first penitentiary in the United States was constructed in Philadelphia. All convict labor in the State of Pennsylvania was thereafter performed within its walls.

Following this example penitentiaries were established in rapid succession in Connecticut, New York, Virginia, Massachusetts, Vermont, Maryland, New Hampshire, Ohio, New Jersey, Tennessee, Kentucky, Maine, District of Columbia, Indiana, Georgia, and Illinois. In 1834 when William Crawford, esq., made his report to Lord Viscount Duncannon, the following were still without them: The States of Rhode Island, Delaware, North Carolina, South Carolina, Alabama, Mississippi, Louisiana, and Missouri, and the Territories of Florida, Michigan, and Arkansas.

From the above classification it will appear that, in general, the Northern and Eastern States were provided early with penitentiaries, whereas the Southern and Western States had no such institutions. The same classification may be made in respect to the system of labor provided for the employment of the convicts. Whereas the Northern and Eastern States adopted the contract and State-account systems and employed their prisoners in indoor workshops, the practice of leasing convicts to private persons for outdoor work was followed in the South and West practically from the foundation of the Republic.

The reasons for these early differences are readily seen in the different conditions and environment of the two sections—North and

[1] Report of the Commissioners on Penal Code of Pennsylvania, p. 13.

South. In the North the severity of the winter climate rendered much outdoor work during that season impracticable. If the convicts were to be employed the year round—and it was recognized that they should be—it was necessary to provide the means of such employment indoors during the winter season; and the institution once established with provision for indoor work, the easy and obvious thing to do was to make use of it winter and summer. In the South, on the other hand, it was thought by many persons that the hot, summer climate would be unfavorable to the employment of prisoners indoors during that season, while the mild climate permitted outdoor work at all seasons. Conditions were the reverse of those existing in the North and the pursuit of the same logic in the two sections resulted in the two opposing methods.

In addition to the effect of the difference in climate upon the employment of convicts in the North and South, respectively, industrial conditions caused by the development of large ports and manufacturing centers in the North, as contrasted with the extension of the plantation system of agriculture in the South, further accentuated the tendency to indoor employment in the North and outdoor in the South. In the North it followed logically that the convicts should be employed in manufacturing, which was the prevailing occupation of the community. The industries were the manufacture of boots and shoes, hollow ware, cooperage, harness, shirts, overalls, and other articles of trade. The same logic of conditions caused the working of the convicts in the South at outdoor tasks, such as in the mines, in the lumber and turpentine industries, in the construction of railroads, and, to some extent, in farming. As has been shown from the early experience of Pennsylvania, the attempt to employ convicts outdoors in the midst of a comparatively dense population brought about such intimate contact of convicts and public as to degrade the former and seriously to affect the order and well-being of the latter. This objection could not be raised in the South, where the population was comparatively sparse and widely distributed on plantations and manors, and where the convict, working out of doors, would fall under the observation of only occasional travelers on the lightly traveled highways.

After the failure in Pennsylvania, convicts had been rarely used in the United States on public works until nearly 1880. In England, the various attempts to abolish the system of convict transportation led somewhat earlier to the extensive and profitable use of convicts in this way, notably in the construction of the Portland breakwater, which was begun in 1848, and upon which an average of 1,000 convicts were employed for almost 25 years. In the United States the first of the modern laws permitting the regular employment of

convicts on public works appears to have been passed by the legislature of North Carolina in 1867. This law provided for the employment of county convicts on county roads in case any county should desire to use them. Subsequently similar laws were passed in North Carolina in 1873, 1875, 1877, 1879, and 1889. But the first work attempted on a practical scale under these laws was conducted by Mecklenburg County, in 1885.

Previous to this work had been begun by a few counties in the States of Georgia and Tennessee; but, though there developed immediately a considerable sentiment in favor of such employment, the use of convicts on the roads in the South did not become general until about 1890. Even then the convicts so employed were county convicts, and in practically all of the Southern States the State prisoners still were employed in other ways under the lease system.

About this time interest in the improvement of the roads of the country having been stimulated largely by the advent of the bicycle, the plan of using State convicts to accomplish the necessary work was widely agitated, and this led to the settled policy in the South of employing the convicts in that manner. For a time the Northern and Western States rejected the idea upon the ground that such labor would entail the degrading exposure of the convict to the public gaze, the same reason that had caused the abolition of the plan in Pennsylvania in 1790. In 1893 the new road law in Delaware provided for the purchase of a stone quarry and the preparation by the prisoners of stone for road work, and shortly afterward a more elaborate plant of this character was established at Folsom prison in California. New Jersey and New York also were among the first of the Northern States to enter into work of this sort. But the employment of prisoners in the actual construction of highways in the North and West is a development of the last ten years; and the reason which ultimately prompted the action in these sections were not economic considerations as in the South, but the desire to relieve the overcrowded condition of the penitentiaries, to furnish employment that would conflict as little as possible with the interests of free labor and to provide a particular form of employment for certain prisoners of the better sort.

Table 2 shows the number of prisoners and the percentages of the total prison population employed in indoor and outdoor work, and on road construction only, in the years 1885, 1903–4, and 1914–15, in a number of representative institutions in the United States. The figures for 1885 and 1903–4 were taken from the reports of the Bureau of Labor and those for 1914–15 were obtained by correspondence. In this table, as in Table 1, the figures for the latest

period represent only 186 of the 296 institutions included in the full report for 1903–4; but a comparison on the basis of identical institutions is made possible by the inclusion of the third and fourth columns of 1903–4.

This table shows that, though the proportions of convicts employed in indoor and outdoor work have not changed greatly since 1885, the numbers and percentages of convicts employed in road work have steadily increased from 584, or 1.3 per cent of the total convict population represented in 1885, to 8,341, or 12.7 per cent of the convict population represented in 1914–15. That the percentage of prisoners engaged in outdoor work has not increased correspondingly may be due to the partial substitution of road work for railroad building, lumbering, the turpentine industry, farming, and other forms of outdoor work.

TABLE 2.—*Convicts employed in indoor and outdoor work and in road work in 1885, 1903–4, and 1914–15.*

Employment.	1885		1903–4				1914–15 186 institutions.	
			296 institutions.		186 institutions.			
	Number.	*Per ct.*	*Number.*	*Per ct.*	*Number.*	*Per ct.*	*Number.*	*Per ct.*
Indoor work	28,280	62.5	28,479	55.7	19,967	57.3	36,036	55.8
Outdoor work	16,997	37.5	22,693	44.3	14,906	42.7	28,593	44.2
Total	45,277	100	51,172	100	34,873	100	64,629	100
Road work	584	1.3	3,508	6.8	2,497	7.1	8,341	12.7

A number of the States are now using convict labor in the construction of roads largely because present conditions have forced a change in the old methods of employing the prisoners, and it is probable that other States, sooner or later, will find themselves in the same position. In the South the sentiment against the leasing of convicts has reached the point where it was imperative to evolve some other system. At the same time most of these States were inadequately equipped for the housing of the entire convict population, and in a few there were no State penal institutions at all. Under these circumstances it was impossible to provide indoor work of any character for all the convicts, and, as in those States there is a pressing need for the improvement of highways, the employment of the convicts in highway construction has seemed to offer the best solution of both problems.

Throughout the country the opposition by skilled free labor to the direct competition of convict labor in the manufacture of trade articles has become so pronounced as to make the abandonment of such competitive work almost necessary, and the adoption of either, or both, the State-use system and the public-works-and-ways system

has seemed the only alternative. Experiment with the State-use system in a number of the States has revealed the fact that large prison populations can not be employed conveniently at full time under the system alone by reason of the limited demand of the State institutions and departments for such articles as the prisons can be equipped to manufacture. Hence prison officials have been forced to look to road work, farm work, or similar outdoor labor to find a medium for the employment of their charges.

In a number of States the large increase in the criminal population has resulted in the overcrowding of the old penitentiaries; while, in the light of modern knowledge of sanitation, some institutions have been found to be a menace to the health of their inmates. Road work or other outdoor employment seems to offer the best solution of these problems of sanitation and health.

Finally, the general impression is that convict road labor is cheaper than the same class of free labor, and there is a consequent demand for such labor on the part of counties and smaller political units with limited funds for necessary road work at command.

In all of the States one or more of these conditions exist, and in a number the resort to the employment of the convicts on road work has proved satisfactory, both from the economic and from the humanitarian standpoint. The scheme has both valuable and objectionable features, the most important of which are detailed below, but a full consideration of its advantages and drawbacks seems to show that such employment for at least a part of the prisoners of all the States might be provided with good results.

Of all the advantages that are urged in favor of road work as an occupation, that which carries the greatest force is that such work undoubtedly is more healthful than any form of employment which may be provided in a prison shop. Hard manual labor, in close touch with nature and its fresh air and sunshine, is universally recognized as most beneficial, while continuous dwelling within doors, with only such periods of exercise in the open as it is convenient to allow, is a most unnatural life for all but a small proportion of the State's prisoners, and is observed to have a depressing effect upon the vitality of most of the convicts, with no marked good effect upon any of them.

TABLE 3.—*Classification of convicts in 22 representative States according to employment prior to arrest.*

Name of State.	Percentage of total population by occupations.				
	Professional.	Merchants and tradesmen.	Outdoor laborers, skilled and unskilled.	Shop workers and indoor laborers.	Unemployed.
New England group:					
Connecticut	5	5	49	41	.....
New Hampshire	10	2	56	31	1
Middle Atlantic group:					
New York	12	9	48	30	1
Pennsylvania	5	4	64	27	.....
Maryland	5	2	67	26	.....
Southeastern group:					
South Carolina	4	.....	77	19	.....
Georgia	1	1	92	6	.....
Louisiana	4	1	83	12	.....
Middle Western group:					
Illinois	14	7	48	31	.....
Indiana	6	8	61	25	.....
Iowa	7	5	67	21	.....
Minnesota	7	6	65	21	1
Western group:					
Montana	7	6	63	23	1
Idaho	11	1	73	15	.....
Wyoming	8	2	70	20	.....
Utah	6	1	62	31	.....
Oregon	9	4	63	24	.....
Colorado	11	6	56	27	.....
New Mexico	3	1	80	16	.....
Arizona	8	1	79	12	.....
California	13	5	50	31	1
South Dakota	8	5	68	19	.....
Average by States	7.43	3.75	65.50	23.09	0.23

The desirability of providing open-air work, as on roads, is enhanced by the fact, shown by the prison statistics of practically all States, that a majority of the prison inmates are of the laboring class or of those classes whose habits of life prior to conviction kept them much of the time out of doors, engaged in occupations similar to those afforded by the various phases of road work. As an indication of the strength of this argument, Table 3 has been prepared, based upon the latest reports of the penitentiaries in the 22 States which were selected as typical of conditions in the various sections of the country. All convicts in these States have been grouped into five classes according to their occupation prior to conviction, namely: Professional; merchants and tradesmen; outdoor laborers, skilled and unskilled; shopworkers and indoor laborers; and unemployed. The table shows that an average of practically two-thirds of the inmates of the institutions represented were engaged in outdoor occupations, that about one-tenth belonged to the professional and mercantile classes, and that only about one-fourth of all the convicts were fitted to endure the confinement of life in penitentiary shops. Upon members of all but the fourth class, then, such confinement has an undoubted physically degenerating effect, and particu-

larly leaves the outdoor laborers unfitted to resume their former work after discharge.

Aside from its deleterious physical effect, the monotony of prison-shop labor has a tendency to reduce the mental activity of the inmate unused to such life, and upon release many of the members of the professional and mercantile classes find themselves no longer able to keep pace with their more alert competitors. Work on the roads offering, as it does, a variety of employment has no such degenerative mental effect, and for this reason is better than shopwork as an occupation for about three-fourths of the prison population.

But leaving entirely out of the question the superior mental and physical advantages of road work or similar outdoor work, a majority of prison officials favor such work for the reason that it removes the convict as far as possible from competition with free labor. It is true that no matter what form of employment be adopted for prisoners, unless it be entirely unproductive, the interests of free laborers will be affected to a greater or less extent; but, by reason of the fact that it is performed in the interests of the public only, that it enriches no private employers of labor to the injury of the free laborer, and that its product is not placed on competitive sale with that of free labor, road work is certainly no more injurious to the interests of the latter than such work as is performed under the State-use system. What is more, in many localities the convict is not depriving the free laborer of work, since much of the road work performed by convicts could not be undertaken at all, for financial reasons, if it were necessary to employ free labor.

Another very important consideration in regard to road work is that it is extremely productive to the public. No field can be selected in which the expenditure of prison labor can be applied with greater benefit to the States, for the reason that, as a whole, there is no greater public need than the improvement of the highways. It is true that the value of such labor can not be measured so readily in dollars and cents as the industrial labor within the penitentiaries, but there is every reason to believe that, properly conducted, the road work may be carried on with as much efficiency as the penitentiary industries, while the former has the additional advantage of requiring no sale or transfer to place it in public use. At this point let it be noted that, although the convict's labor, so applied, may be of very great benefit to the State, it also is of benefit to the convict himself in that it brings to him the realization he can not grasp in the prison-shop grind, that he may be of real importance in life as a producing agent. Through the promotion of his self-esteem in the useful works of the construction camp, there is created the desire to merit the good opinion of his fellows, without which reformation is impossible.

When, as practiced in a number of States, assignment to the road camp is reserved as a reward for those prisoners who have proved in close confinement their merit and good intention, the reformative value of the road labor is further enhanced by the progression from the restriction of bars and locks to the freer regulation of the camp. By doing away with all marks of degradation, such as stripes and chains and shaven heads, by permitting the exercise of more and more initiative, and the granting of an increasing degree of freedom as the ability to use it properly is manifested, the very publicity of the convict's position on the roads is transformed from a mark of disgrace to an acknowledgment of the confidence of his keepers; and by practice in self-restraint and proper living under guidance in the camp he is fitted to live a life of similar circumspection after discharge. That such is the actual effect of the employment of convicts on the roads is the testimony of all prison officials who have employed such a system and who point out that the number of recidivists in their populations is markedly reduced.

Finally, as implied above, it is possible to make the road work, when carried on in conjunction with other industries inside the walls, a very useful factor in the discipline of the penal institution. All prisoners appreciate the opportunity of working in the open under conditions which are not disgraceful. Therefore the assignment to the road camp may be regarded as a reward, while withdrawal from it and return to the walls is regarded by all prisoners as a severe punishment. By the proper granting and withdrawing of this and other rewards which will be discussed in a succeeding chapter, and only by so doing, can corporal and severe punishment of all descriptions be eliminated.

Against the advantages outlined above, the opponents of road labor urge the following objections:

It exposes the convict to the public gaze and not only advertises his shame, but has a tendency to harden the public feeling by permitting it to grow accustomed to spectacles which constantly suggest crime. This objection is advanced not by sentimentalists only, but by men among the most thoughtful and experienced of prison officials and students of penology in all civilized countries. At the International Prison Congress at Budapest in 1905, where the question of open-air occupation of prisoners was discussed by experts from all nations, the conclusions were summarized in brief form as follows:[1]

It will be noticed that the Congress has committed itself in favor of working prisoners in the open air as far as possible, but under very rigid conditions and with careful restrictions. It is very dangerous, in introducing a reform, to carry it too far and to break it down by wrong methods. All the best authorities, for example, insist that prisoners working outside the prison ought never to be brought in contact with free

[1] "Notes on Outdoor Labor for Convicts." Chas. R. Henderson.

laborers and with the general public. They give reasons for this position. If prisoners are set to work on public roads or streets of cities where people are constantly passing, they must be chained and guarded by men armed with deadly weapons. If the weapons are used in places where citizens pass, there is danger of killing the wrong person. Nothing can be more degrading to a prisoner, nothing more hardening to the public feeling, than the public punishment of convicts.

These conclusions carry the weight of the highest authority; but it should be noted that they are directed only against the employment on the roads of that class of prisoners which can be so employed only when secured by chains and armed guards. It is generally conceded that any successful employment of prisoners depends upon their proper classification and the adapting of the labor imposed to the needs and ability of the individual convict; and for those prisoners who can be employed in public under proper conditions road work offers a convenient, productive, and beneficial occupation. It is believed, however, that the foregoing objection is valid when applied to the indiscriminate employment of convicts in public.

The second objection, which also carries force when applied to any system of outdoor labor which does not include a classification or grading of prisoners according to character, habits, and ability, is that the congregate life of the road camp exposes the better convicts to the physical, mental, and moral contamination of their more depraved associates. However, this objection, like the first, is not directed solely against road labor and can not apply to such labor when conducted under proper conditions.

A third objection is to the effect that road labor is not suited to the ability or physical strength of all prisoners, and that there is a class of prisoners, such as physicians, lawyers, merchants, clerks, whose previous habits of life entirely unfit them for such work, who will never apply such manual experience after release and who may receive actual physical injury through such employment. Table 3 shows that this class does not form more than 20 per cent of the entire prison population of any State listed, that in many the proportion is far below that, and that the average for all States included in the table is only about 10 per cent. Therefore, this objection also can apply only to the indiscriminate employment of all prisoners on road work, and can not be held against any system which provides for the careful classification of prisoners and the subjection to road labor of only those who are found to be fitted for such work.

The fourth, a more serious objection to road work than any of the foregoing, is that such work, in common with other forms of outdoor employment, affords much greater opportunity for escape than does any form of indoor employment. To offer this greater opportunity to prisoners weak in self-control is to place before them a temptation they can not well resist; and to subject them to the possibility of

being shot if they yield to their uncontrollable impulses, is unfairly to place their lives in jeopardy. However, the seriousness of this objection is minimized by a proper selection of the convicts who are to be detailed to the road work. Under the present generally prevailing system, judges are compelled to impose definite sentences and when such a sentence has been served the prisoner is released regardless of his fitness again to take his place in society. It would seem therefore that the escape of a prisoner thus arbitrarily sentenced may not be much more dangerous than his premature release at the expiration of an irrationally determined period of imprisonment. It must be understood that this is not a criticism of the trial judge, but of the system which requires the imposition of the definite sentence rather than an indeterminate sentence.

A fifth objection is that road work can not prove to be a solution of the prison-labor problem because it is impracticable to provide such employment during the winter. This objection does not apply at all to the employment of prisoners in most of the Southern States, for in those States the climate is sufficiently mild to make road work possible at all times. In the North and West the climate may present a serious obstacle, for it would not be good economy to maintain the additional equipment necessary for the indoor employment of large bodies of men to be used only a few months in the year. But to road work as it can best be used in the Northern States—that is, as an employment for a small number of picked men who are assigned to it as a reward—there can be no greater objection than to farm work or other forms of outdoor industry, and for such small numbers of men work allied to road construction, such as rock crushing and the manufacture of concrete culvert pipe, which can be performed during the winter, may be provided conveniently and at small expense.

The sixth and seventh objections are closely allied with each other. The former is that outdoor employment, particularly on road work involving frequent moving of the men and their camp equipment, entails a larger expense for the maintenance of the prisoners than work conducted within the penitentiary. This objection is frequently pointed out by penitentiary officials upon whom falls the responsibility for the expenditure of prison funds.

The seventh is usually suggested by the highway commissioner or supervisor, who is responsible for the road labor of the convict, and it is that such use of convicts is economically bad, because the same work frequently can be done at less expense by free labor, on account of the comparative inefficiency of the convict labor. Both these objections lose much of their force when it is considered that in some States it is a question not whether the convicts shall be employed on road work or any remunerative work, but rather whether the convicts shall be maintained in idleness or placed upon the roads; while

in other States the work done under the State-use system, the only other system which does not conflict directly with the interest of free laborers, is found to be even less efficiently performed than is the road work. Furthermore, except in those sections where the wages of free laborers are exceptionally low or the efficiency of such labor exceptionally high, there seems to be no good reason why road work can not be accomplished by convict labor at considerably less expense than by free labor.

EFFICIENCY AND ECONOMY OF CONVICT LABOR.

The relative efficiency of convicts and free men as road laborers is a phase of the convict problem of particular interest. Unfortunately, it is also a phase upon which it is practically impossible to develop precise information. Manifestly, an entirely fair comparison can be made only where both classes are employed in like localities under exactly similar conditions. This is rarely possible, because convicts and free men are seldom employed together, even on different sections of the same road where conditions might be assumed to be roughly identical, but by making proper allowance for differing conditions it is sometimes possible to form reasonably accurate estimates of the comparative value of the two classes of labor. Estimates of this sort are not wanting, but in their bearing on the general question of the efficiency of convict labor they serve to confuse rather than to illuminate, for they rate the relative efficiency of the convict at from 50 to 150 per cent of that of free labor.

By assembling a number of such estimates from different localities and under different conditions it is possible to arrive at a composite figure which will represent the average relative efficiency of convict labor throughout the localities represented. An estimate of this sort was made by the United States Bureau of Labor and published in the Twentieth Annual Report of the Commissioner of Labor in 1905. The data for that estimate were secured by agents of the Bureau of Labor from prison officials, foremen, contractors, lessees, and from employers of free labor in the localities in which convicts were employed. As a result of this survey, it was found from a total number of 111 estimates in regard to highway construction in the States of California, Connecticut, Florida, Georgia, Kansas, Michigan, Minnesota, Missouri, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, South Carolina, Texas, Virginia, Washington, and the District of Columbia, that the labor of 3,522 convicts was equivalent to that of 3,481 free laborers of average skill, working the same number of hours per day. But that such general estimates are of little value in the consideration of particular cases is well illustrated by the fact that if the estimates for the States of Cali-

fornia, Connecticut, Kansas, Michigan, Minnesota, New Jersey, New Mexico, New York, Oregon, Pennsylvania, and Washington, in which a majority of the convicts are white, are separated from those for the southeastern States, where the majority of the convicts are negroes, it is found that in the former section 355 convicts were estimated to be equivalent to 174 free laborers, which would indicate a relative efficiency of each convict of only about 49 per cent, whereas in the southern States it was computed that the labor of a daily average number of 3,167 convicts could not have been performed with less than 3,307 free laborers of the same States, indicating that the convicts of that section, under the direction given them, accomplished approximately 5 per cent more than the free laborers.

Because of this extreme variability of the relative efficiency of convict labor and free labor, a study of the causes which bring about a difference in the efficiency of the two would seem to be more profitable than an attempt to indicate by figures the amount of the difference. These causes are of two classes, the first being found in the character of the convicts and free men considered as individuals, and the second in the organization and control of groups of each kind of labor.

Considered as an individual worker, it seems to be generally assumed that the average convict is less efficient than the average free worker. As a class they undoubtedly possess a lower order of intelligence and less initiative, ability, and willingness in the performance of honest work than free laborers. Of course, there are as wide differences in character among convicts as among free men, and many convicts prove themselves to be the equals of the best free laborers. But a larger number, by nature possessed of normal ability, seem to have permitted their faculties to become dulled through long careers of idleness, viciousness, and crime; some are mentally or physically defective, and thus unable to compete on a parity with free labor; and others, abnormally quick and intelligent, are shrewd enough to evolve all sorts of schemes to avoid work which is distasteful to them. While the foregoing remarks are true with respect to convicts as a class, it should be noted that the negro convicts of the South are generally conceded to present an exception to the rule. Other conditions being equal, they are regarded by all those best qualified to judge as more efficient workmen than the available free labor of the same section. The reason for this condition is probably found in the fact that the best classes of negro laborers are not generally obtainable for road work, and that when the negro of criminal tendency falls into the hands of the law he is compelled to live a regular and healthful life, which results in his marked physical improvement, while the fear of punishment produces a respectful

attention to the orders of the overseers, and a willingness to do more work than money would induce him to perform.

In certain sections, notably in the South, the convicts are drawn largely from previous occupations involving the performance of a kind of labor similar to that required in road work. On the other hand, prisoners of other sections are derived to a much greater extent from the shops and factories, and far fewer of them from the outdoor occupations. For example, Table 3 shows that in New England and the Middle Atlantic States the average proportion of convicts derived from professional pursuits and from the ranks of the merchants, tradesmen, shop workers, and indoor laborers was 42.8 per cent. The occupations of these men prior to conviction were totally dissimilar to the work of the road camp, and in general they do not make efficient road laborers. In the southern States represented, however, it will be observed that the average proportion of convicts belonging to these same classes was only 16 per cent, the remaining 84 per cent being derived from the class of outdoor laborers to whom road work is more or less familiar, and who are best fitted by nature to perform the hard manual labor which it involves.

The second class of causes explaining this difference between free and convict labor includes those factors in the organization of convicts into working groups, in their discipline, and in the means adopted for effecting their security, some of which tend to promote the efficiency of the convict force as compared with the free-labor gang, and others which tend toward relative inefficiency. It is probable that these factors are more important in determining the efficiency or inefficiency of convict labor than is the factor of individual efficiency.

In comparing the economy of convict and free-labor gangs, consideration must be given to the facts that the daily expense of a convict to the State is much less, as a rule, than the daily wage of free labor, and that even though the convicts be actually less efficient than the free laborers, man for man, it is possible that the work of the convict gang may be more productive than the free-labor force at the same cost. This difference between the cost of maintaining the convict and the wage of the free laborer is the greatest economic advantage of convict labor, and the extent of this advantage in a number of the States is indicated by comparison of columns 9 and 17 of Table 4.

TABLE 4.—*Cost of maintenance of convict labor.*

State or county.	Maintenance costs per calendar day.														Maintenance of productive laborers per working day.	Daily wage of free labor.
	Food.	Clothing.	Guarding.	Transportation.	Medical attention and incidentals.	Interest and depreciation of camp structures and equipment.	Per diem.	Total.	Force employed in camp maintenance.	Maintenance cost of productive laborers per calendar day.	Time of productive laborers lost by—					
											Sickness.	Sundays and holidays.	Bad weather.	Total.		
									Per cent.		*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*		
New Jersey:																
State camp No. 1	$0.45	$0.045	$0.433	$0.02	$0.035	$0.124	.....	$1.107	14.0	$1.287	5.0	15.0	7.0	27.0	$1.763	$1.75
State camp No. 2	.24	.045	.431	.01	.046	.093	.....	.865	7.0	.93	1.0	15.0	7.0	23.0	1.208	1.75
Kalamazoo County, Mich.:[1]																
Married men	.50	.01	.....	.005	.015	.02	$1.00	1.55	.....	1.55	.5	15.0	7.0	22.5	2.00	2.00
Single men	.50	.01	.....	.005	.015	.02	.20	.75	.....	.75	.5	15.0	7.0	22.5	.968	2.00
New Mexico	.253	.068	.053	.102	.043	.043	.....	.562	10.0	.624	.5	15.0	2.0	17.5	.753	2.00
Arizona:																
Guarded camps	.414	.108	.378	.104	.055	.017	.....	1.076	15.0	1.266	3.0	15.0	2.0	20.0	1.582	2.50
Honor camps	.414	.108	.....	.104	.055	.017	.....	.698	16.0	.831	3.0	15.0	2.0	20.0	1.039	2.50
Colorado	.288	.05	.....	.03	.030	.022	.....	.42	17.5	.509	.5	15.0	5.0	20.5	.640	2.25
Utah	.25	.05	.45	.07	.03	.03	.....	.88	9.0	.967	.5	15.0	4.0	19.5	1.186	2.25
Virginia	.095	.032	.148	.009	.064	.041	.....	.389	10.0	.432	3.0	15.0	7.0	25.0	.576	1.25
Texas:																
Smith County honor camp	.315	.019	.....	.025	.002	.03	.25	.641	17.1	.772	.5	15.0	6.0	21.5	.983	2.00
New York State camp	.355	.043	.226	.035	.02	.04	.....	.719	13.0	.826	5.0	15.0	7.0	27.0	1.131	2.00
Washington:																
Honor camps	.404	.132	.....	.06	.035	.04	1.50	.671	12.5	.767	6.0	15.0	8.0	29.0	1.58	2.50
South Carolina:																
Charleston County	.122	.04	.213	.02	.044	.025	.....	.464	15.0	.546	8.0	15.0	5.0	28.0	.76	.75
Richland County	.179	.04	.385	.01	.03	.02	.....	.664	10.0	.738	.5	15.0	5.0	20.5	.928	1.00
Union County	.18	.03	.303	.01	.035	.015	.....	.573	8.0	.623	1.0	15.0	5.0	21.0	.788	1.00
North Carolina:																
Durham County	.30	.041	253	.005	.03	.02	.....	.649	8.0	.705	1.0	15.0	5.0	21.0	.892	1.25
State Camp	.226	.04	.245	.02	.03	.02	.....	.581	10.0	.645	2.0	15.0	5.0	22.0	.827	1.25
Georgia:																
Fulton County	.195	.11	.174	.01	.012	.04	.....	.541	8.0	.588	.5	15.0	5.0	20.5	.74	1.50
Chatham County	.112	.053	.22	.01	.043	.04	.....	.478	8.0	.52	1.0	15.0	5.0	21.0	.658	1.50
Florida:																
De Soto County	.30	.05	.40	.01	.01	.01	.....	.78	8.0	.868	2.0	15.0	5.0	22.0	1.087	1.50
Osceola County	.28	.116	.32	.02	.05	.02	.....	.806	6.0	.847	1.0	15.0	5.0	21.0	1.085	1.50
Orange County	.40	.062	.153	.01	.025	.025	.....	.675	7.0	.726	2.0	15.0	5.0	22.0	.931	1.50
Alabama:																
Bullock County	.20	.06	.17	.01	.02	.02	.....	.48	10.0	.533	1.0	15.0	5.0	21.0	.675	1.00

[1] Per diem paid on working days only.

The only other important economic advantage of convict labor over free labor is that the force is absolutely dependable so far as numbers are concerned. Plans for work can be made in advance with a sure knowledge that the anticipated number of laborers will be on hand to execute them. There can be no tardiness in the convict camp such as is frequently the fault of free labor, and, furthermore, the regularity of the force enbles a competent overseer to develop the maximum efficiency of each man to an extent which is not possible with shifting free labor.

But this latter quality which, in one respect is an advantage, in another is one of the most serious defects of convict labor. The constancy which makes the force dependable in attendance and which permits the overseer to provide each man with the work best suited to him, prevents altering the size of the force with changes in the requirements of the work. The force is constant and must be constantly maintained, whether the work justifies it or not. During the delays incident to the failure of road or quarry machinery, the belated arrival of road material, difficulties in acquiring right of way, the opening of new sources of road surfacing material, high water in quarries or gravel pits, and other unavoidable causes too numerous to mention, the whole or a part of the force must be maintained in relative idleness. On Sundays and holidays and during bad weather the continuous expense of the convict camp goes on. In addition to these losses the sick must be maintained though they are entirely unproductive, and this loss amounts to from one to five per cent.

The above concerns the losses in the time of the productive labor of the camp, but part of the squad employed in preparing food and maintaining the camp is necessarily always unproductive in units of road work. The proportion of the force so employed varies from 7 to 17 per cent, and the average is about 10 per cent.

Thus taking into account only the losses which can be anticipated with reasonable accuracy and omitting from consideration those which are incident to unavoidable failures in the work, the cost of maintaining one productive road laborer one working day will be found to be from 40 to 50 per cent greater than the maintenance cost per convict per calendar day. Table 4 contains data secured by representatives of this office relative to the itemized cost of maintenance and the time lost for the above mentioned reasons. In a number of instances the figures given are necessarily estimates because accurate records were not at hand, but it is believed that they are the best estimates obtainable. The effect of the lost time upon the maintenance cost will be apparent at once by comparison of columns 9 and 16.

Aside from the large loss through enforced idleness there are a number of other causes of inefficiency due to the very fact that the

laborers are convicts. Among the most important of these is the lack of a sufficient incentive to induce the convict to labor diligently. Even among free laborers the man who works for the pure love of his work is in a decided minority. These thoughts do not animate the convict. He has no fear of losing his position, and he is aware that he will rarely be punished for the small procrastinations which he knows well how to practice. Indeed he is very sure that his guards and keepers expect him to be inefficient in a small way, and that he will not forfeit his good time for any but flagrant violations of the rules or open disobedience to orders. He prefers to work rather than to remain in absolute idleness, but he takes his work as a pastime and seldom permits it to become irksome. He sets his own pace and there is a comparatively small percentage of ambitious workers among convicts, such as set the standard of work for the less ardent among free laborers. He frequently feigns sickness to avoid work, and often in such a way as to defy detection. He becomes surly and unruly when worked beyond his will so that his keepers often are forced to lower their standards, in order to avoid the too frequent administration of punishment. The investigators witnessed an example of this sort in an eastern State, where a squad of convicts engaged in grading was found divided into two gangs of pickers and shovellers respectively. The shovellers rested while the pickers worked, and vice versa, which amounted to the employment of the entire squad only one-half the time. When questioned about this practice the superintendent replied: "It is impossible to work the men economically because they would become dissatisfied and we would have to be sending them back to the penitentiary continually." Corporal punishment is forbidden in this State, hence to administer punishment means to return the men to the penitentiary. Though this is an extreme example, all who have worked convicts know that it is only possible to overwork them by the introduction of actual cruelty into their discipline, and that in general the only men about a convict camp who are likely to be overworked are the foremen and the superintendent.

This lack of incentive may be overcome to a great extent by a system of reward for earnest effort, as explained elsewhere in this bulletin.

Another fact which precludes the possibility of developing the convict squad into as efficient an organization as the free-labor gang is that in the former it is impossible to eliminate completely the incompetent worker. As stated, there are differences in ability among convicts as among free laborers, but whereas in the employment of the latter it is possible, by selection, to raise the plane of efficiency of the organization to a high level, the incompetent convicts generally must be carried along with the relatively competent, and the efficiency of

the organization suffers by the presence of diseased and crippled convicts, incapable of performing a man's work, and those who, by reason of idleness or self-indulgence prior to conviction, are physically soft and inexperienced. The presence of these undesirables, from a labor standpoint, seriously hampers the development of an efficient organization.

A further source of inefficiency is frequently found in the difficulty of securing superintendents and foremen who combine the qualities of judgment and tact in the management and control of the convicts, and of skill and ability in road construction. The attempt to avoid this difficulty by the employment of two set of officers frequently is rendered abortive by the creation of friction between the two branches of control. Often the difficulty of securing competent superintendents is increased by the fact that candidates must be acceptable not only from the standpoint of their qualifications as road builders and guards, but also in respect to their political connection, and usually the salaries offered to candidates are so low as not to attract men of a high order of ability. These various difficulties frequently result in the selection of incompetent officials, superintendents, and guards, and such a step is invariably reflected in the low plane of efficiency of the convict force.

Much of the inefficiency of convict work results from the use of guarded convicts upon that type of road, which for its most economical construction requires a very flexible force. The construction of top-soil and sand-clay roads can not be satisfactorily done with gang labor, but requires a force readily divided into small units. In dealing with guarded convicts it has been found that one guard can successfully handle as many as 15 men when the character of the work will permit the organization of squads of that size. Grading, quarrying, and the construction of macadam roads afford such an opportunity, but the less continuous and more widely distributed work on the cheaper road surfaces prevents the use of such large squads. That this factor is of more than mere theoretical interest is evidenced by the records of the Virginia Highway Commission. In this State, where the convict road force is managed as well as in any State in the Union and with a lower maintenance cost than in any other State, the records of the cost of road work during the period from 1909 to 1915, inclusive, as given in Table 5, show that while the work of grading and the construction of macadam roads were conducted to considerable advantage with convict labor, the convicts employed in the building of gravel roads were able to show only a slightly lower cost per mile than free laborers employed on the same class of work, while the average cost of sand-clay and soil roads was nearly 45 per cent higher. These records confirm the opinion of many engineers and foremen that the use of convict labor on the light work ordinarily

carried on by the counties of the southern States is a mistake. In the interest of economy it would be better were all this work done by free labor and the use of convicts confined to heavier construction and grading. But if convicts are to be used at all on such work they should, without doubt, be honor men, who may be organized into a fairly mobile force.

TABLE 5.—*Showing comparative mileage and cost of various types of road constructed in Virginia by convicts and by free labor.*

[Based on 12-foot width of surface.]

MACADAM ROAD.

Year.	By convict labor.			By free labor.		
	Miles.	Total cost.	Cost per mile.	Miles.	Total cost.	Cost per mile.
1909	45.41	$203,662.85	$4,484.98	18.26	$89,050.78	$4,876.82
1910	53.52	233,314.57	4,359.39	81.25	401,905.83	4,946.53
1911	56.77	195,671.52	3,446.74	67.90	336,369.88	4,953.90
1912	48.27	218,589.38	4,528.47	95.57	551,475.04	5,770.38
1913	91.11	368,570.96	4,045.34	85.87	484,343.59	5,640.42
1914	69.46	286,655.65	4,126.92	81.13	372,743.46	4,594.40
1915	76.48	303,110.76	3,963.27	82.83	376,761.99	4,494.36
Total average	441.02	1,809,575.69	4,103.16	512.81	2,612,650.57	5,094.77

GRADING.

1911	1.60	$3,043.30	$1,902.06	71.25	$169,577.77	$2,380.04
1912	24.34	29,946.12	1,230.33	190.23	618,885.49	3,253.35
1913	3.73	4,711.97	1,263.26	94.43	178,547.12	1,890.79
1914	3.32	3,185.82	959.58	141.39	222,454.73	1,573.34
1915	38.09	69,639.04	1,828.28	173.20	291,379.22	1,682.33
Total average	71.08	110,526.25	1,554.95	670.50	1,480,844.33	2,208.57

GRAVEL ROAD.

1909	25.20	$32,289.37	$1,281.32	8.86	$11,539.82	$1,302.46
1910	32.50	39,433.40	1,213.33	49.94	61,066.18	1,222.78
1911	25.69	29,454.37	1,146.53	66.68	85,098.10	1,276.22
1912	7.89	11,708.11	1,483.92	59.74	75,475.23	1,263.40
1913	55.05	67,556.69	1,227.19	64.13	80,780.97	1,259.64
1914	45.51	74,659.92	1,640.51	71.85	128,801.69	1,792.65
1915	22.60	41,419.38	1,832.71	103.96	221,083.36	2,126.62
Total average	214.44	296,521.24	1,382.77	425.16	663,845.35	1,561.40

SAND-CLAY AND SOIL ROAD.

1909	16.91	$5,251.48	$310.55	49.57	$24,463.59	$493.52
1910	24.96	17,613.08	705.65	111.01	48,290.23	435.01
1911	39.92	28,080.65	703.42	174.97	69,629.81	397.95
1912	90.21	53,811.71	596.51	195.37	83,638.53	428.11
1913	101.44	69,314.40	683.30	345.60	169,492.43	490.43
1914	218.90	148,161.87	676.85	479.34	251,676.08	525.04
1915	174.33	153,064.83	878.02	408.94	227,344.16	555.93
Total average	666.67	477,298.02	715.94	1,764.80	874,534.83	495.54

Another very important factor in determining the economy of a convict force is the population of the camp and its adjustment to the work to be done, but it is a factor which is overlooked frequently,

with resulting inefficiency and failure. Among the considerations entering into the determination of the most effective size of camp are the character of the work, the size of squad that can be safely handled by a guard or foreman, the number of camp men necessary to prepare food and keep the camp in order, and the nature and convenience of the camp buildings and equipment. A camp whose only operation is grading should not be so large as one which is designed to carry along the grading of a road, quarrying and crushing stone, and surfacing all at the same time; but whatever the work, the size of the camp should be properly proportioned to it, and if the working force be too great or too small inefficiency is sure to follow. Also, it is evident that if one guard or foreman can safely control 10 convicts, a working force composed of any number of men not a multiple of 10 is to a certain extent an uneconomical force, since in that case one guard would have a squad of less than 10. Not less than two men are required to cook and care for even the smallest camp, and no more than two are required for 20 men. Furthermore, the overhead charges for superintendence, engineering, and bookkeeping are but little if any larger for 40 or 50 men than for 20, and the per capita cost of these items decreases as the population increases. The maximum limit is reached with the largest population for which the superintendent can assume responsibility successfully. Between the minimum and maximum limits the most effective population, in any case must be determined by trial and observation; but it is likely that under average conditions this will be found to be about 40 or 50 men. In many of the smaller southern counties the number of convicts on hand at one time is not more than 20 who must be employed either inefficiently on the roads, or at some less desirable occupation, or else maintained in idleness. Under the present laws in many of the States this condition must be endured, but it might be remedied by the enactment of laws placing county convicts under State control and employment.

Finally, the employment of short-term men invariably results in ineffective work. Since to harden and instruct the recruit requires, in the qualified judgment of superintendents and foremen, from 30 to 60 days, it is obvious that road work employing misdemeanants of terms averaging less than six months must bear a heavy burden of lost time and ineffective labor.

The foregoing are the principal factors which determine the relative efficiency of convict and free labor. They form a body of conflicting and opposing tendencies the individual weight of which can not be appraised except by study and trial in the particular case at hand. In this statement lies the reason for the continuance of inefficiency in all convict work. For, though the tendencies outlined in this chapter have been well known, the means of studying the com-

parative influence of each under particular conditions have not been at hand, owing to the failure of public authorities to preserve adequate record of the amount and cost of work performed and the exact cost of the maintenance of convicts. Because of the apparent cheapness with which convicts are fed, clothed, and housed, officials have been led, through this lack of adequate records, into a false sense of security in regard to the economy of convict labor, and there has been a tendency to condone and overlook lapses from a standard of high efficiency because of a feeling that the margin between the daily cost of convict and free labor was wide enough to allow a certain amount of waste. But a comparison of the costs of maintenance of convicts and the prevailing wages of free labor in the typical cases given in Table 4 should prove convincingly the need of closer attention to detail in the employment of convicts.

In considering the economic improvement of a system of convict road labor the geographical factor must be kept in mind constantly. The problem in the South is widely different from that of the North, East, and West, and there are minor differences between the conditions in these latter sections. In the South, the human material dealt with is so radically different from that of the other sections that its problems are not to be remedied by means which will apply very well to the other sections. But, as has been shown, the difference is economically in favor of the South because of the character of the previous experience of its prisoners, their greater responsiveness to discipline, and the relative cheapness of their accustomed manner of living. However, in general, it is believed that the interests of economy may be subserved—

First, by strict attention to the cost of maintenance and by honest effort to reduce it to the minimum amount consistent with proper living conditions and discipline; second, by the reduction, so far as possible, of all losses of working time; third, by providing a positive incentive to industry to offset the negative fear of punishment; fourth, by the elimination of politics as a factor in the selection of officials; fifth, by offering to officials such salaries as to command the services of capable men; sixth, by combining the responsibility and authority for the direction of road work and convicts in one person at each camp; seventh, by such a diversification of labor and employment as to provide for the large body of prisoners the kind of work in the performance of which they manifest the greatest ability; eighth, by judicious selection of the work to be performed by convicts; ninth, by the proper adjustment of the size of the force to the requirements of the work and by the formation of camps of economical size; tenth, by adopting a more mechanical kind of work for short-term prisoners, or, if they must be employed at road work, the separation of long and short term men.

As has been stated, it is exceedingly difficult to secure reliable cost data on the employment of convicts, but after a wide study of the convict problem throughout the United States the following examples of accurate and authoritative information have been selected from a mass of generalities and superficial statements. They present reliable comparisons of the efficiency and economy of the two kinds of labor employed on the same roads in different sections of the United States.

Example I. From September, 1913, until August 26, 1914, guarded convicts were employed under the supervision of the State highway engineer on the Bisbee-Tombstone highway in Arizona. On the latter date the convicts were withdrawn from the work in order to provide employment for free labor thrown out of work by the condition of the copper industry which followed immediately after the opening of the European war. The free labor employed to continue the work consisted, therefore, largely of copper miners, and was paid at the rate of $3 per eight-hour day. A comparison of the work done by convicts during the month of July, 1914, and that done by free labor on the same road during September of the same year, both forces being employed under the same general superintendence, shows a marked advantage in the use of the convict labor. The daily average number of prisoners actually employed in the road work in July was 77, and the daily average number of free laborers actually employed during September was 71. A comparison of the various items in Table 6 will show not only that the work was done by the convicts at lower unit costs, which might be attributed to the extremely high price of free labor, but the actual amount of work accomplished per individual in the same time was greater in the case of the convicts than of the free men.

TABLE 6.—*Comparison of free and prison labor on Bisbee-Tombstone road, Arizona.*

Activity.	July, prison labor.			September, free labor.		
	Total quantities.	Quantities per man.	Unit price.	Total quantities.	Quantities per man.	Unit price.
Grading:	*Cubic yards.*	*Cubic yards.*		*Cubic yards.*	*Cubic yards.*	
Solid rock	1,649.7	21.42	$1.375	981.6	13.82	$2.13
Loose rock	961.3	12.48	.59	521.6	7.34	1.515
Bowlders	829.8	10.78	.81	937.9	13.21	1.777
Excavation:						
Solid rock	389.5	5.06	1.23	219.1	3.09	2.676
Loose rock	21.5	.28	1.16	3.0	.04	1.666
Concrete	143.4	1.86	6.0	65.0	.91	9.44
Masonry	44.4	.58	5.46	37.0	.52	6.53
Ditching:						
Solid rock	84.1	1.09	1.52	21.7	.31	2.64
Earth	39.8	.52	.46	53.0	.75	.925
Clearing and grubbing	[1] 7.0	[1] .09	11.31	[1] 3.0	[1] .04	11.87

[1] Acres.

Example II. The effect of a large amount of lost time upon the cost of work by convict labor is very apparent in Table 7 of unit costs of work performed in the State of Washington by honor convicts, free day labor, and contract labor on the Olympic, Pacific, and other highways. In explanation of the results accomplished with convict labor the biennial report of the State highway commissioner is quoted as follows with regard to the Olympic highway work:

The excavation work during the winter months was entirely in earth. The earth, which is classified as common excavation, is a material composed of a mixture of soil and gravel, resting on a cemented gravel or hardpan foundation, which slopes toward the road and water's edge. Owing to the porous nature of the soil and the impervious foundation below, a large amount of surface water is retained, thus causing many slides. During the winter months these slides were a continual source of expense. Great quantities of soft earth intermingled with trees, stumps, and brush would come down on the road, and in some instances destroy the finished roadbed. When the conditions would permit, the men worked even though it rained, with comparatively little ill-feeling toward their position. At times the material became so soft that it would run from the shovels and resemble mortar more than earth and the men sank halfway to their knees in the mire. During the month of January it rained continuously for 25 out of 27 days and working under such unfavorable conditions, the best of efforts accomplished but little, much time necessarily being lost * * *.

And in regard to the Pacific highway work:

About the same general conditions surrounded this work as that on the Olympic highway, but the excavation was in a different class of material and the slides did not interfere with the progress of the work. Over half of the excavated material was solid rock and could be handled more economically during the wet weather than the earth.

TABLE 7.—*Unit costs of work on certain highways in the State of Washington.*

Items of work.	Convict labor.		Day labor.			Contract labor.			
	Olympic highway.	Pacific highway.	Olympic highway.	Pacific highway.	National park highway.	Olympic highway.	Olympic highway.	Sunset highway.	McClellan pass highway.
Common excavation, cubic yards	$0.446	$0.304	$ 0.21	$0.38	$0.226	$0.31	$0.325	$0.28	$0.35
Loose rock excavation, cubic yards	.645	.559	.37	.50	.857	.45	.50	.48	.40
Solid rock excavation, cubic yards	1.02	.933	.83	.94	.....	1.50	.90	.88	1.00
Clearing, acres	110.18	112.43	92.44	61.10	126.44	200.00	75.00	150.00	175.00
Grubbing, acres	174.20	155.67	113.44	87.10	257.29	300.00	110.00	150.00	150.00

On the other hand, it is stated that the contract and free day-labor work was conducted only during the summer when weather conditions were favorable. As a further aid to the intelligent comparison of the data in Table 7, it is stated that the prevailing cost of free labor was $2.50 per eight-hour day, and of a double team and driver $5 per eight-hour day, whereas the equivalent cost of the convict's labor was approximately $1.58 per day as shown in Table 4.

Example III. During the months of November and December, 1913, certain work was performed by convicts at State camp No. 2, in New Jersey, which at prevailing contract prices, as given by the engineer in charge, would have cost as follows:

Earth excavation, 4,700 cubic yards, at 45 cents per cubic yard	$2,115.00
80 acres removed at $4 each	320.00
Grubbing 0.22 acre at $75 per acre	16.50
Fence removed, 4,600 feet, at 6½ cents per foot	299.00
Hedges replanted, 200 feet, at 20 cents per foot	40.00
Total	2,791.50

The actual cost of the maintenance of the camp during the two months in which the above quantities were accomplished was as follows:

Rent of camp grounds	$20.00
Coal	84.53
Feeding men, guards, and superintendents	602.57
Guarding	648.54
Team hire	573.75
Dynamite	64.25
Tobacco, medicine, telephone, and gasoline	208.04
Interest at 6 per cent and depreciation at 10 per cent per year on buildings and furnishings valued at $3,066.69	81.77
Interest at 6 per cent on $1,022, cost of well	10.22
Interest at 6 per cent and depreciation at 75 per cent a year on hand tools valued at $449.90	60.73
Supervision	850.00
Total	3,204.40

In the above costs the interest and depreciation on machinery, which was valued at $12,734.78 in the list of cost items, has been omitted, as probably little of it was used on the work performed during the two months under observation. But omitting this item it appears by a comparison of the two totals given above that the cost of the work by convict labor was $412.90 greater than it would have been had it been performed by contract.

MANAGEMENT AND OPERATION.

All prisoners employed at road work in the United States are termed either State convicts or county convicts, according to the political subdivision, whether State or county, by which they are convicted and imprisoned. The employment of county convicts on roads is rare in the North but common in the South; in fact, the earliest employment of convicts in this manner in the United States was by the southern counties, and the numbers of their convict road forces still greatly exceed those employed in a similar manner by the States.

County control, therefore, has been thoroughly tested and the experience has revealed a number of inherent faults which render it

ineffective for the fullest realization of the benefits of convict labor. In the main it has been productive of waste and inefficiency for the reason that the average county force is economically too small, and much of the work done is, perforce, of a very inconsequential nature. In many counties the entire time of the inadequate force must be spent in the attempt, by small repairs and patchwork, to keep the roads in barely passable condition. This inefficiency is generally recognized and deplored by county officials, but it is usually defended by the assertion that the only alternative under the existing system is to maintain the convicts in absolute idleness, which could not be justified on any ground.

Another serious objection which may be pointed out in connection with county control is the lack of coordinated effort which is typical of the independent operations of the numerous counties. As these objections are similar to those which have been responsible for concentration of supervision of construction in the State highway departments, there can be no doubt that similar control in the management of convict labor would effect a great improvement.

Such an arrangement is provided for in Virginia under the law of 1906, which established the State convict road force. In addition to the State convicts, this State force also includes all male county jail prisoners over 16 years of age, and the latter class, as well as the former, is subject to any assignment within the State, which the superintendent of the penitentiary may direct. The apportionment of the county convicts among the various counties may be determined according to population, road mileage, property values, or any other equitable criteria which may be fixed under particular conditions; but, however the distribution be made, the results of the creation of such a State force will be the same, namely:

(1) That the total overhead expense for the administration of all the convict labor of the State will be reduced by the elimination of a large number of small offices and the consolidation of the supervision in one central office;

(2) That the wider outlook of State officials will lead to the practical adoption of more scientific methods;

(3) That the greater financial means of the State will permit of the employment of a more able class of officials;

(4) That the counties will be relieved of the expense of maintaining small convict forces which produce inconsequential results;

(5) And that the force of convicts will be available for work in the counties where there is a demand for the heavy road work best suited to the employment of convict labor, while slight repairs and maintenance not economically done with convict labor may be performed by free labor, supplemented, perhaps, by small forces of paroled convicts.

Although the superior advantages of State over county control are very evident, the placing of the control in the proper State department is more difficult. On account of the dual aspects of the work—the penal and the constructional—the interests of two departments are involved—namely, the prison and highway.

In Colorado the work is carried on under the immediate direction of the warden of the State penitentiary, and the State highway commission acts only in an advisory capacity. In Georgia there is no highway commission, and the convict road work is carried on by the various counties, the conditions affecting the convicts being under the control and inspection of the State prison commission. But in all other States in which there are highway departments the road work done by the convicts is under the direction and control of the highway authorities, and the prison departments exercise only a more or less direct control over the discipline, guarding, and maintenance of the prisoners.

Though it is recognized that no stereotyped system of control can be prescribed arbitrarily for all the States, on account of their varying institutions and customs, it is believed that the best results may be obtained under a system which clearly defines and separates the responsibilities of the prison and highway departments. The prison department should, of course, be charged with the selection of convicts for assignment to the road working forces, upon the request of the highway department, and with the formulation of rules and regulations for the guidance of the highway officials in the discipline, housing, and maintenance of the prisoners. But the supervision of construction and the preparation of adequate means of housing, feeding, and disciplining the men in accordance with the rules of the prison department preferably should be under the immediate control of the highway department. By such an arrangement the formation of a highway division under the prison department, with consequent duplication of officers, is avoided, while, as indicated, the prison department, through the agency of the highway department, retains control of the administration of the penal law.

By the foregoing arrangement the responsibility of the distribution of the convict labor to the various pieces of construction is given to the highway department. The labor may be used on State roads, or it may be granted to the counties as a form of State aid, but in either case full control of the work and conditions of work should be exercised by the highway department to insure the essential uniformity of methods and results. Although a certain amount of discretionary authority must be given to the men in immediate charge at the camps, they should be governed by regulations and orders issued by the department. Their conduct of the work should be ascertained by means of periodical reports made in a prescribed form

to the highway department, and by frequent visits of inspection by officers of the highway department, the prison department, and, in States where such a bureau exists, by officers of the State board of health, who should report, through their bureau, on the sanitary conditions of the camps.

CAMP OFFICERS.

Though the experience of a number of States has demonstrated the practicability of cooperation by the prison and highway departments through their central offices, the dual system of management in the camps has not proved satisfactory. Prompted by a recognition of the duplex nature of the project, at least three States have tried the plan of placing two men, representatives of the prison and highway departments, respectively, in more or less independent charge of the two phases of the work. In each case the arrangement has resulted in the development of friction and bickering between the employees of the two departments, caused by the clashing of their respective interests and instructions. As a rule, most of the differences are trivial and when brought to the attention of the superior officers of the departments they are readily adjusted, but before these officials are appealed to it is found that the discord has usually reached such proportions as seriously to affect the proper management of the camp. As an example of the petty nature of these disputes it was found in one State that the camp sergeant, or head guard representing the prison department, had been instructed to keep all the convicts at work at all times, except Sundays and holidays, unless prevented by sickness or bad weather. The resident engineer, representing the highway department, had been instructed not to lay surfacing stone on a wet clay subgrade. A dispute arose over the question of the employment of the convicts on days following heavy rains when the subgrade was still wet, the sergeant wishing to send the men to work and the resident engineer refusing to permit any stone to be laid, and the bitter feeling which resulted had practically paralyzed the work of the camp long before the matter was brought to the attention of the heads of the two departments.

But while the appointment of two more or less independent camp heads is undoubtedly inadvisable, it is true that it is extremely difficult to secure, within the customary limits of salary attaching to such positions, one man who is capable of superintending both features of the work. It would seem that the difficulty may best be overcome by providing two officers, but by making one subordinate to the other. It is suggested that the superintendent, or first officer, be selected primarily for his knowledge of road building and for his skill in the direction of men, and that an assistant, who may be known as a camp officer or yard man, be appointed on a basis of

skill or experience in the handling of prisoners. The camp officer should be expected to advise the superintendent in matters of discipline and to assume entire charge of the management of the camp proper under the general supervision of the superintendent. It will be found usually that the camp officer will be able to act as a commissary officer and camp clerk, ordering and distributing food and supplies and keeping the camp records, in addition to his other duties.

In the guarded camps two sets of officers, namely, guards and foremen, may be necessary to work under the two principal officers. In such cases, the ratio of guards to convicts should be not less than 1 to 10 and the foremen should be employed in the number necessary for the successful prosecution of the road work, usually 2 or 3 for camps of 40 men. In a number of States there is a tendency to combine the duties of guarding and supervision of the work in one set of officers and when only the less dangerous of guarded convicts are used on road work, as proposed under the scheme of grading as suggested on page 63, this practice would seem entirely safe and proper. But when all classes of criminals are employed regardless of character, it would seem that the evident necessity of avoiding the close approach of convicts to armed guards would render the guards of little value as foremen.

In the honor camps the guards may, of course, be dispensed with and the unarmed foremen, in no greater numbers than are necessary in the guarded camps, will be able to direct the work and also to carry out such disciplinary measures as are necessary.

In all camps, whether of the guarded or honor types, at least one night guard should be provided. In the guarded camps this officer is necessarily armed with a shot gun or rifle, and measures should be adopted to prevent the close approach of the convicts to him in the quarters at night. When the men are chained in the quarters no other protection is necessary, but when they are permitted freedom of movement within the quarters the night guard should be separated from them by a partition, containing a window or opening through which he may command the entire dormitory.

In the honor camps, as a general rule, the night guard should not be armed as there is little chance of preventing a general uprising should such an act be planned by the convicts, and in the event of an attack on the guard it is highly desirable to prevent the capture of arms.

The importance of the selection of men of good character and intelligence to fill the positions of officers and guards has been pointed out so often and is so generally understood as to require little emphasis. Unfortunately, however, the wages usually offered in connection with these positions are not sufficiently large to attract first-

class men, and it is believed that there is still much room throughout the country for improvement in this respect. The salaries necessary to attract good men will, of course, vary in the different sections of the country, but experience has shown that the payment of a reasonably good salary to a good man is invariably a better investment than a poor salary paid to an incompetent one. And it should be remembered that competence in a convict camp officer means not only efficiency in road construction, but also self-restraint, moderation, honesty, sobriety, and firmness of character.

To complete the organization of the camp, a certain number of convict helpers under the direction of the camp officer or yard man are necessary to perform the various duties of cooking, cleaning, laundering, etc. Even in guarded camps, it is necessary that such men be trusted to a considerable degree, and they should therefore be selected with this in mind. As to their further qualifications, it is very desirable that the cook shall have had some previous experience, but no special aptitude is required in the other helpers, and in fact it will usually be possible to select for such work convicts of inferior physique, whom it is impossible to employ in any other way. The size of the camp force must be varied with the population of the camp. No less than two men will be required for the smallest camps, and for camps of over 20, one camp assistant should be added for every 10 men up to camps of about 100. In camps of populations greater than 100, the proportion of camp help to total numbers may be somewhat reduced.

RECORDS AND COST ACCOUNTS.

FINANCIAL.

In the conduct of a business involving manufacture or construction, it is a well recognized fact that the standard or primary books of an accounting system should be supplemented by certain subsidiary records known as cost accounts. The journal and the ledger are well designed to preserve a record of transactions to show the total amounts of receipts and disbursements and the balance between them, but they do not enable the manufacturer or constructor to analyze the costs of his products. To supply this need, cost accounts have been extensively adopted in private business, and comparatively recently the example set by private business has been followed in certain branches of public work, such as the water and street departments of municipalities and many of the State road commissions. But though such accounts are particularly useful in the development of unstandardized work of a constructive character, and for this reason should be of the greatest usefulness in the conduct of work by convict labor, the study made by this office revealed the fact that, with few exceptions, only the ordinary journal and ledger

accounts are kept. This failure to keep adequate cost accounts is responsible for the extreme paucity of reliable information with regard to the economy of convict labor, and it is needless to say that if practices and methods are to be much improved, a reform of procedure in this direction is vitally necessary. To this end it is proposed to state in detail the reasons for the introduction of cost accounting and reliable personal records, and to indicate the general form which a system of such records and accounts should take.

Briefly, the specific purposes which a system of accounts should serve are as follows:

(1) To make proper account, for the information of the public, and especially the appropriating body, of the total expenditure of funds. This function is more or less adequately served by such simple systems of accounts as are in general use. But though this is the only function of accounting that is generally recognized, it is really the least important of the services which a properly designed system can be made to yield.

(2) More important in the present beclouded state of the question is the value of records and accounts indicating whether convict labor is being employed at a profit. This function can be served only by the introduction of cost accounts which make it possible to analyze the total cost in such a way as to indicate the cost of each process and of the results in detail. It is undoubtedly true that convict labor is conducted at considerable advantage in numbers of instances, but it is also an established fact, that lacking such information, many communities unwittingly employ convict labor disadvantageously, and are daily paying more for such labor than it would have been necessary to pay for free labor.

(3) In addition to indicating what may be termed the "total economy" of convict labor, cost accounts also furnish a means of checking what may be termed "internal economy." A system of convict labor may be, as a whole, economical with respect to free labor, and still there may exist many sources of waste and inefficiency in the system which, if remedied, would make for even greater economy. Such elements of weakness are to be found in unintelligent supervision, improper distribution of labor, wastefulness in the handling of material and supplies, and unreasonable losses of time. In many cases it is only necessary to know of these weaknesses to remedy them, yet they may well escape attention if only general results are known. Furthermore, it is to be observed that such a detailed record of cost kept daily indicates to date the existence of faults and affords the opportunity to correct, in its incipiency, any tendency to overrun proper costs.

(4) An adequate system involving a subdivision of cost accounts provides the means of recognizing merit and of detecting and eliminat-

ing personal inefficiency, and is thus a constant incentive to foremen and superintendents to reduce costs.

With this understanding of the functions which a system of convict labor accounts should perform, it is possible to formulate certain general principles to govern the character of the record forms and methods of procedure necessary to serve these functions. Their precise character can be determined only for the particular conditions under which they are to be employed, and even under special conditions it is practically impossible to outline a system completely in advance, for the reason that details of the work to be accounted for are constantly changing.

The inadequacy of the ordinary methods of double-entry bookkeeping to accomplish the desired ends has already been mentioned. This becomes more clearly apparent when it is realized that those methods were designed primarily for the balancing of receipts and expenditures, whereas the conduct of convict labor work involves disbursements only; and of these disbursements it is desirable to know not only the total amount, but an analysis showing the purposes for which they were made and the costs of the various parts or units of the road work or other work which results in large measure indirectly from them.

Specifically it is important to analyze all disbursements in such manner as to show:

1. The daily and total itemized costs of maintaining the convicts.
2. The unit and total costs of the work.

With regard to the former, the elements of maintenance cost which should be recognized and segregated in a good system of accounts are those chargeable to (*a*) subsistence, (*b*) clothing, (*c*) quarters, (*d*) furniture and equipment, (*e*) kitchen and mess supplies, (*f*) fuel and light, (*g*) medicine and medical attention, (*h*) transportation of convicts and equipment, (*i*) wages of convicts (money, tobacco, discharge clothing), (*j*) miscellaneous, (*k*) guarding or convict supervision.

It is only by such a division of the cost of maintenance that it is possible to determine the exact cause of excessive total costs.

The segregation of the elements is accomplished by opening accounts to each, then classifying and distributing all disbursements among these accounts. The latter should be so kept that at all times it may be possible to determine not only what expenditures have been made and for what purposes, but also the total amount of previous disbursements for each purpose, the amounts of materials received into and issued from the general store or commissary, and the number of individuals (convicts, officers, and visitors) sharing in the use of materials and services. In this way it is possible to determine at suitable intervals the amount of disbursements per individual for each purpose during the latest period, the comparison of these disbursements with those of other periods, and also to maintain a continuous inventory of the stock of material supplies on hand.

The per capita cost of maintenance per calendar day being thus developed, the second set of accounts is necessary to determine the unit and total costs of work. The cost of maintenance per individual work day, which is equivalent to the cost per calendar day corrected for unproductive labor and lost time, should be treated as the wage of labor, and should figure in the cost of construction. In addition there must be a careful record of wages directly paid to officers and hired employees, of the cost of teams used on construction work, of materials consumed in the construction, of depreciation of tools and machinery employed, and of the amount and proper allocation of what are known as overhead expenses. All of these items entering into the cost of the work should be properly accredited to the particular operations and parts of the work to which they are applied. For example, the records should be complete enough to show in the case of the construction of a macadam road not only the total cost of the road, but also the itemized cost of clearing and grubbing, grading, quarrying rock, crushing rock, spreading surfacing material, rolling, etc. The keeping of such records implies the determination of the amounts of the various kinds of work, such as the cubic yardage of earthwork, the square yardage of surface, the area cleared and grubbed in acres, etc. Without such a determination of the amount of work done any system of cost accounting is valueless as an aid in the improvement of methods of work.

The accounts comprised under the above classification are necessary for the determination of unit costs of maintenance and construction. In addition to these, certain operating forms are necessary, such as the usual forms of requisition and order blanks and inventory sheets, and a system of books suitable for recording the business incident to the work. These may consist of the old form of journal and ledger, or more suitably of a system of voucher files and records to replace the ledger.

In the design of the forms to serve the various purposes outlined above it is essential to bear in mind not only what information it is desired to record, but also the desirability of presenting that information in logical and orderly manner and of so regulating and standardizing the size of sheets as to permit of their convenient use and proper filing in a systematic manner. Large forms are cumbersome, and irregular sizes are difficult to file properly.

Forms 1 to 12 represent a series of report and record forms designed in accordance with the above principles. They are presented as concrete examples to illustrate the technical methods of securing the desirable information. It is not expected that they will meet entirely the requirements of any particular system, but it is believed that they are correct in principle, and with suitable modifications can be readily adapted to the use of any State

or county convict-labor system. All may be printed on sheets of paper of the following standard sizes: 8 by 10½ inches, 8 by 12½ inches, and 16 by 12½ inches. All but the form for the monthly report of construction (No. 9) have the 8-inch dimension in common, and the maximum length is 12½ inches. The monthly construction report folded once conforms to the 8 by 12½ inch size, so that all forms can be filed in a standard filing cabinet with drawers to accommodate the 8 by 12½ inch size.

Requisition Form.

Form No. 1 is a requisition blank to be made out monthly or weekly by the superintendent, sergeant, or deputy warden in charge of a convict camp and forwarded to the central office from which purchases are made. In order to supply the purchasing officer with sufficient information to determine the necessity of the articles requisitioned, the columns headed "Quantity issued last month" and "Quantity on hand" are included. Space is provided for the signature of the principal camp officer and for the approving signature of his superior officer, the warden or official in charge. In the last column space is provided for the notation by the purchasing officer of the numbers of the orders made out for the various articles requisitioned.

Purchase Order Form.

Form No. 2 is an order blank suitable for use in connection with the preceding requisition form. This form should be made in triplicate, on paper of three colors, one copy to be mailed to the contracting firm or other firm in a position to supply the items desired, one to be retained at the central office, and the third to be sent to the camp for which the order is made. The form is largely self-explanatory, but particular attention is directed to the space provided for the number of the related requisition, the name or number of the camp initiating the order, and the full instructions for the shipment of the goods and the mailing of the bill. The last column in the body of the form is provided for use when goods are bought on contract, for the designation of the articles ordered by contract and item numbers.

Voucher for Supplies and Services Furnished.

Form No. 3 is designed to avoid the multiplicity of sizes and forms of billheads furnished by the various firms and supply houses. The advantage of such a form, designed to fit the filing cabinets in use, and its effectiveness in preventing confusion, inconvenience, and loss will be appreciated by all who have had to deal with large numbers of bills of numerous shapes and sizes. Two copies of the blank form should be mailed with the order to the supply house, and the merchant should be requested to submit his bill on one, retaining the

other for his own files if he so desires. The bill should be rendered first to the camp superintendent at the time the goods are shipped. The superintendent should check it against the camp copy of the order and the goods received and certify in the proper place on the voucher form to the correctness of the bill, or make such notations with regard to its incorrectness as may seem necessary. He should then forward it to the central office, where, after it has received the approval of the principal in charge, it may be forwarded through the regular channels for payment. Special attention is directed to the space on the form for the related purchase-order number, the name of the camp for which the goods are purchased, and also the column for contract reference or authority similar to that on the purchase-order form. The purpose of the other columns will be readily understood, the last column being provided for the notation of the accounts to which the items are charged, this column to be used only by the clerk at the central office. Below the columnar section of the form are the sections for the formal certifications of the merchant and the camp superintendent, for the approval of the warden or superior central officer, and for the notation of the date of payment and the number of the check by which payment is made. The instructions to be printed on the reverse side of the form, which are referred to in the note in the upper section, are as follows:

INSTRUCTIONS.

1. Separate vouchers must be rendered for articles and services requested on different orders.
2. This form, when properly filled, is to be sent to the camp to which articles are shipped or for which the service is rendered.
3. When supplies have been furnished upon contract, accepted proposal, or written agreement, upon emergency or special order, reference to the contract or authority should be made in the column headed "Contract reference or authority."
4. Payee should not write in the last column, headed "Account."

For keeping these forms it will be found convenient to provide a vertical file divided into two compartments, one for unpaid and one for paid bills. As they are received from the camps the vouchers can be filed alphabetically in the compartment for unpaid bills and allowed to remain there until paid, when they can be given serial numbers and filed numerically in the other compartment as paid vouchers.

Book Forms.

The book forms for the office record of the transactions of the convict department will not be treated in this bulletin, as it is necessary that they be designed with special reference to the financial practice of each particular institution, and a sample form would be of little assistance. The matter has received attention, however, and the Office of Public Roads and Rural Engineering is prepared to furnish

assistance upon application for the design of such forms for particular conditions.

Inventory of Property.

The inventory form (No. 4) is designed for use in connection with the periodical determination of the value of camp property. In general, it is believed to be self-explanatory, but the column headed "Date received here" is included so as to provide for the keeping of the date of reception of property transferred from another camp.

Cost-account Forms.

All the forms previously described are in the nature of operating forms—that is, they are necessary for the systematic conduct of the financial transactions involved in the management and administration of convict camps. The forms to be described hereafter (Nos. 5 to 9) are designed expressly for cost accounting. They are intended for use as reports from the principal camp official to the central office and copies should be retained at the camp. The information which they contain can originate only at the camp, and they are of primary importance to those in direct charge of the convict labor, presenting, as they do, at regular intervals an accurate representation of the amount and value of work performed.

Ration-report Forms.

These forms (Nos. 5 and 6) are designed to furnish a check on the daily disbursement of food, a monthly statement of the cost of food, and a continuous inventory of the amount of food on hand.

The food item report sheet, Form No. 5, furnishes detailed information with regard to the daily use of each item of food, such as beef, pork, beans, peas, molasses, coffee, etc., and each item used at any time in the month must be represented by an item sheet in the food report for the month. Thus, if 30 separate articles of food be served in the month, the month's food report will include 30 item sheets. Beginning in the upper right-hand section with the amount of the particular food item on hand at the beginning of the month, space is provided in the column below for the entry of the amounts of the item received during the month at various times, the sum of these amounts and that on hand at the beginning of the month yielding the total which must be accounted for at the end of the month. In the horizontal section of the report are the spaces for the daily entry of the amounts of food issued to convicts and officers and any amounts wasted on account of deterioration or spoiling (not table waste). At the end of the month the sum of the totals of food issued to convicts and officers and that wasted shows the total amount of food issued during the month as determined by the daily weighing. This amount subtracted from the amount

above in the total column will give the amount of food which should be on hand at the end of the month. An inventory then is to be taken and the amount actually on hand entered in the space provided. This amount may differ from that which should be on hand according to the record of daily distribution on account of cumulative errors in weighing and loss in weight by drying of the stock during the month. Whatever the difference indicated, it should be added to the total amount wasted and the result should be divided in proportion to the total amounts issued to convicts and officers and used to adjust those totals, the results being entered in the space provided. If the food used during the month has been purchased at more than one unit cost, the separate unit costs should be weighted in proportion to the amounts purchased at each cost and the result should be entered as the average unit cost in the space provided, and in case food of different quality is bought for convicts and officers, respectively, two spaces are provided for the entry of the two average unit costs. The final process in preparing the item sheet is to determine the total cost of the food item used during the month by convicts and officers by multiplying the amounts used by the average unit costs. The space for "Remarks" is added for the explanation of irregularities and for furnishing the specific information required by the note printed on the report.

The summary sheet, Form No. 6, is to be used for the daily entry of the numbers of convicts and officers fed. At the end of the month the total number of visitor-food days may be added and the record of the number of food days will be complete. The other section of the report is to be used at the end of the month for summarizing the total quantities and total costs of food as taken from the various item sheets. By dividing the total cost of the convicts' food by the total number of convict-food days the daily cost of food per convict is obtained, and space is provided for the entry of the result. Similarly, the unit cost of officers' food is obtained by dividing the total cost by the total of officer-food days plus the number of visitor-food days.

REPORT OF SERVICES AND SUPPLIES OTHER THAN FOOD.

The report of services and supplies other than food (Form No. 7) is designed to supplement the ration report and complete the record of maintenance costs. To accomplish this, an account should first be opened to each of the recognized elements of cost. Then one of Form No. 7 should be used for the monthly report of all articles and services purchased under each account. Thus, if articles or services are purchased under all ten of the accounts which the form is designed to cover, the monthly report would be composed of ten sheets of the form, one for each account. In order to reduce the cost under a given

account to a cost per capita per day, which is the main purpose of the form, it is necessary that the sum of the actual value of all services rendered during a particular period, plus the actual value of supplies completely consumed or used during the period, plus the estimated depreciation of articles of supply and equipment not completely consumed during the period, shall be divided by the number of convict days for the period. The depreciation of articles not entirely consumed can be determined only by means of an inventory. But as the depreciation of many articles is very slight in a period of a month, it is impractical to take the inventory at less than six-month periods.

In inaugurating the system of accounting, a complete inventory of all goods should be taken, and the ascertained value of all supplies and equipment of a given class on hand should be placed in a space provided at the head of the total column on the proper account form. Subsequently, during the first month, all items purchased should be reported, giving the names of the items, the dates of purchase, the quantities, and their unit and total costs. At the end of the first month the total cost of the items purchased should be added to the original inventory value to obtain the grand total of value invested in the camp at the end of the month. At the beginning of the second month the latter figure should be placed at the head of the total column. Entries of the items purchased during this month should be made as during the first month, and all operations should be similarly repeated every month.

When a period of six months or a year has elapsed, the grand total of the last monthly report will represent the total amount invested in the camp under the given account since the beginning of the period. An inventory taken at this time will show the approximate value of all articles of supply and equipment remaining in use or in stock, and this value deducted from the grand total of the last monthly report will give the value of the goods and services consumed or used during the period as nearly as can be ascertained. If this value be divided by the total number of convict-days for the period, which a proper use of the form will show in the upper right-hand corner, the result will be the daily per capita cost of supplies and equipment used under the given account during the period. This figure, added to the daily per capita cost of food for the various months, will give the true cost of maintenance per convict per calendar day for each of those months. Finally, to obtain the true cost of maintenance per convict per working day, this latter value must be modified on account of the time lost by Sundays, holidays, camp duty, and sickness, all of which losses are reported on the daily reports of construction (No. 8).

The distribution of charges to the various accounts is largely a matter of judgment, but the classification of items given under the

heading "Clothing, camp supplies, and equipment" (p. 152) will serve to indicate the general scope of the accounts.

DAILY REPORT OF CONSTRUCTION.

Form No. 8 is suggested for the daily report of construction. In addition to the name, date, weather, and other lines which form the heading, there are spaces for reporting the amount and kind of all labor, such as superintendence, hired labor, teams, and convicts, the wages per day, and the subdivision of the time of each kind of labor among a number of work accounts, such as rock, loose rock, and earth excavation, and quarrying and crushing rock. There are also spaces for reporting the amount of time lost by reason of bad weather, Sundays and holidays, sickness, and camp duty, and for the total time of each kind of labor. In the second section of the report there is provision for the daily report of materials of construction used in kind, amount, and cost, and for charging such materials to their proper work account. Finally, by means of the progress report at the bottom of the sheet, the locality and kind of the day's work may be shown and also the locality and length of the finished work. The form is designed as a daily report for the reason that the information it should convey can only be accurately recorded daily, while the operations of the day are fresh in the minds of the officials.

MONTHLY REPORT OF CONSTRUCTION.

The last of the cost-account reports is shown as Form No. 9, namely, the monthly report of construction. The report is designed for the monthly summary of the information contained on the daily reports of construction, and for the purpose of completing and reducing that information to useful form. One sheet should be made out to the account of each class of work done during the month, and the entries of the time of each kind of labor employed should be made on the proper date lines each day, at the same time that the daily report is made out. At the end of the month the total number of days served by each kind of labor on a given class of work will be shown by the sums of the daily time entries in the spaces provided for "Total days." Below the latter spaces are others for reporting the daily wage and board of each kind of free labor, and for the sum of the two, which represents the total daily rate. Multiplying "Total days" by "Total rate" in each case gives the "Total amount," or cost of each kind of labor for the month. The daily rate in the case of convict labor is the daily per capita cost of maintenance, and this can not be determined each month on account of the long life of some of the items of supplies and equipment. However, for the purpose of month to month comparisons of work

costs, it is permissible to assume a convenient figure to represent the daily rate, and on the basis of this assumed rate to compute an assumed amount or cost. Then the sum of the total amounts for all kinds of free labor and the assumed amount for the convicts will give a total "Assumed labor cost" which should be inserted in the proper space in the "Table of unit costs" at the bottom of the sheet.

In the "Materials used" section the quantities, rates, and costs of the various materials used during the month on the given class of work should be summarized from the daily reports of construction; and the total cost of materials thus determined should be inserted in the space provided in the "Table of unit costs." The results of the monthly estimate of work done being also entered in their proper spaces of this section of the report, as indicated, it is possible to compute an approximate unit cost of the work which will be comparable with a cost ascertained in a similar manner for other months, though it will not be the actual unit cost of the work on account of the use of the assumed convict-labor cost. When the actual daily per capita cost of maintenance is made available by the determination of the cost of supplies and equipment, at intervals of six months or a year, the actual unit cost of the work may be determined and the record may be made true and complete.

PERSONAL RECORDS.

The records, accounts, and forms discussed in the foregoing paragraphs all have to do with the economic phase of convict labor, and, as that is a very important aspect of the problem but one which has been much beclouded by hasty judgment and misleading information, their utility as an aid in forming accurate estimates of the value of work performed can hardly be too strongly emphasized. Of equal importance, however, to the complete history of a system of convict labor are the so-called personal records of the convicts, having to do with the manner of employment of individuals, receipts and discharges of prisoners, pardons, punishments, escapes and recaptures, sickness and deaths. Unlike the cost accounts, the importance of these records is very generally recognized, and as a rule the systems in use are entirely adequate.

Examples of the more important of these are shown by Forms Nos. 10 to 12, and it is believed that their purpose and the manner of their use will be so apparent as to require no explanation. Other forms of this character, examples of which are not shown, but which may be added if desired, are those for recording punishments administered, money and valuables held for convicts, and any particular phases of the work necessary to record.

The personal reports shown correspond in size to the cost account reports and may be filed in drawers of the same size.

FILING SYSTEM.

A very convenient method of filing the cost-account and personal reports is to inclose all the reports for one month in a manila envelope of proper size, on the back of which may be printed a blank summary form for the display of the significant figures of all the inclosed reports. The envelopes for the various months and camps may then be filed in order in a simple drawer letter file.

Numbering of Forms.

Instead of designating the various forms by their names, which may be rather cumbersome, it is a good plan to give each of the reports a form number. The sample forms shown are numbered according to a decimal system, by which the numbers serve to designate not only the individual forms but also the class of forms to which they belong. For example, the forms shown are divided into four classes according to their use, as follows:

Class I. Operating forms, including (1) Requisition; (2) Purchase order; (3) Voucher for supplies and services furnished; (4) Inventory of property.

Class II. Maintenance reports, including (1) Food-item report; (2) Summary of quantities and cost of food issued; (3) Report of services and supplies other than food.

Class III. Work reports, including (1) Daily report of construction; (2) Monthly report of construction.

Class IV. Personal reports, including (1) Prisoners' time sheet; (2) Movement of prisoners; (3) Daily report of sickness.

All forms of Class I have in their numbers the figure 1 on the left of the decimal point, and the four forms in the class are numbered from 1 to 4, respectively, on the right of the decimal point in the order in which they are enumerated above. The three forms of Class II are designated by the figure 2 on the left of the decimal point, and the figures 1 to 3 in the order of enumeration above, on the right of the point; and the numbers of forms in Class III and Class IV are determined in like manner.

Form No. 1.1.

..... CONVICT ROAD FORCE.
(Name of County or State.)

REQUISITION.

Requisition No. ..... Supplies to be sent to .....
(Place.)

Not later than ....., 191..

Camp No. ..... Date of Requisition ....., 191..

Quantity.	Article.	Quantity issued last month (or week).	Quantity on hand.	Order number.
				(Not to be filled by Supt.)

I certify that the quantities on hand and issued are correctly reported, the above articles are required, and the quantities are not excessive.

Approved: ..... Warden. ..... Supt.

1. Use different colored sheets for requisitions for food supplies and general supplies.
2. Whenever an emergency purchase is made locally, fill out this requisition form covering the purchase, write the word "Emergency" on it and mail it with the bill to the warden.
3. If the article is unusual explain the need for it on the requisition.

FORM 1. SIZE, 8 BY 10½ INCHES.

Form No. 1.2.

....., CONVICT ROAD FORCE.
(Name of County or State.)

PURCHASE ORDER.

Order No. ..... To Fill Requisition No. ..... From Camp No. .....

....., ..., 191..
(Name of city or town.)

Firm name .....

Address .....

Please ship the following articles to .....,

....., via .....,

and render the bill on the inclosed voucher form to .....

.....

Signature .....
(Purchasing Agent or Official in Charge.)

Quantity.	Name of article.	Contract reference.

FORM 2. SIZE, 8 BY 10½ INCHES.

Form No. 1.3. Voucher No........

..............................CONVICT ROAD FORCE.
(*Name of County or State.*)

VOUCHERS FOR SUPPLIES AND SERVICES FURNISHED.

Date, ..., 191..

....
(*Name of County or State.*)

To..Dr.

Goods supplied on
Purchase Order No...... Address.......................................
For Camp No...... ....

(Consult instructions on other side before preparing voucher.)

Contract reference or authority.	Articles or service.	Quantity.	Unit.	Unit price.	Amount. Dollars.	Amount. Cts.	(Leave blank.) Account.

I certify that the above bill is correct and just, and that payment therefor has not been received.

(Payee sign here)...............................

Title...................................

I certify that the above articles have been received by me in good condition and in the quality and quantity specified, or that the services were performed as stated.

Signature..Supt.

Approved for $ Signature..................................Warden.

Paid by check No......, dated.............................., 191...

FORM 3. SIZE, 8 BY 10½ INCHES.

Form No. 1.4 Sheet No......

..................................CONVICT ROAD FORCE.
(*Name of County or State.*)

INVENTORY OF PROPERTY.

Camp No........ Place.............................., Date.................., 191..

Listed by..

Quantity.	Item.	Description (Dimensions, materials, etc.).	Date of purchase.	Date received here.	Original value.	Present value.	Condition.
		Totals,					

FORM 4. SIZE, 8 BY 10½ INCHES.

Form No. 2.1.

..... CONVICT ROAD FORCE.
(Name of County or State.)

Ration report.

Month of .....

Camp No. .....

Place .....

Signature .....
Supt.

Food Item .....

Usual Ration .....

On hand first of month	
Received during month. (Give date of receipt and unit cost of each shipment.)	

Total to be accounted for .....

Issued to—	2	3	4	5	6	7	8		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
Convicts																														
Officers																														
Waste																														
Total issued																														

Remarks: (State cause of waste; make statement of amount of food donated and raised, and give dates and manner of use. Food received but later returned should be deducted from amount received during month, and reason for return stated below.)

Should be on hand at end of month	
Inventory at end of month	
Adjusted total issued to convicts	
Adjusted total issued to officers	
Average unit cost of food used by convicts	
Average unit cost of food used by officers	
Total cost of convicts' food	
Total cost of officers' food	

FORM 5. SIZE, 8 BY 12½ INCHES.

Form No. 2.2.

....., CONVICT ROAD FORCE.
(*Name of County or State.*)

SUMMARY OF QUANTITIES AND COSTS OF FOOD ISSUED.

Month of .....

Camp No. ..... Place .... Supt.

Item.	Quantity.		Unit.	Unit cost.	Total cost.		Days.	Number persons fed.	
	Con.	Off.			Convicts.	Officers.		Convicts.	Officers.
							1		
							2		
							3		
							4		
							5		
							6		
							7		
							8		
							9		
							10		
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		
							25		
							26		
							27		
							28		
							29		
							30		
							31		
							Number of visitor-food days.		
							Daily cost of food.		
							Per convict.	Per officer.	
Grand total cost.....									

FORM 6. SIZE, 8 BY 12½ INCHES.

Form 2.3.

..... CONVICT ROAD FORCE.
(*Name of County or State.*)

REPORT OF SERVICES AND SUPPLIES OTHER THAN FOOD.

Camp No. .....

Place .....

Signature .....
Supt.

Account .....

Month of ....., 191..

Number of convict days since last inventory to first of month.

.....

Number of convict days this month .....

Total number of convict days to date .....

Date.	Item.	Last inventory value plus subsequent purchases to first of month ..... $		
		Purchased during month.		
		Quantity.	Unit cost.	Total cost.
	Total for month.....			$
	Grand total.....			$

FORM 7. SIZE, 8 BY 12½ INCHES.

Form No. 3.1.

.....
(*Name of County or State.*)

CONVICT ROAD FORCE.

DAILY REPORT OF CONSTRUCTION.

Name of camp .....
Name of place .....
Name of road .....
Kind of road .....
Date .....
Weather .....
Name of supt. .....

FORCE REPORT.

	Title.	Rate per day.	Effective labor days.																			Lost labor days.				
			Rock excavation.	Loose rock excavation.	Earth excavation.	Excavation for culverts and bridges.	Laying pipe.	Mixing and placing concrete.	Quarrying rock.	Crushing rock.	Loosening surface.	Loading surface material.	Hauling surface material.	Spreading surface material.	Sprinkling.	Rolling.	Mixing sand-clay.	Dragging.	Clearing and grubbing.	General.		Bad weather.	Sundays and holidays.	Sick.	Camp duty.	Total.
Superintendence.																										
Hired labor.																										
Convicts.																										
Teams.																										

REPORT OF MATERIALS USED.

Item.	Quantity.	Rate.	Amount.	Account.

PROGRESS REPORT.

Activity.	Worked to-day.		Completed.	
	Station to station.		Station to station.	

FORM 8. SIZE, 8 BY 10½ INCHES.

Form No. 3.2.

.....CONVICT ROAD FORCE.
(*Name of County or State.*)

REPORT OF CONSTRUCTION.

Account....., Month of....., 191..

Name of road.....Kind of road.....Camp No...Place.....Signature.....

Date.	Superintendence.	Hired labor								Teams.		Convict labor.
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Total days,												
Wage												Assumed rate.
Board												Assumed amount.
Total rate												Actual rate.
Total amount												Actual amount.

MATERIALS USED.

Item.	Quantity.	Rate.	Cost.	Item.	Quantity.	Rate.	Cost.
Carried forward,				Total cost,			

TABLE OF UNIT COSTS.

Activity.	Quantity.	Units.	Total cost materials.	Assumed labor cost.	Actual labor cost.	Approximate unit cost.	Actual unit cost.	Unit.

FORM 9. SIZE, 12½ BY 16 INCHES.

Form No. 4.1.

..... CONVICT ROAD FORCE.
(*Name of County or State.*)

PRISONERS' TIME SHEET.

Camp No. ..... Place, ... Month of ....., 191..

Signature, ..., Supt.

Prison No.	Name.	Days on road.	Days camp duty.	Days bad weather.	Days of sickness.	Days, Sundays and holidays.	Total number days.
	Total carried forward.....						

FORM 10. SIZE, 8 BY 10½ INCHES.

Form No. 4.2.

....., CONVICT ROAD FORCE.
(*Name of County or State.*)

MOVEMENT OF PRISONERS.

Camp No. ..... Place, ... Month of ....., 191..

Signature, ..., Supt

On hand first day of month.....	.....	
Received during month.....	.....	
Recaptured and returned during month.....	.....	
To be accounted for.....		.....
Discharged.....	.....	
Pardoned or paroled.....	.....	
Died.....	.....	
Escaped during month, and still at large.....	.....	
Sent to.....	.....	
.....	.....	
.....	.....	
Convicts on hand at end of month.....	.....	
Total (should agree with total above).....		.....

Remarks:

FORM 11. SIZE, 8 BY 10½ INCHES.

Form No. 4.3.

..... CONVICT ROAD FORCE.
(*Name of County or State.*)

DAILY REPORT OF SICKNESS.

Number of camp.....
Place.....
Date of illness.....
Day of illness (as 1st, 2d, 3d, etc.).....
Name of convict.....
Of what does the convict complain?.....
What signs of sickness did he show to-day?.....
What treatment was given to-day?.....
Was he seen by the doctor to-day?.....
Doctor's diagnosis to-day.....
Signature of superintendent.....

FORM 12. SIZE, 8 BY 10½ INCHES.

DISCIPLINE AND METHODS OF CONTROL.

As stated elsewhere in this bulletin, one of the most serious objections to the employment of convicts on road work or other form of outdoor labor is that such employment invariably presents greater opportunity for escape than any work conducted entirely within walls. When the work is well conducted this disadvantage is outweighed by more favorable considerations, but it is generally accepted that every effort should be made to reduce the number of escapes to a minimum, and in order to accomplish this, the system of discipline and methods of securing the prisoners must be well adapted to the special conditions of the work and the particular character of the convicts.

Until a few years ago all convicts employed in the open were restrained by armed guards and chains and were distinguished from free citizens by suits of striped material and, frequently, by shaven heads. This system of discipline will, for the sake of distinction in the following discussion, be termed the "guard system." Lately, however, there has been developed another plan under which the security of the convict is placed largely in his own hands, and this is popularly known as the "honor system." A number of State wardens have inaugurated work under this system with much apparent success, and the more enthusiastic of its supporters advocate its general adoption by all the States. But conservative officials hesitate to attach value to a system which depends so largely upon what they believe to be the questionable honor of a convict. In the controversy that has arisen between the adherents of the two systems, much misunderstanding and confusion has resulted from a failure on the part of each group to understand the aims and purposes of the other, and by an erroneous belief in the sufficiency of one system or the other.

In the attempt to clear up this confusion the principal methods of discipline practiced under each system are briefly described herein, with reference to the most noticeable limitations and advantages of each.

THE GUARD SYSTEM.

This system of discipline is practiced in one form or another in connection with road work in the States of Alabama, Arizona, California, Delaware, Florida, Georgia, Kentucky, Louisiana, Missouri, Minnesota, Mississippi, New Jersey, New York, North Carolina, North Dakota, Oregon, South Carolina, Tennessee, Texas, Utah, and Virginia.

In its most rigorous form it is practiced in the southeastern States of Alabama, Florida, Georgia, North and South Carolina and Virginia. Here prisoners while at work in the open are under the constant surveillance of guards armed with double-barreled or repeating shot

guns and revolvers, the ratio of the number of guards to the number of convicts varying from 1 to 8 to 1 to 15. In all except Virginia the guards also act as foremen in charge of the road work; in the latter State they are given no authority over the work of the convicts, but confine their attention to the guarding of the prisoners, and the distance which they are required to maintain between themselves and the prisoners to prevent surprise or attack renders them practically valueless as foremen. Convicts who are regarded as particularly dangerous or likely to escape are shackled during the day with leg chains of various forms intended to limit the stride and prevent running; and occasional instances of the use of the ball and chain, principally as a punishment for attempted escape, are still to be found. As a rule, all convicts, regardless of character, are clad in striped uniforms, though Georgia has adopted a plan by which they are divided into three grades, according to conduct and character, and prisoners of the first two grades are no longer required to wear stripes. In Virginia jail prisoners employed on the roads by the State highway commission are dressed in brown. For securing and housing the convicts at night steel or wooden cages on wheels are extensively employed in all the States except Virginia, but tents and cheaply constructed shacks also are used, and permanent stockades are provided in a few counties. In Virginia the camp structures are practically uniform in character, and consist of light shelters constructed with metal roofs and canvas sides. In these latter structures and in the tents and shacks of other States, the convicts are generally secured by means of their individual leg chains to a long continuous chain, the two ends of which are locked, and in addition to these measures one or more night guards, armed in the same manner as the day guards, are usually provided. It is the common practice to employ the prisoners on the roads throughout the daylight hours, all hands being marched to the work in squads under armed guard as early as practicable after sunrise and returned to camp in the same manner just before dark. But little opportunity for recreation is provided, though a few sergeants, superintendents, or wardens, as the overseers are variously called, permit indulgence in outdoor games on Saturday afternoons and Sundays. Invariably, however, convicts are kept within the camp limits at all times except while at work and the general practice is to keep them "on the chain" or in their cages on Sundays and holidays. Privileges are limited to the infrequent reception of visiting relatives, the writing of occasional letters, and the issuance of the weekly ration of tobacco. As a general rule, all prisoners are accorded the same treatment, though in all camps a few prisoners of the better sort, those with short terms, those who are bound to the neighborhood of the camp by family ties, or those who for any reason are unlikely to attempt to escape, are appointed as "trusties."

These positions are created to meet certain requirements of the work where guarding is impracticable, as in the case of men who may be used in the positions of drivers, waterboys, or camp men but whose discipline differs but little from that of the "gunmen," aside from their assignment to somewhat lighter and more agreeable tasks. The trusties in these southern camps comprise from 5 to 50 per cent of the total population, the average ratio being about 20 per cent.

Except in so far as it involves compulsory labor and regularity of life, the system of discipline, as practiced in this section, is not reformatory. In a number of camps provision is made for religious instruction by the employment of a minister to make weekly or monthly visits to the camps, but, in general, the convicts depend for such instruction upon the negro preachers who are found frequently among their number. In practically all camps the races are separated by providing separate sleeping quarters, or at least by the segregation of each race in different sections of the same structure, and at meals, also, the races are segregated.

In a few camps, negro women are employed as cooks and camp helpers, but this practice is condemned by the large majority of officials. Whipping is practically the only form of punishment administered. In all of the States of this section the authority to administer such punishment is reposed only in the superintendent or chief camp officer, and the number of lashes which may be inflicted at one time is restricted by law in some States. The lash is usually applied to the bare back, though this practice is forbidden in the States of Florida and Georgia. Good behavior and satisfactory labor are rewarded by the granting of "good time" in all the Southern States, with the exception of Alabama. Such deductions from the legal sentence vary in the different States; thus in South Carolina the allowance is 1 month per year; in North Carolina 5 days per month; in Georgia, county misdemeanants are allowed 4 days per month, while State felons who have attained the first grade may be paroled at the termination of their minimum sentence; in Florida the amount of the deduction is graduated from 2 days to 10 days per month for the first 9 years and 15 days per month for the tenth and all succeeding years. Bloodhounds are kept in a majority of the southern camps for use in the recapture of prisoners who attempt to escape, and it is believed by those who use them that their mere presence exercises a salutary effect.

The foregoing are the principal features of the most rigorous form of the guard system. In some States, notably in New Jersey, New York, Oregon, Arizona, and Utah, many of these features have been modified materially without abolishing the system in its entirety. In all these States the use of striped clothing has been entirely discontinued, and the result of the change is regarded as a success.

Shackles of all kinds also have been discarded. Though in the three western States named the guards are armed with revolvers and rifles and are about as numerous in proportion to the convicts as in the southeastern States, in New Jersey and New York the guards carry only concealed revolvers and each one is responsible for the security of 20 or 30 convicts. In these States, and the North and West generally, the convict cage and the night chain are not tolerated by public opinion, and apparently the same degree of security is obtained instead by the use of stockades, substantial buildings, and night guards.

In the road camps of Utah, where tents are used exclusively, a high degree of perfection in the prevention of escapes has been attained without the use of chains. The tents are pitched within a square of approximately 150-foot dimensions, the limits of which are marked by a single-strand wire fence. At two diagonally opposite corners of the inclosure and immediately outside the fence are two small guard tents, and the only opening in the fence is near one of these tents. Situated at the corners, each of these guard stations commands a clear view of two sides of the inclosure, and guards are on duty at each station at all times when the convicts are in camp. At each of the guard corners are two strong locomotive headlights, so directed as to illuminate the two sides guarded from the respective corners. Convicts are forbidden to enter or leave the inclosure except by way of the single entrance and they are cautioned on pain of punishment not to approach the fence at other points, while at night no excuse is considered sufficient to justify a convict in approaching the fence at any point without permission. Working under this arrangement with a force of men maintained at approximately 70 for three years up to November 1, 1914, there had been only one escape, a record which hardly could have been improved upon had every man been chained night and day.

In all the States of this group convicts assigned to road work are selected especially with reference to their moral character and their general fitness for the work. The discipline of the road camp is markedly less severe than that of the prison from which they are removed, and eight or nine hours of labor is the rule. More or less latitude is allowed the prisoners in the employment of their time after working hours, games, periodicals, and books being provided for use between supper and the retiring hour, which is, as a rule, about 9 p. m. In New Jersey and New York particular attention is paid to this matter, and baseball games and other outdoor sports are arranged regularly during the season for Saturday afternoons. Whipping is not permitted, and the only punishments which are sanctioned are deprivation of meals, and return to the penitentiary, except that in Arizona prisoners may be punished for minor

infractions of camp rules by confinement, on short rations, at the camp in a wooden jail or lockhouse. In this group of States convicts assigned to the road camps receive an allowance of "good time," under provisions of law similar to those already mentioned as applying in the Southeastern States. But in Utah the special character and labor of the road men is recognized by granting to them an additional deduction amounting to four months for each year of service on the roads. By reason of the fact that the road men in these States are especially selected for the work, all are regarded as equally trustworthy, and "trusties," as the term is used in the southern camps, are not selected, but such positions as drivers and water boys may be filled almost indiscriminately from the camp population. While blood hounds are not used, every effort is made to recapture escaped convicts by means of widely distributed advertisements and rewards, and the penalty for attempted escape is return to the penitentiary upon recapture, with the loss of all credits in "good time" and the loss of the larger privileges of the camps.

In all sections there is a decided feeling among prison and camp officials that free laborers should not be employed in conjunction with the convicts, but in a number of instances free men have been employed as drivers, roller engineers, steam-shovel operators, dynamiters, and in other positions necessitating the employment of skilled labor. Every effort is made to limit the intercourse of such employees with the convicts in order to prevent the introduction of intoxicating liquors, morphine, and opium into the camps, and in some States the act of furnishing a convict with any of these liquors or drugs constitutes a legal offense punishable by fine or imprisonment.

THE HONOR SYSTEM.

This system of convict discipline originated in the West. From the best information obtainable it was practiced to a limited extent in Montana as early as 1894, but it did not attract general notice until more than 10 years later, when it was adopted by Colorado and New Mexico. Following the lead of these States it has since been adopted and practiced, to a greater or less extent, in connection with road work in the States of Arizona, Idaho, Illinois, Michigan, North Carolina, Nevada, Oklahoma, Oregon, Texas, Washington, West Virginia, Wisconsin, and Wyoming, and it is possible that in connection with other work it has been practiced in some of the other States. It is adaptable to the government of only a part of any convict population, and in all the above States convicts assigned to work under it have been confined previously in the State penitentiaries, where they have been under observation for a sufficient length of time to make a character determination possible. After such a period of probation, however, the prison officials of the States which have

adopted the system find that it is possible to so employ from 10 to 50 per cent of their respective prison populations, the proportion varying somewhat according to the character of prisoners dealt with, the proportion employed in the majority of States being from 20 to 25 per cent. Under this system, as its name implies, much dependence is placed in the honor of the convict; but it should not be supposed that prisoners are worked under it absolutely without guard, for though the superintendents and foremen are not armed and are responsible for from 15 to 30 convicts each, instead of 10 or 15, as under the guard system, they are, nevertheless, able to make their surveillance practically as close as is usually thought to be necessary in the case of the trusties of the guarded camps. Furthermore, it is found that the men themselves, realizing that the liberties and privileges of all are dependent upon the conduct of individuals, will go a long way toward regulating their own conduct and preventing escapes. With the exception that not even concealed weapons are carried by the officers of the honor camps, the discipline is very similar to that in the camps conducted under the modified form of the guard system as practiced in New Jersey and New York. As in the camps of those States, the uniform of the men is not particularly distinctive, there is no whipping, no chaining, no employment of bloodhounds, and the order of the camps is largely dependent on the granting and withdrawal of privileges and not upon the imposition of positive punishment. The inducements which are held out for good behavior and faithful work are:

A more liberal reduction in sentence than that granted to other prisoners. This usually amounts to from 5 to 10 days per month, in addition to the regular or statutory good time.

The freedom of the vicinity of the camps after working hours.

Permission to indulge in baseball games, quoits, and other outdoor sports in the evening.

Occasional visits singly, in groups, or in a body to a near-by town, and occasional attendance at a theater or entertainment.

Very liberal mail privileges.

Better food than the guarded convicts receive.

In a few States, the payment of a cash per diem.

Furthermore, when, as usually is the case, the honor system is employed in connection with the indeterminate sentence, convicts assigned to road work may be given the opportunity of parole at the expiration of the minimum sentence or shortly thereafter.

Punishment is effected by the withdrawal, either temporary or complete, of any or all the above privileges, and under the indeterminate sentence the offending inmate may be required to serve the maximum sentence for his offense. However, it is the invariable rule wherever the honor system is practiced that serious infractions of the

rules shall be followed by immediate return of the offender to the penitentiary, where the prescribed punishment is administered.

In two States, Washington and Texas, the honor system is applied only to conditionally paroled convicts, who are required to enter into "honor agreements" or contracts with the governors of the States, in which they promise to work faithfully and well under the conditions prescribed, either until given final release, as in Washington, or for a specified period of a year, as in Texas. In the former State, a cash per diem of 50 cents is paid and in the latter a similar per diem of 25 cents is granted under the terms of the contracts. In both these States, however, the disciplinary measures effective in the camps are in all essentials the same as in other States.

COMPARISON OF THE GUARD AND HONOR SYSTEMS.

The guard system may be adopted effectively, as it has been in the South, for the discipline of convicts of all classes. The honor system, on the other hand, is applicable only to a selected number of any prison population, and can not, with safety, be indiscriminately applied. However, in maintaining the security of those prisoners who are employed under them, the two systems appear to be equally effective, as will be noted by comparison of the following percentages of escape reported from a number of States using each system. In the road camps of New York and Utah, the number of convicts who escaped in 1914 formed less than one-half of 1 per cent of the total number of individuals handled; in New Jersey the proportion was 2.5 per cent; in Virginia 3.5 per cent; and in the counties of North Carolina, South Carolina, Georgia, and Florida the percentage varied from 1 to 6. All the foregoing States employ some form of the guard system, yet the percentages of escapes sustained are roughly the same as in the following States, which employ the honor system in their road camps: Oklahoma, 1 per cent; Colorado, 1.2 per cent; Kalamazoo County, Mich., 2 per cent; New Mexico, 3 per cent; Washington, 3.5 per cent, and Montana, 5 per cent. It will appear by examination of the above statistics that the lowest proportions of escapes were registered in the States of New York and Utah, in which a modified form of the guard system is applied to a selected group of convicts; but it should be stated that in the Southern States in which the convicts are employed indiscriminately under the guard system with its chain gang, the majority of escapes occur in the trusty class. It is urged in favor of the guard system in the Southern States that under it large numbers of convicts have for some time been safely employed at work on the roads; that their work has been largely productive in the construction of many miles of improved highways, and that during the time they have been thus employed the States have been relieved of the burden of maintaining expensive

penal institutions. Under no other system of discipline would it have been possible to have employed such large numbers of convicts in this way. But aside from these alleged economic advantages very little can be said in favor of the chain gang and the system of discipline which alone renders it possible. It comprises no conscious reformative measures, and except for the fact that it provides compulsory and regular outdoor labor for a class of individuals who are habitually averse to it, it can show no reformative results. It entails the exposure of the convicts, subjects them to unnecessarily severe punishments, and, except in the South, is not tolerated by public sentiment. The economic advantages in the form of the road work performed which are urged in justification of the discipline are doubtful, but this phase of the problem has been taken up in detail under the topic of economics. The modified forms of the guard system practiced in New York, New Jersey, and Utah are not open to such serious objections, but except for the fact that the guards in these States are armed either with concealed or exposed weapons, the discipline in these States embodies many of the characteristics of the honor system.

The honor system, discriminately applied, is shown by the statistics given above to be fully as effective as the guard system in preventing the escape of the convicts worked under it; and from the standpoint of the peace and security of the community, the escaped "honor convict" is likely to be less dangerous than the prisoners who escape from a guarded camp, for the very reason that the former is presumably of higher moral character than the latter.

Judged upon an economic basis, the honor system should result in some lowering of cost, although part of the saving through dispensing with guards is expended in supplying the convicts with conveniences and comforts not usually furnished under the guard system. Furthermore, the honor convicts may be more efficiently distributed than is practicable under the guard system.

The selection of prisoners for such employment under the honor system is a task requiring the greatest judgment and care, as well as experience in the study of criminal character. Full consideration should be given to the history of the individual prisoner prior to conviction, his habits and associates, the character of his offense, the circumstances surrounding its commission, and his traits of character as observed during the probationary term of close confinement, which should not only be long enough to make an intelligent choice possible, but also to impress upon the convict the necessity of subordinating his will and desires to those of others.

No hard and fast rules can be given to govern the selection of honor men. A few prison officials believe that it is safe to trust only prisoners with relatively short terms, arguing that the temptation

to escape is almost irresistible to the man who has the prospect of a long term of imprisonment to face. Yet the experience of the majority of officials is that the long-term man is not much more likely to attempt escape than the short-term man, and there are on record innumerable instances of the escape of prisoners with only a few days left to serve, whereas "lifers" are to be found serving faithfully and well in many honor camps. The character of the offense committed is considered by some officials in the selection of their honor men, preference being given usually to prisoners convicted of impulsive crimes where it can be found that the commission of the criminal act was surrounded by extenuating circumstances. Many prisoners serving sentences for murder, manslaughter, assault, and grand larceny are found to be absolutely trustworthy when placed on honor. But, in general, there is considerable hesitancy in trusting to the honor of the sneak thief, the pickpocket, the burglar, or any prisoner convicted of a petty crime against property.

The physical environment in which the convict will be placed on honor also should exercise an influence upon the selection of the honor men. The presence of a city or town near the honor camp calls for the use of greater discrimination in the selection of the camp inmates than is necessary in manning a camp which is located remote from a center of population. The trusted convict should not be subjected to temptation greater than he is capable of withstanding. Therefore, in proportion as the location of the camp affords greater or less opportunity for escape a higher or lower standard of trustworthiness must be set for its inmates.

That the honor system can not be applied successfully to negroes is asserted by many experienced prison officials. Their opinions are based upon long experience with negro character and its peculiarities. They point out that the majority of attempts to escape from the southern chain gangs are made by negro trusties. However, the positions of the chain-gang trusty and the honor man are not comparable. It has been already stated that the former is trusted as a matter of convenience only. Off the work he is accorded much the same treatment and is governed by the same rigorous discipline as the "gunmen." On the other hand, when the honor man returns to camp after his day's work is done he is accorded many small liberties and privileges which have the effect of convincing him that he is in fact, as well as in name, a trusted man, and tend to promote his self-respect and the desire to merit the respect of others, in addition to rendering the lure of the free life around him a little less hard to resist. That the negro criminal may be safely employed under the honor system has fortunately been demonstrated by actual experience in a number of States. In Colorado and the other Western States, though they naturally form only a small percentage of the

populations of the camps, the negroes are not noticeably less amenable to the discipline than the whites. In West Virginia, where the system has been in operation since 1913, and where more than half of the convicts employed under it are negroes, it is reported that of 18 attempts to escape made in 1914, 16 were by white men and only 2 by negroes. But the most convincing proof of the amenability of negro prisoners to honor-system discipline is that which is being recorded daily in the experimental convict camp established by the commissioners of Fulton County, Ga., in cooperation with the Office of Public Roads and Rural Engineering. At this camp, established in January, 1916, with a population of 40 negro convicts drawn from the guarded camps of the county, not a single attempt to escape has been reported in the seven months during which it has been in operation. Whipping as a punishment has been entirely abandoned, and the foremen in charge of the men are entirely unarmed, yet the discipline is satisfactory in every respect and the industry of the inmates is above the average. Inasmuch as it is conceded by all persons of experience in dealing with convicts that the most dangerous period in the life of an honor camp is that immediately after its inauguration, the results of this experiment in the heart of the South must carry considerable weight as evidence of the fitness of the negro convict for a reasonable form of the honor system.

The character of the warden or prison superintendent who makes the selection of the men to be trusted and of the sergeant or deputy warden who is placed in charge of the camp has, of all factors, the most influence upon the success or failure of the honor system. It may almost be said that unless these officials are possessed of the ability to win the respect of the men and cultivate sentiments of loyalty and pride the system is foredoomed to failure.

GRADED SYSTEM OF DISCIPLINE.

From the preceding discussion it must be evident that the honor system of discipline can be applied to only a part of the entire population of any penitentiary or convict force. The reports of the proportions of men trusted in a number of States under the honor system and guard system, respectively, seem to indicate that under average conditions about 25 per cent of any force responds favorably to a reasonable measure of trust. The remainder must be guarded more or less strictly to prevent their escape. Success of a certain kind can be obtained by treating all convicts alike and subjecting all to the rigid discipline necessary for the government of the worst, but such a plan imposes unnecessarily severe restraint upon the better class and ignores the very considerable disciplinary value of a policy of treating the convict according to his deserts. The tendency of modern penology toward an increasing recognition of the shades

of character among convicts and toward the substitution of rewards for penalties as far as possible can best be furthered by the adoption of a graded system of discipline in which both the guard system and the honor system have a place. The method of classification must necessarily be determined with respect to particular local conditions, and the following suggested system is presented as an example to indicate the proper bases of classification rather than as a recommendation for general adoption.

Class I.—This class should be quartered at the State penitentiary or the county workhouse or concentration camp. All recruits should be received into this class to remain a sufficient length of time to permit a determination of their character to be made. While they remain, they should be employed in the prison shops or at such indoor industries as may be provided where there is no elaborate prison establishment. As soon as they are classified they should be distributed among the other grades, and only those who are apparently best fitted for shop or indoor work should remain permanently in this class.

Class II.—To this class should be assigned all convicts who are evidently best fitted for hard outdoor work, but who are of such desperate and untrustworthy character as to require constant guarding, and whom it would be impossible to employ outside of an inclosure without shackling and clothing in striped uniforms. This class may very properly be employed within an inclosed stone quarry, a brick plant, or on a large farm, where the convicts can be entirely withdrawn from all contact with the public. They should be clothed in such distinctive clothing as stripes, which will attract immediate attention in case of escape owing to the fact that under this system convicts regularly employed in public will not be so clothed.

Class III.—This class should include convicts of a less dangerous nature than those assigned to Class II, and of such kind as to permit of their employment on the public roads without shackles or striped clothing and under a relatively light guard. They should be employed on works of heavy grading or in exposed quarries or at other work which is well adapted to the employment of gangs of not less than 10 men each. Convicts of this class may be clad in blue uniforms.

Class IV.—To this class should be assigned all convicts well fitted for outdoor work who can be trusted to work under the honor system. Clad in suitable uniforms they may be employed to advantage on all classes of road work. As an incentive to labor and good conduct, a small daily compensation should be provided for convicts of this class, and such compensation could be paid readily from the amount saved by the elimination of guards.

Class V.—This class should consist of convicts paroled from Class IV, who should be given an opportunity to serve their paroles as

patrolmen on the maintenance of State or county roads. They should wear no regular uniform and should receive the full compensation of free laborers, but, during the period of their parole, they should be required to report monthly to a designated officer with regard to their satisfactory observance of the conditions of parole.

Provision for promotion or demotion of all convicts through the various grades, as the reward of merit or the punishment of misbehavior, will go a long way toward the mitigation of the cruelty of punishments, as the severest forms will be approached only by gradual descent, except in cases of violent assault, mutinies, and riots.

CAMP LOCATION.

As a rule, it was found that the officers in charge of the camps investigated were possessed of a general knowledge of the cardinal principles of camp location, and had applied their knowledge fairly effectively in the selection of their sites.

Accessibility to the road work was in general their first consideration, and usually their policy was to select the site near the center of the section of road to be improved. The average distance which it was considered practicable to cover from one location was 3 miles.

For more exact determination of the site the proximity of a supply of good water was considered as the controlling factor, though in the majority of cases it had not been thought necessary to make any special investigation of the character of the water they were using. Whenever practicable, the site was selected near naturally flowing sources of water, such as springs, mountain streams, and lakes, or when opportunity offered use was made of city water supplies and the wells of farms or residences close at hand. The digging of wells was avoided, where possible, on account of the expense involved, but when the impracticability of other sources made that expedient necessary there was an evident tendency to make a shallow well suffice.

The camp sites were usually high enough to secure dry soil and fair natural drainage, and several of the camps inspected in the Western States were splendidly located on the high banks of rivers or on knolls protected from the wind by trees. Other camps, both in the East and West, were established near the foot of hills and were exposed to flooding in rainy weather. It was not always possible to avoid locations of this character, and when the camps were allowed to remain only during the dry summer months little difficulty was experienced. As a rule, the camps in the Eastern States were abandoned during the severe winter months, while those in the South and far West were maintained throughout the year. Locations for winter quarters generally were chosen with considerable care, and everything that reasonably could be expected was done for the health and

comfort of the men. In one of the Western States it has been the custom for several years past to move a camp of about 50 men more than 200 miles from its base and over 100 miles from a railroad in order to reach a climate sufficiently mild for the men to be employed during the winter months.

A few camps, most of them in the Eastern States, were laid out on rather marshy ground in the vicinity of pools of stagnant water. However, these were only temporary, and the officers in charge, while quite aware of the undesirability of the locations, stated that they were unable to find any land in the vicinity of the work which afforded better sites.

In one camp a bunk house was built under a very large tree with foliage so dense that the sun never could penetrate it. The structure was provided with board sides and a canvas roof, and the only opening was a single door at one end. As a result, its interior was dark and musty even in dry, midsummer weather.

CONSIDERATIONS WHICH SHOULD GOVERN THE SELECTION OF A CAMP SITE.

By selecting the site at the intersection of two or more roads which are to be improved, the mileage which may be constructed from one location may be increased proportionately.

The 3-mile limit mentioned above is fixed by consideration of the time required to transport the men from the camp to the work and back, and it depends therefore to a large extent upon the means of transportation employed. It is approximately correct when the men walk to work or are transported on the work wagons drawn by slow-moving mule teams, but if motor trucks are used, as is done in some instances, this distance may be increased to fully 7 or 8 miles with no sacrifice of economy, provided the general condition of the road surfaces permits the use of the trucks.

By judicious arrangement of the work and the exercise of a certain amount of foresight, it may be possible often to select a location for a camp which can be occupied for a period of five years or more if motor trucks are used, and from which all the roads lying within a radius of 7 or 8 miles may be worked. Furthermore, by a wise distribution of such camps over the county it may be possible to build them as permanent camps to serve their sections whenever there is work to be done in them, and so avoid entirely the necessity of moving or rebuilding camp structures. As stated, the success of such a system will depend upon the suitability of the roads, grades, and natural conditions for truck transportation; it will also depend upon the extent to which the truck can be employed for camp purposes and for road work when not used for transporting men. The system is being employed in a number of localities with apparently satisfactory results.

The general location of the site being thus determined with regard for its proximity to present and future work, other important factors serve to fix its position definitely. Most important of these factors is the availability of an adequate supply of good water, to secure which some sacrifice in distance from the work is justified.

Of the various sources from which water is obtained springs are most highly valued by a majority of people, because of their generally high degree of purity and the coolness, cleanness, and pleasing taste of the water. Springs are most frequently found under the slopes of hills, and except in rare cases it is impracticable to establish a camp directly at the site of a spring. It is therefore generally necessary to carry or pipe the water to the camp from a considerable distance, but this distance may be a distinct advantage owing to the fact that the danger of pollution by surface or subsurface washings from the camp is materially lessened.

Camps located in thinly populated mountainous sections frequently may be so placed as to receive their water by gravity from a mountain stream. While this is a very cheap and satisfactory form of supply it necessarily must be limited to those camps which are near an uninhabited watershed. For this reason it is imperative, before choosing a site depending upon such a supply, that a careful sanitary survey of the stream and its watershed be made, to avoid dangerous pollution by possible camping parties, even though no permanent dwellings may be found.

The selection of camp sites in sections where the underlying rock is limestone is a problem of especial difficulty, as explained under the topic of camp sanitation.

In cases where it is impossible to secure a site sufficiently near to a naturally flowing source of water it will be necessary to dig a well, in which case the aim should be so to select the site as to reduce to a minimum the cost of reaching water.

Whenever possible, the camp should be located on elevated and well-drained ground, as far as practicable from marshes, swamps, and pools of stagnant water, and in such direction from them that the prevailing wind in summer is from the camp to the swamp rather than in the opposite direction. The top of a low ridge, the summit of a knoll with gently sloping sides, or the high bank of a river is very desirable.

It is important that the location shall be such that the drainage from the camp shall not pollute the grounds and water supplies of dwellings or settlements in the vicinity; and it is equally important that the camp site be removed as far as possible from stables, pigpens, and other fly-breeding places not under the control of the camp authorities.

For camps designed for occupancy in winter weather a slope to the southward, with trees to break the force of the wind, is the most suitable location, but for hot-weather sites it is advisable to select high ground shaded by trees.

A side-hill site or one at the foot of a hill may be improved greatly by digging an intercepting ditch on the uphill side of the site to receive the surface water from the higher ground and carry it around the site. A similar expedient usually is adopted for the protection of tents. In this case, instead of a single ditch a number of small ditches are dug, one immediately around each tent.

The grouping of trees should not be so close nor their foliage so dense as to exclude the rays of the sun completely, for under these conditions the ground may remain moist and the buildings may become damp and unhealthful. Underbrush should be cleared away thoroughly because, in the presence of moisture, it affords breeding places for mosquitoes and also gives them protection in their flights. Closely cut grass on the camp grounds offers many advantages. It prevents the washing of the soil by rains, does not reflect the heat and glare of the sun, and aids in the prevention of mud and dust.

The most suitable soils for camping purposes are gravel and sand, as rainwater sinks into them quickly and the surface dries rapidly. Loams, so-called top soils, and sandy clays, while not so good as sand or gravel, are usually satisfactory. Clay is least desirable for the reason that it absorbs and holds a great deal of moisture which is given up but slowly by evaporation, and is especially disagreeable after a rain.

The site should be selected with a view to the disposal of the sewage, animal, and kitchen wastes of the camp; and a good site will afford a suitable location for the burial of this refuse or for a cesspool or other arrangement not less than 100 yards from the prospective location of the buildings, and in such position as to avoid the pollution of the water supplies of men and animals.

All of the sanitary conditions of a prospective site proving satisfactory, it should be examined with respect to its suitability for the accommodation of the necessary buildings, roads, and walks. It should afford a level or slightly sloping area of sufficient size to permit the convenient grouping of all buildings or structures without crowding. It is important from the standpoints of economy and cleanliness that grading for the reception of buildings be avoided. The sod should be preserved intact, particularly on a clay soil, to prevent the formation of mud and dust. Large or important structures should be separated by a distance of at least 30 feet to minimize the risk of spreading fire. Furthermore, the conformation of the site should permit the arrangement of the sleeping quarters, kitchen, and mess buildings of convicts and officers so as to admit as much sunlight as possible. To

accomplish this it is necessary that these buildings be placed with their longer sides facing east and west.

The camp should be located near the road under construction or on a highway affording connections with the entire territory served by the camp and with the nearest town or city. It is desirable that the camp structures be elevated somewhat above the road and back from it far enough to avoid the dust; but the ground contours should be such as to permit economical construction of driveways and approaches.

When convenient, it is desirable that the site shall provide a fairly level open space where the convicts may be allowed to exercise under the supervision of their guards or officers and where, if possible, a baseball diamond may be laid out.

A limited area to serve as truck garden where fresh vegetables may be raised by the men is another desirable feature. In many camps it is found that the convicts enjoy the light work involved in the cultivation of the garden as a recreation after the day's work on the road.

The purely aesthetic considerations should not be overlooked entirely, as seems to have been done, unfortunately, in many of the camps inspected. On the contrary, the grounds surrounding the camp should be made as attractive as the conditions will permit. By saving large and graceful shade trees when the site is cleared, by sowing grass seed, by laying out and constructing walks of cinders or gravel, and by planting a few flowers as walk borders or in beds it is usually possible to make even the most forbidding site reasonably attractive in a short time and with little expense.

In selecting the site, thickly settled rural communities should be avoided if practicable, and the camp should be located as far as possible from a large city in order to minimize the chance of escape which the proximity of the city promotes; and, finally, after a site has been selected tentatively, it is proper to make inquiries in the neighborhood to ascertain the sentiment of residents regarding the presence of the camp among them. Neighboring property owners often have pronounced objections to settlement of convicts nearby, and whenever possible this sentiment should be respected.

Plate I shows a contour map of a desirable camp location with a good disposition of structures.

WATER SUPPLIES.

QUALITY.

Water obtained from any source may be sufficiently pure for use, but before deciding to use any given source the purity of its water should be determined by means of a bacteriological examination, and a thorough survey of the immediate and remote surroundings should

be made to ascertain that there are no probable sources of future contamination which may be beyond the power of the camp officials to correct. Chief of such sources of contamination are privies, stables, barnyards, hog pens, pastures, and manured fields; and water supplies which can not be protected from the surface washings or direct ground leachings from these sources should not be used.

Springs.

Twelve of the camps investigated obtained their water from springs. As a rule, springs form excellent sources of water supply, since they usually come from distant sources and are filtered through sand, gravel, and soil before reaching the surface; but occasionally they may originate not far away, and in such cases the water is more likely to be poorly filtered and easily polluted. Springs of the former class usually may be distinguished by the fact that they show a steady flow in both wet and dry weather and are not much influenced by the different seasons, while springs of local origin tend to disappear in dry weather and come up rapidly again immediately after a rain.

Though springs usually are of a high degree of purity in the absence of human settlements, when one of them is adopted as a water supply for a convict camp it may become subject to pollution from the camp itself, and unless its purity be safeguarded properly it may shortly become unfit for use. This pollution may occur by the seepage of the liquid contents of a privy, cesspool, sink, stable or garbage pit through the soil into the water vein, or by surface washings, from these and other sources, into the spring pool.

Contamination by seepage can be prevented only by locating the camp buildings, stock corrals, and other sources of pollution at a sufficient distance from the spring to make sure that any liquids which reach the ground water previously shall have become purified by filtration through the soil. In general, none of the structures or waste deposits should be located within a hundred yards of the spring and, if possible, they should be located on another slope.

For protection from surface pollution, the spring should be inclosed in a brick masonry or concrete box provided with a pipe inserted in the side for the overflow of the water; and as a further protection it is advisable to dig a ditch on the slope above the spring, so as to lead the surface water around the spring and into the overflow, as shown in Plate II. On no account should buckets or vessels be dipped into the spring for filling, but all water should be taken from the overflow-pipe. If the spring water be used for the cooling of food, a separate box should be built especially for that purpose; and water for other purposes, such as the soaking of tubs and buckets, may be obtained from the overflow a safe distance below.

Spring water supplies in limestone regions are subject to pollution carried from distant sources through the fissures and crevices in

the rock, as stated under the topic of camp sanitation; and, as it is usually impracticable to find and correct the source, springs in such formations always should be regarded with suspicion.

Wells.

Wells are of two general classes, shallow and deep. As a rule shallow wells are dug from 3 to 6 feet in diameter to a depth of from 20 to 50 feet, while deep wells are bored or driven to depths of 100 feet and more, often well down into the underlying rock.

Both shallow and deep wells are subject to pollution from surface sources and by subsurface leachings from privies, cesspools, and other sources, as described in the foregoing treatment of springs. However, deep bored or driven wells are less liable to pollution than shallow dug or bored wells, as the former usually are incased in metal pipes and the surface water, to enter the well, must filter through the soil to the depth of the well, while in the case of shallow wells, even when tightly lined, the surface water has a comparatively short distance to filter before entering at the bottom of the well.

About one-fourth of the camps investigated were using well-water supplies, and in general the surroundings of the wells were very unsanitary. Usually the wells were shallow ones 3 to 4 feet in diameter and from 12 to 30 feet deep. The main camp structures were generally from 35 to 50 feet away, with a privy of the hole-in-the-ground type not more than 100 feet distant and frequently at a somewhat higher elevation than the well. Stables and hogpens were in close proximity and chickens and pigs were allowed to roam about the camp. Laundering usually was done within a hundred feet of the well and the laundry wastes were thrown almost invariably upon the surface of the ground, while faces and hands frequently were washed almost immediately at the well, the dirty water being wasted on the ground. Such conditions as these almost certainly must result in the contamination of the water supply. The soil surrounding the well may remove the polluting substances at first by filtration but it soon becomes overburdened with organic filth, and finally, unable to perform its purifying function, allows the contaminating water to enter the well practically unchanged.

Wells in limestone regions are subject to the same danger of pollution as springs in such sections, and always should be regarded as of doubtful purity. When it is necessary to use a well in a limestone country, frequent tests of the water should be made to ascertain that no contaminating matter is being introduced.

Local pollution may best be prevented (1) by placing privies, stables, and all other possible sources of pollution at a safe distance from the well—never less than 200 feet—and on a slope below the well; (2) by keeping the surface of the ground about the entire camp

scrupulously clean and free from filth of all kinds; (3) by constructing the well itself in such manner as to prevent the entrance of polluting matter.

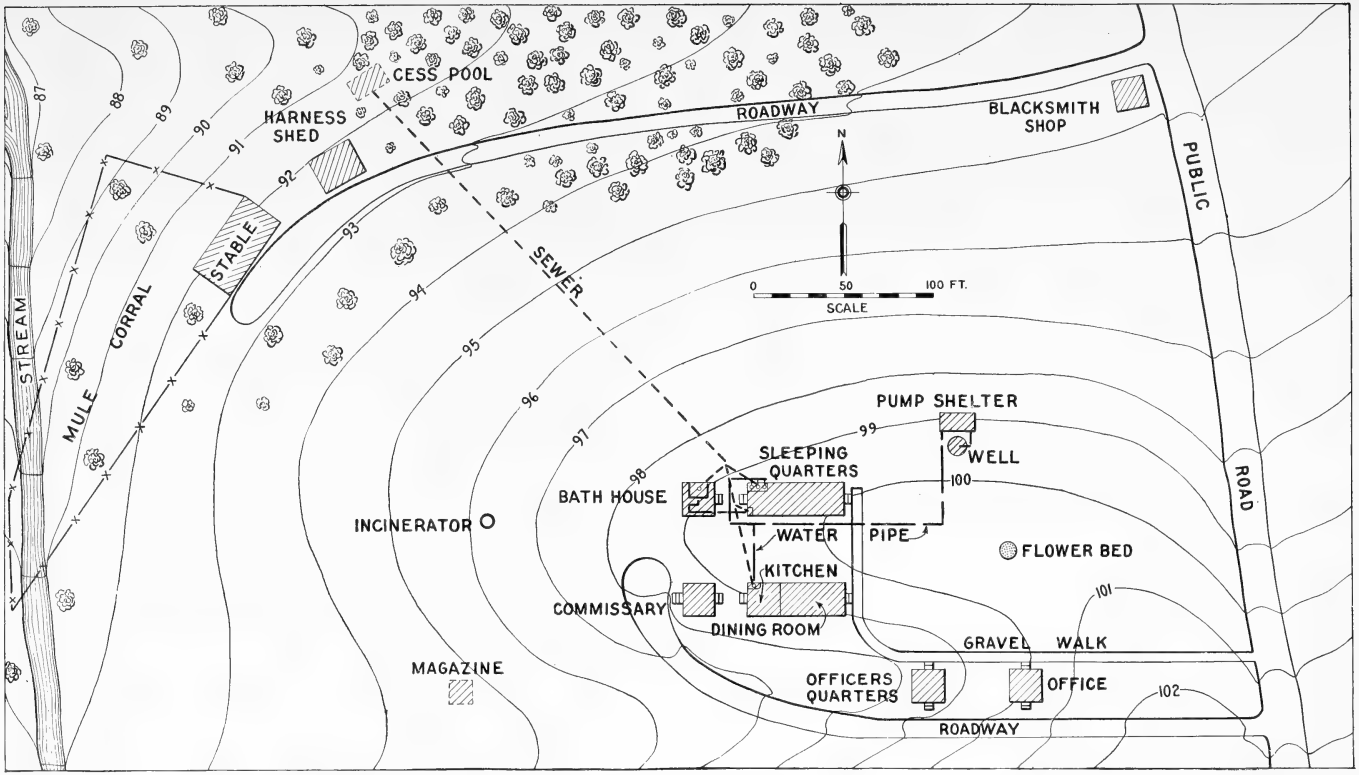
CONSTRUCTION OF WELLS.

A shallow dug well under ordinary conditions should be lined with some impervious material, such as concrete, brick or stone laid in cement and pointed on the inside, or terra cotta sewer pipe cemented at the joints; and this casing should be built as deep into the well as practicable. In temporary camps, those in charge usually feel that they can afford neither the time nor the material to construct casings of any of the materials mentioned above, and rather favor the use of wooden casings, used more for the purpose of preventing the sides from caving than for keeping out surface pollution. In such cases, all precautions as to the location of the well in relation to privies, stables, and other sources of pollution become more vital than ever. The space between the wooden casing and the earth should be very carefully filled with sand or earth tamped as the casing is put in. Sand is preferable because it is of value in aiding in the purification of any surface water which may percolate through it; clay is somewhat unsafe for the purpose, as some kinds of clay shrink and crack on drying, and if this occurs, polluted water may find its way through the cracks to the well. Wooden casings, however, should be used only in temporary camps, if at all. When used for long periods they decay and impart an unpleasant taste to the water, and in the end may be more expensive than one of the more durable kinds of casing.

Driven wells are constructed by attaching a perforated point to the end of a pipe from $1\frac{1}{4}$ to 4 inches in diameter, and driving the pipe into the ground until water is reached. The water enters the pipe through the perforations in the point, which are small enough to keep out sand and gravel.

The upper end of the pipe usually is attached directly to a pump by which the water is raised. The vibration of the pipe, caused by the pump, often loosens the earth about the tubing so that a channel is formed through which surface water may enter the well; and the joints in the pipe also have been known to loosen so as to permit the entrance of surface water. To obviate the former trouble it is necessary to provide a heavy timber or concrete platform to which the frame of the pump may be fastened tightly. The pipe should be inspected occasionally with a view to the removal of all leaky and rusted sections. Waste water from the pump should be carried by a pipe or spout to a considerable distance from the well, and dirty water never should be used in priming.

When a distance of 100 feet or more is traversed before water is struck, the term "deep well" is commonly applied. If, after water



DESIRABLE CAMP LAYOUT.

PLATE I.

TYPES OF POLLUTED AND WELL-PROTECTED SPRINGS.

has been reached, the well is continued through the hardpan or rock underlying it until another water-bearing level is reached, the well is called an artesian well.

Such wells are usually made by sinking an iron pipe to the required depth if the formation of the ground will permit, or by drilling in stiff soils and rocks. The water thus obtained usually has filtered through the ground for great distances and generally is free from pollution from human and animal sources. Such water may contain mineral salts in great abundance, being in some cases so disagreeable to the taste that it can not be used for drinking purposes. Questions are asked frequently concerning the possible injurious effects of mineral salts in water, and the methods of removing them. It is impossible to define their ill effects, if any, and, in general, it is not practicable to remove the salts.

To prevent the pollution of artesian wells from the surface it is necessary to observe the same precautions to prevent the leaking or rusting of the upper sections of pipe, as were outlined in the discussion of driven wells.

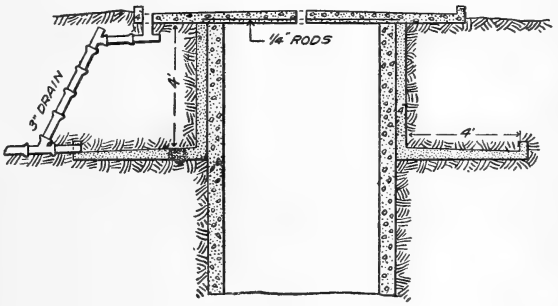


FIG. 1.—Well protection.

Both shallow and deep wells should have water-tight curbs in addition to impervious casings, for the drip from the pump often is the cause of serious pollution. The casing or lining should extend 6 or 8 inches above the ground surface, and a concrete curbing should be built over the top with a slope away from the pump opening in the center. This cover should extend about 4 feet beyond the edge of the well, with the outer edge raised sufficiently to force the waste water to run off through a tight drain tile, as shown in figure 1. In figure 1 there is also shown a method of protecting a well from direct contamination by unfiltered surface water.[1] To construct the cut-off shown, the earth should be excavated for 4 feet outside of the regular casing to a depth of 4 feet and an extra 4-inch coating of waterproof Portland cement mortar should be placed outside of the casing. The bottom of the excavation should be covered with from 4 to 6 inches of the mortar, and the outer edge of this layer should be raised so as to divert the seepage water to the tile drain. This arrangement will prevent from entering the well any water which has not been filtered through at least 4 feet of earth. A method of making water-proof

[1] Suggested by E. Bartow in University of Illinois State Water Survey Bull. 7 (1909), No. 2.

Portland cement mortar is described in Bulletin 230 of the Department of Agriculture, which may be procured at 10 cents per copy from the Superintendent of Documents, Government Printing Office, Washington, D. C.

For the purposes of wells for temporary camps, in which a wooden casing is used, a certain degree of protection may be obtained by extending the wooden casing above the ground level and banking around it a shield of earth, 18 inches deep at the casing and sloping away from it to the ground level about 6 feet away.

If the water is to be raised from the well by hand, a hand pump is better from a sanitary standpoint than the familiar rope and bucket, since the bucket coming in contact with dirty hands may carry pollution to the water in the well. The joint between the pump and well cover should be protected with a tin flashing to prevent water from running back into the well.

If it be necessary to use a bucket, a shelf should be built on the side of the windlass box, so that when not in use the bucket may rest on the shelf instead of on the well cover. A better method suggested by the United States Public Health Service consists of a closed windlass box provided with an automatic device for emptying the bucket through a spout. By this method the handling of the bucket is avoided entirely.

Surface Water Supplies.

Surface water supplies are more liable to pollution than either springs or wells. Streams, lakes, and ponds receive a large amount of contaminating matter washed from the section which they drain, and usually the sanitary conditions of the up-stream watershed are beyond the control of convict camp officers.

Double Water Supplies.

Though the practice of using surface supplies generally is to be condemned, it is sometimes impossible to supply more than the drinking and cooking demands of a camp from underground sources. In such cases it may be necessary to resort to a surface supply to obtain water for washing and other purposes. This condition existed at one of the camps visited, and river water was being used, without any hesitation, for general camp purposes, notwithstanding the fact that it was known to be dangerously polluted, and had caused an epidemic of typhoid fever. It is true that the water was heated when used for bathing and washing clothes, but there could be no assurance that the temperature was high enough to kill the germs, nor, apparently, was there any hesitancy in adding unheated water in sufficient quantities to reduce it to a comfortable temperature for bathing. Furthermore, even when, as in the camp referred to, a pure water is provided for drinking purposes, it is a well-known fact that many

persons are absolutely thoughtless in regard to the water which they drink, and an inferior water, if a little more convenient, will be used readily. Though no instances of this kind were reported at this particular camp, examples were not lacking in other places. At one camp a "trusty" convict working on the road drank water from a railroad culvert in order to save himself the trouble of going to the regular supply. It is significant that he was the only man at the camp who contracted typhoid fever. At another camp where the men were working under the honor system and were not under constant observation, several drank water from a river close at hand, although the camp supply was not far distant. Four contracted typhoid fever. The prisoners then were cautioned not to drink any water except that furnished for their use, and no more illness occurred. From the foregoing examples it is clear that danger may exist wherever a surface supply is at hand. To sanction the use of such a supply for any purpose whatever serves to increase the danger.

Whenever the use of such a supply is absolutely necessary, water used for all purposes should be purified, and the danger of using the unpurified water should be thoroughly drilled into the minds of the convicts. Harmful organisms are killed by boiling, but it is not certain that all the water used in the preparation of food will reach the boiling point, and much of the water used in washing dishes and clothing never boils. A method by which the danger may be overcome more certainly consists of the addition to the water of bleaching powder, otherwise known as "chloride of lime," "chlorinated lime," and "hypochlorite." In the quantities in which it is generally used for the purification of water for drinking purposes it is harmless in its effect upon the human body, and its taste is almost imperceptible. In cases where it is desirable to discourage the use of the water for drinking, the bleaching powder may be used in sufficient quantities to produce a disagreeable taste

The United States Public Health Service issues the following directions for the use of bleaching powder in the purification of water for drinking purposes:[1]

Prepare a solution of bleaching powder (chloride of lime) by dissolving one teaspoonful of the fresh substance in one quart of water. This should be placed in a tightly stoppered bottle (preferably of dark glass) and kept from the light. To disinfect water, add one teaspoonful of this solution for each two gallons of water. Stir the water thoroughly and allow it to stand for fifteen minutes. At the end of that time the disinfectant will have killed the disease germs and the water may be drunk with a fair degree of safety.

As bleaching powder loses its strength very rapidly when exposed to the air, great care must be taken to keep it covered tightly in air-tight containers.

[1] Public Health Bulletin No. 70, U. S. Public Health Service.

QUANTITY.

The adequacy of the water supply of a convict camp is nearly as important as its purity, and before a given source is decided upon for use an investigation should be made to determine the quantity of water it will supply per day, and its sufficiency for the purposes of the camp.

The customary uses of water in convict camps are for drinking, cooking, kitchen washing, bathing, laundering, watering of stock, and fire protection. When it is to be used for all of these purposes the following table will give some idea as to the amount which should be available:

Approximate quantities of water required per day.

	Gallons.
For each inmate and officer	25 to 30
For each horse or mule	6 to 10
For each hog	2 to 3

Thus for a camp of 40 men and 5 officers, and maintaining 30 mules and 4 hogs, a minimum supply of 1,313 gallons per day will be consumed, based upon an estimate of 1,125 gallons for the officers and men, 180 gallons for the mules, and 8 gallons for the hogs. The water consumption will vary from day to day and from season to season, and will be greater in arid than in humid regions.

The amount of water supplied by the source should be somewhat in excess of the estimated consumption to provide for excessive drafts under unusual circumstances, and also to prevent the complete draining of the source each day, which is undesirable. Thus, for the camp assumed above, the supply should yield about 1,800 gallons per day, which represents a flow of $1\frac{1}{4}$ gallons per minute.

If the source be a well, the determination of the flow and the adequacy of the supply may be made as the well is dug by measuring the amount of water baled out in a given time. If it be a spring, a small bank of earth may be thrown up entirely around it, and in this way it can be forced to overflow through a pipe inserted in the bank. The flow then can be determined by noting the time required to fill a bucket or tub. When the source is a brook, there usually is little doubt of its adequacy for the purposes of camps of ordinary size. A stream only 12 inches wide and 2 inches deep and flowing at the rate of only 1 foot per minute will yield a supply of practically $1\frac{1}{4}$ gallons per minute, or enough for the camp of 40 men mentioned above.

STORAGE.

Assuming in the foregoing example that the flow of water from the source is exactly $1\frac{1}{4}$ gallons per minute, it will be observed that a full day of 24 hours will be required for the accumulation of the 1,800 gallons, necessary for the use of the camp. But this amount is used during only about half that time, and the length of time during which the water actually is drawn off is much less than that. It is

therefore evident that some means must be provided of storing the water during the night for use during the day. If the source be a mountain brook, this may be done by constructing a dam which will impound the necessary amount of water. If it be a spring, the water may be stored by excavating a reservoir around it, or by constructing a concrete reservoir, while if a dug well be the source, the water may be impounded in any desired quantity in the well itself by carrying the well for the necessary distance below the water-bearing stratum or soil, and by making the diameter of the well sufficiently great. The dimensions of a driven well, on the other hand, are not sufficient to furnish such a reservoir and, therefore, unless the well be a so-called flowing well, in which case the water may be impounded in a reservoir above ground, it is necessary that the flow of the well be sufficient to supply the draft as required.

Distribution, Pumping, Etc.

The flow of water being sufficient for the needs of the camp, and sufficient storage or reservoir capacity having been provided, the next matter to receive consideration is the manner of distribution from the reservoir to the various parts of the camp.

The most primitive method is to have the water carried in pails or tubs by members of the camp force, and this method was in use in a number of camps visited. But it is very wasteful of time and labor, and unless the camp is expected to be of the most temporary character, more economical and convenient means should be provided.

In mountainous or hilly sections it happens frequently that the source, whether brook or spring, can be selected at a greater elevation than that of the camp, and under these conditions it is only necessary to lay a pipe line and the water will flow to all parts of the camp by gravity. This is simplest and cheapest and, when natural conditions permit, should be adopted.

However, when the natural conditions are not so favorable, and when it is desired to eliminate the carrying of water, one of three methods must be adopted, namely, the elevated tank, the hydropneumatic tank, or the pneumatic-pump methods.

Elevated-tank Method.

In the elevated-tank method water is forced into the tank from a lower level by means of a pump or ram and is discharged therefrom by gravity. "As there is considerable frictional resistance to the flow of water through the distribution pipes, the tank should be placed at least 10 feet higher than the highest discharge cock to insure a flow under pressure."[1]

[1] From Bulletin No. 57, U. S. Department of Agriculture, "Water Supply, Plumbing, and Sewage Disposal for Country Homes."

Either wooden or metal tanks may be used. Wooden tanks may be obtained in almost any size, and are usually circular in section, and built of cedar or cypress staves, though juniper, fir, yellow pine, and white pine also are fairly satisfactory. As generally built the sides are battered not less than one-fourth nor more than one-half inch per foot of height; and the staves are held together by means of hoops which should be of wrought iron or mild steel and round in section rather than flat. Tanks are usually shipped "knockeddown," and should be set up and filled with water as soon as they are received. They are usually elevated on wooden towers, and, as set up, should rest on the tank bottom and not on the part of the stave that projects below it. All outdoor tanks should be covered to keep out birds and leaves or other débris. To prevent the covering being blown off it should be firmly fastened to the top of the tank by straps of iron. The ordinary life of wooden tanks is about 15 years.

Steel tanks cost from 40 to 100 per cent more than wooden tanks of the same capacities; but if kept well painted inside and out they will last an indefinite time. They are absolutely tight when once erected, whereas a wooden tank will shrink and leak if the water gets low. They are not liable to sudden failure, as sometimes happens with wooden tanks when the hoops burst. On the other hand, steel tanks are not well adapted to the use of convict camps because it requires skilled boilermakers to erect them. They are also more difficult than wooden tanks to protect against freezing.

This elevated-tank system was in use in six of the camps investigated. It may be employed satisfactorily in permanent camps, but it can not be used economically or conveniently in temporary camps on account of the time required to erect and raze the tank and tower when the camp is moved.

THE HYDROPNEUMATIC-TANK METHOD.

The hydropneumatic-tank method is more convenient for the use of temporary camps, as the elevation of the tank is avoided. The equipment necessary consists of a force pump operated by hand or power, an air-tight steel tank and valves, pressure gauges, and fittings. The operation of the system depends upon the fact that air is elastic and can be compressed while water can not be compressed. When water is pumped into the empty, air-tight tank, the air already in the tank is compressed into a smaller space in the upper part of the tank. This compression of the air causes it to exert a pressure which forces the water through the service pipe to the points of delivery. But, though the air can be compressed almost indefinitely, it always will occupy some space in the top of the tank, and hence the tank never can be filled to capacity with water. In practice it is customary to fill only from two-thirds to three-fourths of the volume of the tank with

water. As the water is drawn off the pressure of the confined air diminishes rapidly and a point is soon reached where, though there still is some water left in the tank, the pressure of the air may not be sufficient to force it to the faucets. The following table shows the increase in the pressure of the air as water is pumped into a hydropneumatic tank.

TABLE 8.—*Increase in pressure as water is pumped into a hydropneumatic tank.*

Part of tank filled with water.	Pressure caused by compression of trapped air only.	Initial pressure pumped into tank.
	Pounds per square inch.	*Pounds per square inch.*
Empty	0.0	10.0
One-fourth full of water	4.9	18.2
One-third full of water	7.4	22.4
One-half full of water	14.7	34.7
Two-thirds full of water	29.4	59.4
Three-fourths full of water	44.1	84.1

A pressure of 6 or 7 pounds per square inch is necessary to overcome the friction in the piping and force the water to the height of faucets under average conditions, and it will therefore appear by reference to the above table that the volume of water which can be delivered at one charging of the tank, when only the air trapped in the tank furnishes the pressure, is not greater than one-half the volume of the tank. If, before the water is forced into the tank, a pressure of 10 pounds of air be pumped into it, all the water the tank will hold, which is not more than three-fourths of its volume, can be forced out. In practice, it is always necessary to pump a certain amount of air into the tank at intervals to overcome the loss caused by the gradual absorption and removal of the air by the water.

The following table gives the pressures in the tank theoretically necessary to force the water to certain elevations above the tank:

TABLE 9.—*Pressures theoretically necessary to force water to given heights.*

Height.	Pressure in tank.	Height.	Pressure in tank.	Height.	Pressure in tank.
Feet.	*Pounds per square inch.*	*Feet.*	*Pounds per square inch.*	*Feet.*	*Pounds per square inch.*
1	0.43	35	15.16	110	47.63
2	.87	40	17.32	120	51.96
3	1.30	45	19.49	130	56.30
4	1.73	50	21.65	140	60.62
5	2.17	55	23.82	150	64.95
6	2.60	60	25.98	160	69.28
7	3.03	65	28.15	170	73.61
8	3.46	70	30.31	180	77.94
9	3.90	75	32.48	190	82.27
10	4.33	80	34.64	200	86.60
15	6.50	85	36.80	210	90.93
20	8.66	90	38.97	220	95.26
25	10.83	95	41.14	230	99.60
30	13.00	100	43.30	240	103.92

In practice, the pressures given in the table will not force the water to the heights indicated because of the pipe friction. The amount of this friction depends upon the size and length of pipe, and the velocity at which the water is forced through it. The values given in the following table represent the frictional loss in feet of lift per 100 feet of pipe in pipes from three-fourths of an inch to 2 inches in diameter, discharging from 5 to 40 gallons per minute:

TABLE 10.—*Frictional loss in feet for 100 feet of clean iron pipes.*[1]

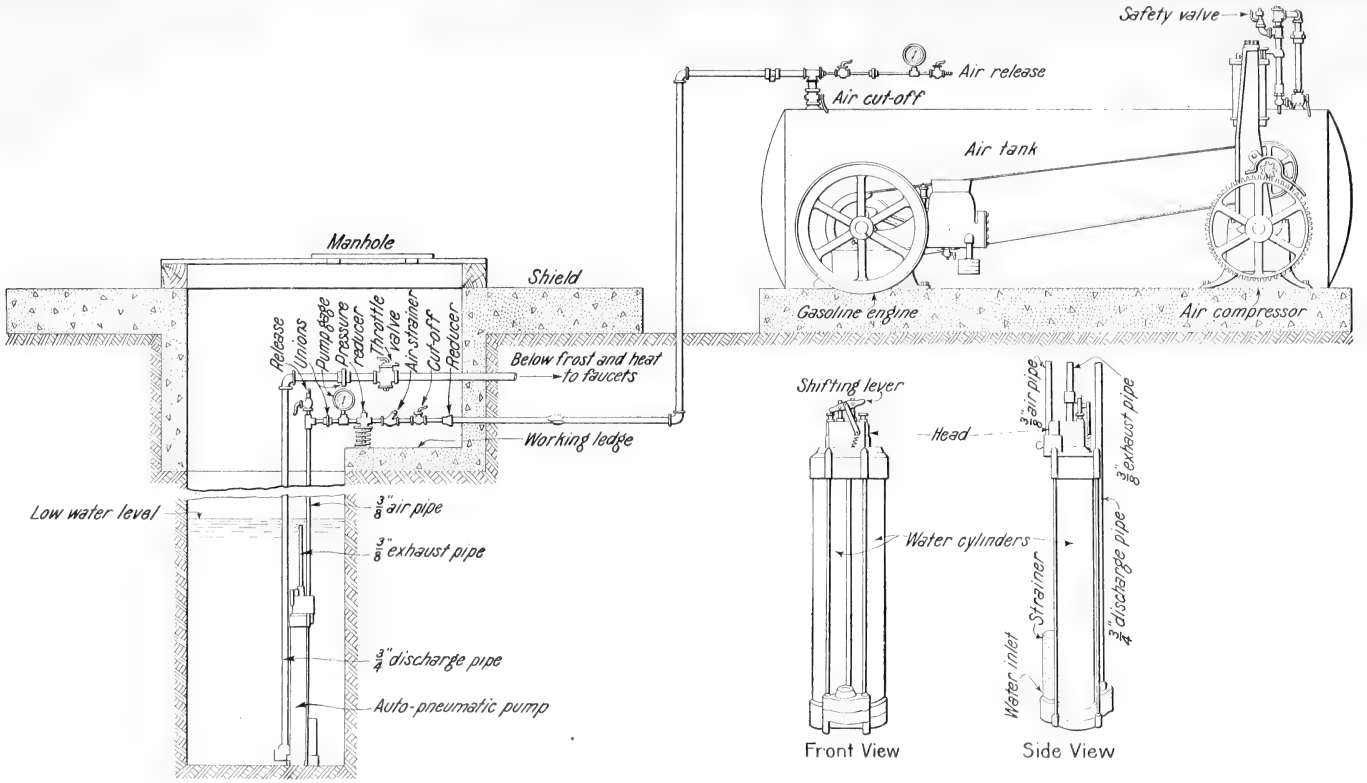
Gallons per minute.	¾-inch.	1 inch.	1¼ inches.	1½ inches.	2 inches.
5	7.6	1.9	0.7	0.3	0.1
10	29.9	7.3	2.4	1.1	.3
15	66.0	16.1	5.5	2.2	.6
20	115.9	28.3	9.4	3.8	1.0
25	181.4	43.7	14.7	6.0	1.5
30	.....	63.3	21.0	8.6	2.1
35	.....	85.1	28.5	11.6	2.8
40	.....	110.4	37.0	15.0	3.7

[1] From Ellis and Howland's experiments.

The use of the foregoing tables is best explained by means of an example, as follows:

Example: It is desired to find the air pressure which will be necessary in a hydropneumatic tank to force water to two faucets, each 20 feet higher than the tank, at the rate of 5 gallons per minute to each faucet, the water for both being conducted for 150 feet through a 1½-inch main and then through two branch pipes each 30 feet long.

Solution: (1) The theoretical height to which the water is to be forced is 20 feet. (2) From Table 10 the frictional loss in forcing the water through 100 feet of 1½-inch pipe at the rate of 10 gallons per minute is equivalent to an additional height of 1.1 feet, and for 150 feet it will be $1.5 \times 1.1 = 1.65$ feet. (3) Also from the same table the frictional losses in forcing the water further through the two ¾-inch pipes for distances of 30 feet at the rate of 5 gallons per minute in each are equivalent to $2 \times 0.3 \times 7.6 = 4.56$ feet. Adding (1), (2), and (3), the total equivalent height will be $20.00 + 1.65 + 4.56 = 26.21$ feet. The pressure necessary to force water to this height is found from Table 9 to be 11.5 pounds per square inch.



VIEWS OF PNEUMATIC-PUMP SYSTEM AND PNEUMATIC PUMP.

PLATE III.

The following table gives commercial sizes of pneumatic tanks: [1]

TABLE 11.—*Commercial sizes of pneumatic tanks.*

Diameter.	Length.	Weight.	Volume.	Diameter.	Length.	Weight.	Volume.
Inches.	*Feet.*	*Pounds.*	*Gallons.*	*Inches.*	*Feet.*	*Pounds.*	*Gallons.*
24	6	445	140	42	10	1,650	720
24	8	560	195	42	12	1,900	865
24	10	675	245	42	14	2,200	1,000
30	6	560	220	42	16	2,400	1,150
30	8	700	295	48	10	2,066	1,000
30	10	870	365	48	12	2,320	1,130
30	12	900	440	48	14	2,610	1,300
36	6	750	315	48	16	2,900	1,500
36	8	900	420	48	18	3,600	1,700
36	10	1,050	525	48	20	3,950	1,880
36	12	1,200	630	48	24	4,650	2,260
42	8	1,450	575	60	20	5,900	2,940

As stated above, the water capacity of the tanks given in Table 11 will be not greater than three-fourths of the volume of the tank. Therefore, for the camp of 40 convicts, assumed above, for which a daily supply of 1,800 gallons is necessary, it is evident that a tank 48 inches in diameter and 14 feet long would be required and it would be necessary to pump up this tank twice a day, starting with an initial air pressure of at least 11 pounds.

Pneumatic tanks usually are constructed to withstand safely a pressure of 100 pounds per square inch.

THE PNEUMATIC-PUMP METHOD.

By the pneumatic-pump method the water is delivered direct from the source. As it is not stored in a tank, storage capacity of other form must be provided, either a special reservoir or a sufficiently large dug well. The necessary apparatus consists of a small gasoline engine, an air compressor, an air-tight steel pressure tank, and a pneumatic pump. The operation of the method is as follows: The gasoline engine supplies power to run the air compressor which pumps the air in the tank up to any desired pressure. From this reservoir air under pressure is supplied to the pneumatic pump which is immersed in the water at its source in the well, lake, or brook. The pump consists of two small metallic chambers; when a faucet is opened these fill with water automatically and discharge alternately, owing to the alternate application of the air pressure from the tank to the surface of the water in each, and a continuous supply of fresh water is thus forced through the pipes.

Plate III shows a front and side view of a pneumatic pump and the arrangement of a pneumatic-pump system.

Each pump requires an air-pressure reducer, shut-off and release cocks, and pressure gauge. The air-pressure reducer is necessary to reduce the high pressure carried in the tank to the uniform low pres-

[1] Bulletin No. 57, U. S. Department of Agriculture.

sure required to operate the pump. It is placed in the air pipe line between the air tank and the pneumatic pump, and can be adjusted to the proper pressure with an ordinary wrench. The working pressure required to operate the pump and raise water to the required height is recorded on the pump gauge placed on the air pipe line between the reducer and the pump. The pressure necessary may be determined by the use of Tables 9 and 10, as described under the hydropneumatic system.

The size of tank that should be installed is governed both by the quantity of water to be delivered with one charging and by the pressure necessary to overcome the friction in pipes and fittings and to deliver the water at the required elevation. The following table shows the number of gallons of water that can be drawn from faucets with the pump under working pressures varying from 25 to 55 pounds, and with total starting pressures in a 1,000-gallon air tank varying from 60 to 100 pounds.

TABLE 12.—*Pumping capacity of a 1,000-gallon air tank, in gallons of water, under varying internal pressures.*

Pressure maintained in pump by pressure reducer.	Initial pressure in pounds in 1,000-gallon air tank.				
	60	70	80	90	100
Pounds.	*Gallons.*	*Gallons.*	*Gallons.*	*Gallons.*	*Gallons.*
55	40	155	270	415	550
50	140	270	400	550	700
45	240	385	530	685	850
40	340	500	660	820	1,000
35	470	650	830	1,010	1,200
30	600	800	1,000	1,200	1,400
25	737	918	1,239	1,350	1,618

For air tanks of other than 1,000-gallon capacity the amount of water which can be delivered with one charging can be obtained approximately by dividing the figures in the table by 1,000 and multiplying the result by the capacity of the tank in gallons.

For the purpose of the assumed camp of 40 convicts, an air-tank 48 inches in diameter and 14 feet long (the same size as the hydropneumatic tank selected) will supply all the water necessary for a day's consumption with one charging. Its volume, by Table 11, is found to be 1,300 gallons and if it is charged to an initial pressure of 100 pounds per square inch, and the pressure reducer set at 25 pounds per square inch, Table 12 indicates that the volume of water which can be delivered at one charging will be $\frac{1618}{1000} \times 1300 = 2{,}103$ gallons.

When the same tank was used as a hydropneumatic tank, it was found that it would be necessary to charge it twice a day, which indicates an advantage in point of convenience in favor of the pneumatic

pump method. Those who favor this method claim as an additional advantage the fact that the water is not stored in a closed tank or in contact with stale air. On the other hand, the equipment necessary is more expensive than that required for the operation of the hydropneumatic tank method, and the mechanism of the pneumatic pump is somewhat delicate and demands careful attention to keep it in good running order. In particular, the pump must be protected from the action of sand or grit in the water.

PUMPS.

There are two general types of pumps, namely, suction-lift pumps and force pumps. The former depend for their action on the creation of a partial vacuum in the pump cylinder, which permits the water in the pump to rise above the water in the well. The maximum practical suction lift is about 20 feet, though it varies somewhat with the elevation above sea level, the greater the elevation the smaller the suction lift. This means that the pump cylinder which raises the water by suction in lift pumps should never be more than 20 feet above the water level in the well or other source. In force pumps the water is raised mechanically and the height to which the water can be raised is not limited as in the case of the suction pumps. Pumps of this type are necessary for use in connection with elevated-tank or hydropneumatic systems, and, unless a special air pump or compressor be used, it is necessary that a combination air-and-water force pump be employed for the hydropneumatic systems, especially in pumping from deep wells.

Frequently the two types of pumps are combined, the water being raised partly by suction and partly by force. This is accomplished either by the use of two cylinders, one for each of the operations, or by a combined suction and force cylinder.

Pumps are manufactured suitable for operation with any kind of power—hand, gasoline, steam, or electric. The most suitable form of power for the use of convict camps is that of the gasoline engine. For the purposes of camps of ordinary size from $2\frac{1}{2}$ to 3 horsepower is all that is required, and a gasoline engine of such rating will not only pump all the water necessary but will furnish sufficient power to run a clothes-washing machine or other small machinery which may be useful around the camp. The horsepower necessary for pumping purposes in any case may be estimated by the following method:

Divide the number of gallons which it is desired to pump per minute by 7.48 (the number of gallons in a cubic foot), to determine the number of cubic feet of water to be pumped per minute. Multiply the number of cubic feet by 62.5 (the weight in pounds of a cubic foot of water) to get the weight of the water to be pumped per minute. Multiply this weight by the total lift in feet. The total lift will be equal to the vertical distance from the surface of the water

at the source to the level of the water in the elevated tank plus the frictional loss in the pipes between the source and the tank as determined from Table 10; or if a hydropneumatic tank is to be used the total lift will be found by adding the frictional loss to the sums of the vertical distance from the surface of the water at the source to the tank and of the height which is found by Table 9 to be equivalent to the maximum pressure desired in the tank. Divide the result of the last operation by 33,000 and the quotient will be the theoretical horsepower required. But, as a pumping outfit usually is only about 50 per cent efficient, the theoretical horsepower derived by the foregoing operation should be doubled to determine the horsepower actually necessary.

Example: It is desired to determine the horsepower necessary to force water from a well 50 feet deep into the hydropneumatic tank, 48 inches in diameter and 14 feet long, selected for use in the camp of 40 convicts considered in the foregoing examples. The water is to be pumped at the rate of 900 gallons per hour, and a 1-inch pipe is to be used in the well. As a minimum pressure of 11 pounds is needed, the tank when three-fourths full of water will be under an internal pressure of 88 pounds.

Solution: By Table 9, page 79, the maximum pressure of 88 pounds is equivalent to a head of 204 feet of water. The vertical distance from the surface of the water in the well to the surface of the water in the tank is 50 feet. By Table 10, on page 80, the frictional loss in 50 feet of 1-inch pipe with water pumped at the rate of 900 gallons per hour, or 15 gallons per minute, will be equivalent to a head of 8 feet. Therefore the total lift is equal to $204+50+8$, or 262 feet. The volume of water to be pumped per minute is 15 gallons, or 15 divided by $7.48=2$ cubic feet. The weight of this volume of water is 2×62.5, or 125 pounds. Multiplying this weight by the total lift determined above, and dividing the result by 33,000, the power theoretically necessary is found to be $\frac{269\times125}{33{,}000}$, or 1 horsepower, and allowing for 50 per cent efficiency of the outfit the power actually necessary is 2 horsepower.

Detailed information as to pumping installations may be obtained from pump manufacturers. In applying for such information it is proper to advise the manufacturer fully regarding the following points:

(1) The source of the supply (whether well, cistern, lake, or spring); (2) if a well, the inside diameter and total depth; (3) the distance from the ground surface to the level of the water in the well; (4) the flow of the well; (5) the number of gallons to be pumped per hour; (6) the relative positions of the source and the point to which the water is to be forced; (7) the position in which the pump

is to be placed; (8) the preference as to elevated tank, hydropneumatic tank, or pneumatic-pump methods; (9) the kind of power to be used (hand, gasoline engine, or electric motor); (10) the number of people to be served; (11) the approximate number of faucets desired and an estimate of the amounts of water to be used for various purposes; (12) the number of head of live stock of all kinds.

HYDRAULIC RAMS.

When there is available in the immediate neighborhood of the camp a spring or other supply of pure water so situated that a considerable fall may be obtained within a reasonable distance, a hydraulic ram may be used for pumping to the storage tank. The ram is a simple though wasteful machine, which utilizes the momentum of a stream of water falling a small height to elevate a portion of the water to a greater height; and once started the operation is continuous until the valves become worn.

The proper size of ram to suit any special condition is a matter which should be taken up with manufacturers of rams. It will depend upon the following factors:

(1) The flow of water from the source of supply, determined by the time required to fill a vessel of known capacity; (2) the difference between the level of the supply and the lowest point within a reasonable distance suitable for the location of the ram; (3) the distance between the source of supply and the proposed location of the ram; (4) the difference in elevation between the ram location and the highest point to which water is to be delivered; (5) the length of pipe necessary to conduct the water to the point of delivery.

In purchasing a ram, information with regard to the foregoing factors should be sent to the manufacturer.

The efficiency of a ram is governed by the ratio of the fall of water from the spring to the ram to the height to which water is to be pumped. It is greatest when this ratio is from 1 to $2\frac{1}{2}$ to 1 to 3, and the ram usually will not work well when the height to which the water is to be pumped is more than 25 times as great as the fall from the spring to the ram.

The relation between the four interdependent factors, fall at the ram, lift to the tank, the supply at the spring, and quantity of delivered water are expressed approximately by the following equation:

$$q=\frac{Q\times H}{h},$$

in which

Q=supply of spring in gallons per minute,
H=fall in feet from spring to ram,
h=height of storage tank above ram in feet,
q=quantity of water pumped in gallons per minute.

Values of q and h, derived by the solution of this equation, should be reduced by about one-third to allow for friction, and values of Q and H should be increased in the same proportion.

Example: As an example of the use of the foregoing equation, suppose it is desired to determine the requisite flow of a spring to supply the camp of 40 convicts, in which the daily consumption is 1,800 gallons, the proposed location of the ram being 14 feet below the spring and 200 feet below an elevated storage tank.

Solution: As the ram operates throughout the entire 24 hours of the day the quantity of water in gallons per minute to be pumped, (which is q) is equal to $\frac{1800}{24\times 60}=1.25$ gallons. The height of the storage tank above the ram (or h) is 200 feet, and the fall from the spring to the ram is 14 feet. Substituting these values for the symbols in the equation,

$$1.25=\frac{Q\times 14}{200}$$

or,

$$Q=\frac{1.25\times 200}{14}=17.86 \text{ gallons per minute.}$$

Increasing this value by one-third to allow for friction, it is found that under the conditions named a flow of 23.8 gallons per minute will be necessary at the spring to force $1\frac{1}{4}$ gallons per minute into the storage tank.

Table 13 gives commercial estimates of the quantities of water delivered in 24 hours under various conditions:

TABLE 13.—*Capacity of hydraulic rams.*

Power head in feet.	Pumping head in feet.																
	4	10	15	20	30	40	50	60	70	80	90	100	120	140	160	180	200
2	540	192	128	96	64	43	29	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	.....	301	192	144	96	72	58	43	37	27	24	.....	.....	.....	.....	.....	.....
4	.....	432	256	192	128	96	77	64	55	43	38	29	24	.....	.....	.....	.....
5	.....	540	345	240	160	120	96	80	69	60	53	43	30	26	.....	.....	.....
6	.....	.....	432	302	192	144	115	96	82	72	64	57	43	31	27	24	.....
7	.....	.....	505	378	235	168	134	112	96	84	75	67	50	36	31	28	25
8	.....	.....	.....	432	270	192	154	128	110	96	86	77	64	55	43	38	29
9	.....	.....	.....	485	300	216	173	144	124	108	96	86	72	62	54	43	39
10	.....	.....	.....	540	360	252	192	160	137	120	107	96	80	68	60	53	43
12	.....	.....	.....	.....	430	301	230	192	165	144	128	115	96	82	72	64	57
14	.....	.....	.....	.....	505	353	270	224	192	168	150	135	112	96	84	75	67
16	.....	.....	.....	.....	.....	432	323	257	220	192	171	154	128	110	96	85	77
18	.....	.....	.....	.....	.....	486	390	303	247	216	192	173	144	124	108	96	86
20	.....	.....	.....	.....	.....	540	430	336	288	240	214	192	160	137	120	107	96
22	.....	.....	.....	.....	.....	.....	475	370	303	264	235	212	176	151	132	118	105
24	.....	.....	.....	.....	.....	.....	520	405	346	288	256	230	192	164	144	128	115
26	.....	.....	.....	.....	.....	.....	.....	470	375	328	278	250	208	178	156	139	125
28	.....	.....	.....	.....	.....	.....	.....	505	430	354	300	269	224	192	168	149	134
30	.....	.....	.....	.....	.....	.....	.....	540	465	405	336	288	240	206	180	160	144

To determine the number of gallons delivered per day under any given conditions of power head, pumping head, and quantity of water used by the ram, multiply the factor opposite the given power head and under the given pumping head by the given number of gallons used per minute by the ram; and, vice versa, to determine the number of gallons per minute necessary to pump a given supply in 24 hours, divide the factor in the table into the supply.

Thus, in the above example, the supply required every 24 hours is 1,800 gallons. The power head is 14 feet, and the pumping head is 200 feet. Opposite 14 and under 200 in the table is 67. Dividing 1,800 by 67 the requisite flow through the ram is found to be 26.9 gallons per minute, as compared with 23.8 gallons determined by the formula above. Both results are approximate, and more accurate figures can be obtained only by a careful consideration of the length of the delivery pipe and the pipe friction. However, for the purpose of a preliminary determination of the practicability of a ram installation either method will provide sufficiently close results.

When it is determined to use a hydraulic ram precise instructions for the proper installation, operation, and care of the particular ram to be used should be obtained from its manufacturer, and these instructions should be followed carefully.

PLUMBING.

All piping used in connection with the water supply should be of iron, not lead, and the system should be so arranged that the water is carried to the point of discharge in as nearly a straight line as possible.

The main pipe from the storage tank never should be less than 1 inch in diameter, and for camps of 40 men should be $1\frac{1}{2}$ inches in diameter. For camps of the latter size the branch pipes to the kitchen sink, wash trough, and shower fixtures should be not less than $\frac{3}{4}$ inch in diameter.

All pipes should be laid on sufficient slant to drain them back into the tank or drainage system, and a drain pipe and cock should be provided at a low point in the system so that in extremely cold weather the system may be drained into the cesspool or the tank to prevent freezing. This necessitates a stop cock on the pressure-tank outlet to prevent draining the tank.

Pipes exposed to the outer air or located where there is any danger of freezing should be boxed in sawdust or some other nonconducting material.

Hot water for kitchen purposes can be heated most conveniently and cheaply on the kitchen range, but for lavatory and shower bath it

usually will be necessary to provide a special hot-water heater and a hot-water storage tank or boiler. In purchasing the water heater it is important that it shall provide sufficient area of heating surface in contact with the water to raise the temperature of the required amount of water to a proper point in a given time. The area necessary will depend on the nature of the fuel. If wood is to be used, the surface area of the jacket, water back, or tubes should be about 50 per cent greater than if coal is to be burned. By "forcing the fire" it is possible to increase the rate of heating, but this practice results in the premature burning out of the heater. As an aid in calculating the necessary heating surface the following, based on the use of coal as fuel, may be used:

The average size of water back having about 110 square inches, or about two-thirds square foot, of exposed surface, will heat to the ordinary temperature of domestic hot water, 180° F., about 21 gallons of water an hour. It will heat about 17 gallons of water to the boiling point with an ordinary fire. With a fire such as is used for roasting, washing, or baking, a water back of this same size will heat about 23 gallons of water to the boiling point, or 27 gallons to the temperature of 180° F. Wrought-iron pipe-heating coils will heat from 30 to 40 gallons of water under the same conditions.[1]

When wood fuel is used, the above performances should be reduced one-third. It must be borne in mind that the temperature required for bathing is only about 100° F., and therefore it is not necessary to heat the entire quantity of water which is to be used to 180° F. On the contrary, with the temperature of the cold water at 60° F., only one-third of the water necessary for bathing need be heated to 180° F. to give a temperature of 100° in the mixed water as it comes from the showers.

To act as a reservoir of hot water a tank of from 50 to 100 gallons capacity should be coupled to the heater. By heating the water capacity of such tank before the bathing of the force is begun it is possible to reduce the rate at which the heater will be required to heat water, and thus decrease its size.

Steel tanks are most satisfactory for camp use, and they should be galvanized inside and out, particularly inside. Ordinarily, they are tested to withstand a pressure of 150 pounds, and extra heavy ones 250 pounds per square inch. The latter should be used when the gauge pressure at the tank is more than 40 pounds per square inch.

NOTES ON FIXTURES AND APPLIANCES.

The most suitable form of shower-bath fixture is a nickel-plated spray head 3 inches in diameter which may be obtained at a cost of approximately 25 cents.

[1] Cosgrove, J. J., *in* Kidder's "Architects' and Builders' Pocket Book."

For camps where a supply of running water is not available a simple shower device may be improvised by attaching a spray head of the type mentioned above, to a faucet or cock in the bottom of a 5 or 10 gallon can so arranged that it can be raised by means of a rope running through a pulley attached to the roof.

When running water is available it is proper to provide more than one shower fixture, and experience indicates that one fixture for from 7 to 10 convicts is a desirable proportion. The use of bath tubs is to be discouraged. The shower bath is more convenient and more sanitary.

Wash troughs for use in connection with running water should not be provided with stoppers, but should act only as collectors for the waste water, and the convicts should be required to wash their faces and hands under the running water from the faucets. Troughs may be made of wood lined with galvanized iron or of a heavier weight of iron alone. Unlined wooden troughs should not be used. One faucet should be supplied for every 10 men.

Kitchen sinks may be of galvanized or enameled iron. The space under them should be left open.

CAMP SANITATION.

DISPOSAL OF EXCRETA.

The Pail System.

Pails are used extensively throughout the country for the temporary reception of human excreta and when used properly are peculiarly well adapted to the needs of guarded convict camps. Galvanized metal pails with tightly fitting covers and having a capacity of about 3 gallons are commonly employed. About 1 pint of a solution of coal-tar disinfectant is placed in each pail.

In some of the camps, pails in the proportion of one to every five men were brought into the bunk houses immediately after the prisoners had been chained for the night, the chains being arranged so that the men could move for a distance of about 6 feet from their bunks. After the prisoners were ordered "down to sleep," any man who wished to use the pail was required to attract the attention of the guard by raising his hand.

It is evident that when the pails are allowed to remain for a long period inside the bunk houses, they become quite objectionable. Some of the camps had the pails removed and emptied at intervals during the night and at other camps they were brought in at 8 p. m., used, and immediately removed, cleaned, and placed outside the bunk houses. They were again brought in at midnight and

again at the rising hour. This latter practice was the most satisfactory from every standpoint. Some conditions were found during the course of the investigation which could not be justified on any possible ground. An indefensible custom which seems almost universal at convict camps is to provide insanitary privies for the use of the guards and the five or six trusty convicts who work about the camp during the day. This practice nullifies the good effects of a well-managed pail system, as these insanitary privies are likely to make the entire camp insanitary. Such conditions could be corrected easily by providing covered pails inside the privies.

PROPER CONDUCT OF PAIL SYSTEM.

The coal-tar disinfectants of which mention has been made are in general use for this purpose and are very satisfactory. The United States Public Health Service recommends that 1 quart of the solution be used to 6 quarts of sewage. Chloride of lime is an excellent and cheap disinfectant and may be used instead of the coal-tar product. A solution of the proper strength may be made by dissolving 1 pound of the disinfectant in 8 gallons of water and should be used in the pails in the proportion of 1 teacupful of the solution to each deposit of excreta. The chloride of lime should be kept in tight containers as it loses strength rapidly when exposed to air. To prevent splashing, a thick piece of paper or several small pieces of wood or chips may be dropped into the pail just before it is used. The pails should be cleaned and washed daily, but under no circumstances should they be rinsed in the vicinity of the well or spring.

At all camps where pails are in use the excreta is disposed of finally by dumping into pits and covering with earth. These pits, in all cases, were a sufficient distance away from the camps, but it might be mentioned that the minimum distance should be 100 yards, and the pits should be so placed that they are on a lower level than the water supply of the camp. Chloride of lime should be sprinkled into the pits at intervals. As the natural agencies of purification are present to a greater degree in the upper layers of the soil, it is better that excreta should be given shallow burial rather than thrown into deep pits. The deeper the pit the greater the danger of polluting underground water supplies. Instead of the large pits now in use at a majority of the camps, shallow furrows or trenches should be dug. These should be from 6 to 12 inches deep, and the excreta should be scattered along in a layer of about 2 inches in thickness, and should be covered immediately with 6 to 12 inches of earth. The furrow should be marked with stakes, so that there may be no danger of

digging in the same place twice. Furrows made with the ordinary plow are entirely satisfactory. In cold climates the trenches for winter should be about 2 feet deep, and a sufficient number should be dug before the ground freezes. They should be filled with earth as soon as the ground thaws out enough to permit it.

Privies and Pits.

A great majority of convict camps use privies and pits for the disposal of human excreta. At only 4 camps out of the 30 at which some form of pit privy was in use was there any attempt to manage the disposal of excreta along sanitary lines. At three of these camps sanitary fly-proof privies were in use, while at the fourth a trench 2 feet wide, 12 feet long, and 12 feet deep was provided with a latrine box and the contents burned out each day with kerosene oil and hay.

At the other camps, insanitary privies of varying degrees of filth were provided, while flies were present everywhere and had easy access to the accumulation of filth. At two camps where men were confined in cages toilet seats had been placed over holes in the flooring and pits dug 4 feet deep and 18 inches in diameter to receive the excreta. The cages were not screened, nor were the pits. Over this mass of sewage human beings lived and ate their meals. At other camps where the men were locked in cages a tub was placed on the ground under the cage to receive the excreta. The tubs frequently contained a little disinfectant, but at only one camp was any attempt made to protect the excreta from flies.

At several of the largest camps, pits about 6 feet long, 2 feet wide, and from 4 to 6 feet deep were provided for 50 men. A pole, supported on cross logs at the ends of the pit, was used as a seat, while burlap or canvas surrounded the pit to afford privacy. There was no overhead protection.

These pits are objectionable because they are freely accessible to flies, while the filth may be carried quite a distance on scraps of toilet paper and on the feet of the men. In order to make pits as unobjectionable and harmless as possible, it is the consensus of opinion among Army sanitarians that the pits should be boxed and converted into closed vaults, from which flies may be excluded. The pits should be as far as possible from the water supply of the camp, and so located that they will not be flooded in rainy weather. Drain ditches should be dug around them or on the side from which drainage water might be expected. Pits should be about 2 feet wide at the top and about 6 feet deep. When they are filled to within 18 inches of the surface they should be covered with earth and other pits dug.

A box (fig. 2) devised by Maj. William Lister (military surgeon, May, 1912) might be used to good advantage at convict camps. The box is 8 feet long, with four holes, and is provided with a grip at each end for convenience of handling. The top is 18 inches wide, with a slope of 1½ inches to the rear to drain rain and wash water. The circular holes are 11 inches in diameter. The lid is extended forward flush with the top edge, so as to keep the seat dry, and it has a block nailed on the upper side to prevent its opening to a right angle. A block (2 by 3 inches) is nailed at each end of the upper edge in front, so that when the box is turned over this edge may not be soiled or scratched. A piece of tin (8 by 10 inches) is fastened by its upper edge to the inside of the front wall, opposite each seat, and set at an

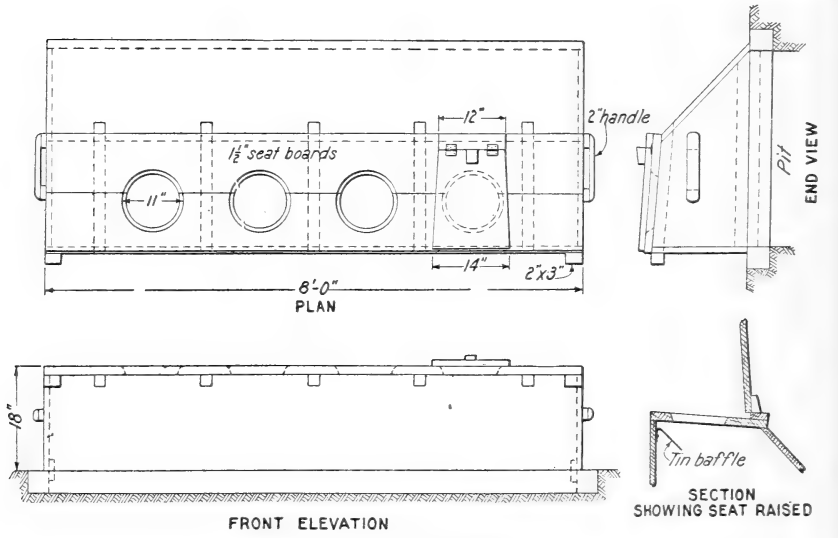


FIG. 2.—Lister latrine box.

angle which causes the urine projected against it to fall clear into the pit. The box is set on a frame, so as to make the contact with the ground closer. This renders the box more completely fly proof, and protects the edges of the pit from wear and tear. To hold the box on the frame, a strip of board 4 inches wide is nailed 1 inch inside the lower edge of the box, thus projecting 3 inches clear and snugly fitting inside the frame.

Disinfection of a pit by fire has been practiced to a considerable extent in the United States Army and the results have been very satisfactory.

At about 9 a. m., after a majority of the men have visited the pit, the box being lifted to one side, a layer of straw, grass, or hay (about 20 pounds for a pit 10 feet long) is evenly spread over the contents, sprinkled with a gallon of crude petroleum, and

set on fire. The hot blaze destroys all the germs lying near the surface of the excreta as well as on the sides of the pits, and completely removes all odors.[1]

Some authorities believe that still better results could be obtained by using oil alone in increased quantity (by an additional quart) as the residue from burned hay or stray fills the pit uselessly. The effect of the burning decreases in the afternoon, and odors, especially on warm days, may again become noticeable; then a liberal coating of lime is recommended, or of fine dry earth. Crude petroleum or diluted formalin sprinkled into the pit is useful at any time as a disinfectant and to repel insects.

At one camp in Mobile County, Ala., the boxed pit was in use, and was disinfected with fire each day in the manner described. The pit, which was sheltered from view by a thatching of pine branches, was in good condition and free from odors, and the camp authorities were enthusiastic over the satisfactory results obtained.

During the night, when it is impracticable to allow convicts to visit the pit, pails may be used in the quarters, as already described.

DISPOSAL OF EXCRETA IN LIMESTONE REGIONS.

In regions where there is limestone formation the danger of the pollution of camp or other water supplies by human excreta is greatly increased. Because of the fissures, channels, and crevices which abound in limestone, the excreta may find its way almost directly to water which is drawn from the well or spring, and this may occur even when the excreta has been disposed of at a long distance from the camp—a half mile or even much farther. The depth at which it is buried also may have little effect in such cases. The ordinary privies, cesspools, and pits are, therefore, very dangerous in limestone localities.

The burning or boiling of all excreta is the surest way of making it harmless, but this is a somewhat tedious and expensive process and frequently is almost impossible to accomplish in convict camps.

The following method, if carefully adhered to, will render the excreta practically harmless, and its use exactly as described is urged at all camps in limestone regions:

1. Use either the pail system, or a sanitary privy with water-tight receptacles.

2. Every time a deposit of urine or feces is made in a pail or privy can, throw in a cupful of chloride of lime solution and a small handful of slaked or unslaked lime. The solution should be made by dissolving one pound of chloride of lime in 8 gallons of water. It must be kept in tightly stoppered bottles so as not to lose its strength.

[1] Havard, "Military Hygiene," p. 630.

The slaked or unslaked lime may be kept in an open box and is to be used as directed in conjunction with the chloride of lime solution. It is not sufficient by itself, but creates an alkaline medium in which the action of the chloride of lime is most effective. It can be purchased for about 75 cents a barrel.

3. Provide a watertight steel-coopered barrel with a stout cover. This may be mounted for convenience on wheels or on a hand truck. Dump all excreta from the cans and pails into this barrel every morning and allow it to stand until the following morning in order that the disinfectants may have time to reach and destroy the organisms. During the time that the mass is standing it need not be more than 100 feet from the camp. It will be neither offensive to the senses nor will it attract flies to any extent. It should, however, be kept covered. After 24 hours haul it away from the camp, 100 yards or more, pour it into a shallow trench similar to a plough furrow and cover with the excavated earth. The barrel then is ready to be returned to the camp and used over again in the same way.

DISPOSAL OF EXCRETA AT PLACE OF WORK.

With very few exceptions the roads being constructed by convict gangs led through sparsely inhabited regions with much vacant land on either side of the road. It was the common custom for the men to move a few feet from the side of the road and deposit their excreta on the surface of the ground. As the construction work progresses with fair rapidity, very few deposits of excreta are made in any one place, but, on the other hand, a certain amount is scattered over a considerable territory, and there is danger that some may reach streams or springs which furnish the water supplies for dwellings.

To prevent this it is a very simple matter to require each man to dig a hole in the ground from 6 to 12 inches deep and cover his excreta with the earth immediately. This method, which is already in use among certain groups of convicts, embodies excellent sanitary principles and is similar to that prescribed by Moses to the children of Israel (Deuteronomy XXIII, 12 and 13).

When prisoners are at work in more thickly populated districts it is the custom to provide for their use a small portable privy and to dig a shallow pit each time the privy is moved. This method is without objection provided the privy is kept a safe distance from wells and other water supplies, and each fresh deposit of excreta is covered immediately with earth.

Voiding Excreta on the Surface of the Ground.

At three of the camps inspected no toilet facilities whatever were provided. The reasons given by the officials were: (1) That the camp was moved so often (every two months); (2) that this method was as good as any other; and (3) that it was what the convicts were used to, and that the health of the men showed that the method was all right.

This method is neither safe nor cleanly, and it is because of carelessness of this sort that typhoid fever, dysentery, Asiatic cholera, hookworm, round-worm, pin-worm, and tapeworm diseases persist and are transmitted from person to person. Officials who are charged with the safe keeping and reformation of law breakers should, when the opportunity presents itself, endeavor to inculcate clean methods of living.

It should be perfectly apparent that the camp may be contaminated by excreta on the surface of the ground; that such excreta may be carried to the camp by the feet of men and animals, by flies, and by rain. Danger through contamination of the water supply and the food, or through direct infection, is ever present where such methods are permitted.

The Sanitary Privy.

A sanitary privy should afford privacy and comfort to the user and have a water-tight receptacle to receive the excreta. This receptacle should be protected to prevent access of flies or animals to its contents and so arranged as to be cleaned easily.

In order that the sanitary privy may serve its purpose, the inmates of the camp should be rigidly prohibited from voiding their excreta at the outskirts of the camp rather than making use of the privy.

Privy seats and floors should be scrubbed with soap and water each day. Toilet paper, with fixtures to prevent its becoming scattered, should be provided. Rigid rules should be made and penalties imposed for their violation. A bucket of clean water, soap, and a couple of basins should be placed in a conspicuous position near the privy, and the waste, after washing the hands, should be emptied into a receptacle provided for the purpose. Excreta find no more direct passage into food, drink, and human mouths than by hands soiled by accident or by carelessness.

As already pointed out, guards and "trusties" usually are provided with insanitary privies, or they are permitted to pollute the surface of the ground. The following device, described by the United States Public Health Service [1] is a simple way in which to make conditions sanitary.

[1] Public Health Bulletin No. 68, "Safe Disposal of Human Excreta at Unsewered Homes."

Covered can.

This type [fig. 3] consists of a stout water-tight can fitted with a wooden top having a suitable hole in it to serve as the seat. The hole in the seat is covered by a hinged lid. The seat board is closely fitted to the top of the can and the lid fits closely over the hole. To provide ventilation, the lid may be a framed screen. This simple type of sanitary privy, which can be set up for about $1, if operated with care can be kept sanitary.[1] Where a sanitary privy house already exists it can be improved by filling the old pit with earth, removing the old seats, thoroughly cleaning the interior, laying a new floor and installing one or more of these box tanks.

Any water-tight receptacle of suitable size may be used in a sanitary privy. Experience has shown that wooden receptacles soon warp, become leaky, and are, therefore, unsafe, and in the long run expensive. Cylindrical cans made of strong galvanized iron generally are most suitable. A can about 15 inches in height and holding about a bushel is a convenient size. This type of can costs about 60 cents and is obtainable at most any store where hardware is sold. The painting of the inside of the receptacle with coal tar increases durability and makes cleaning easier.[1]

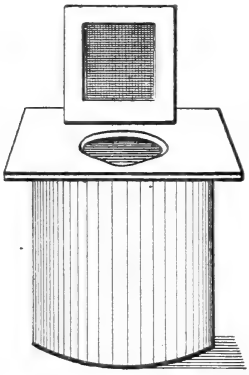


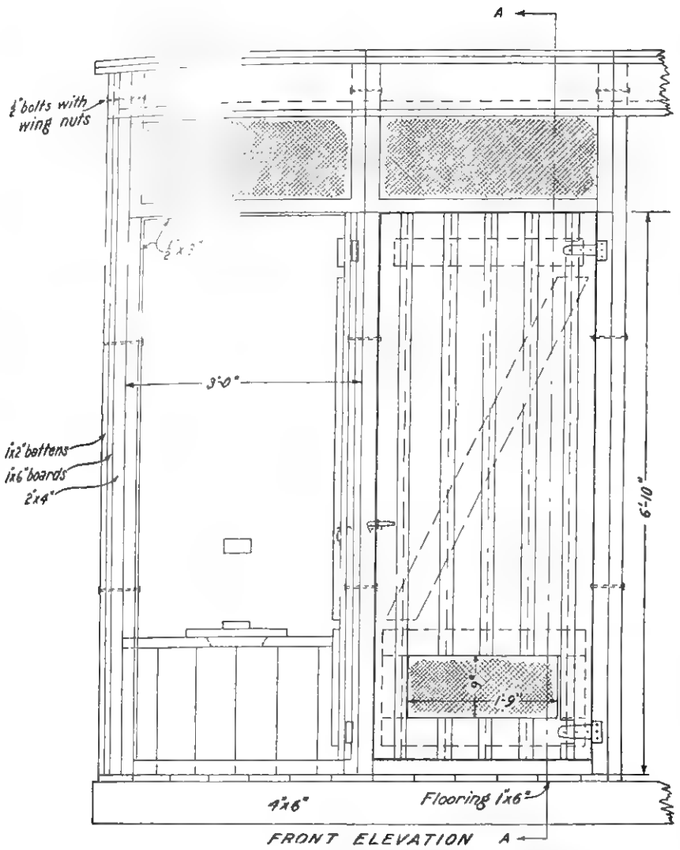
Fig. 3.—Covered can. The simplest type of sanitary receptacle privy. Used with a suitable drying powder, or disinfectant solution, it may be kept sanitary and practically odorless. The seat should be provided with cleats on the under surface to hold it in place on the can.

The cans should be inspected frequently to see if they leak.

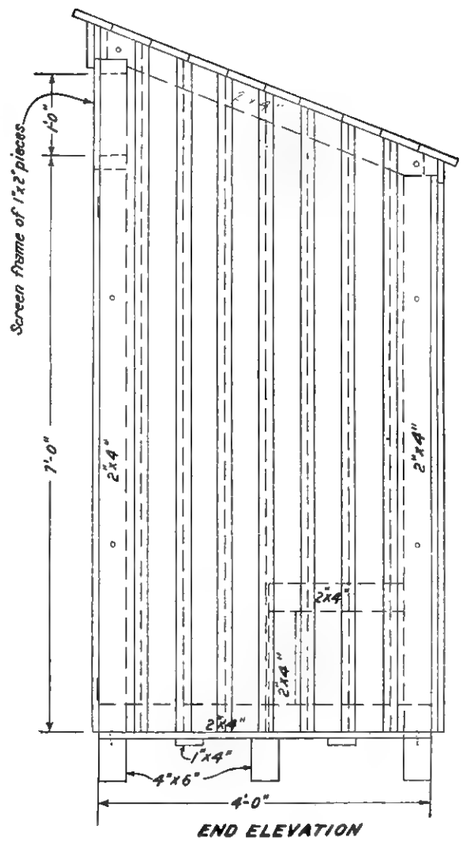
Sanitary Receptacle for Use with Convict Cages.

A water-tight metal receptacle should be obtained at a hardware store. This should be of sufficient size to hold the excreta voided by the men from the time they enter the cage at night until they leave the camp for work the following morning, and in addition to this it must hold 1 gallon of a strong solution of coal-tar disinfectant for every bushel of capacity of the receptacle. A wooden box, fly-tight and substantially constructed, should be built to contain the receptacle (Fig. 4.). This box is to be fastened firmly to the flooring under the cage by means of angle irons and bolts, and should be placed so that the receptacle which it contains will be directly under the hole in the floor through which the excreta pass. The most accessible side of the box should be hinged in order that the receptacle may be removed each day for emptying and cleaning. The toilet seat inside the cage should be provided with a tightly fitting hinged lid, so arranged as to drop into place of its own weight when the seat is not in use. For purposes of ventilation and easy removal it is well to have a space of two or three inches between the top of the receptacle and the under surface of the flooring of the cage. A flue made of a few lengths of stovepipe and a couple of elbows extended from one side of the box to near the top of the cage will

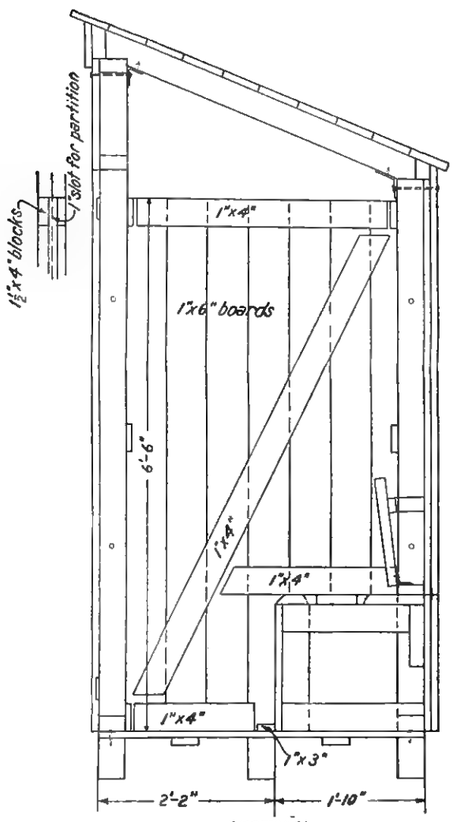
[1] Public Health Bulletin No. 68.



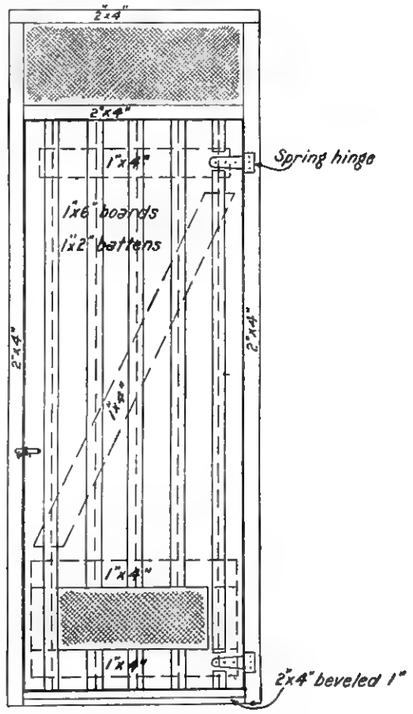
FRONT ELEVATION A



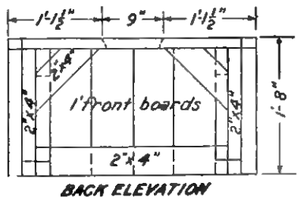
END ELEVATION



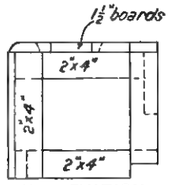
SECTION A-A



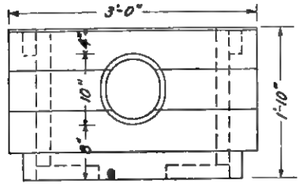
DETAIL OF FRONT SECTION



BACK ELEVATION

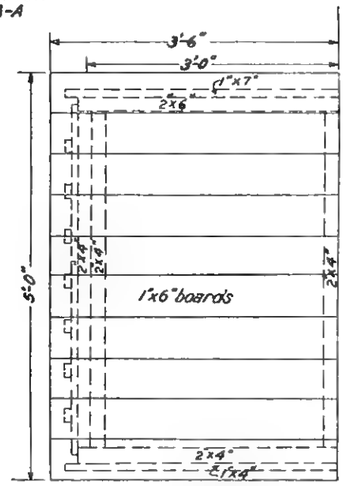


END ELEVATION



PLAN

DETAIL OF SEAT



PLAN OF ROOF

U.S. OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING
ROAD ECONOMICS

DETAILS
PORTABLE FLYPROOF PRIVY

SCALE, 1" = 1'-0"

CORRECT O. S. Fairbanks HIGHWAY ENGINEER

APPROVED J. E. Pennybacker CHIEF ROAD ECONOMICS

E-56

DESIGNED BY O. S. Fairbanks DATE 2-15-16
TRACED BY C. C. Dunn DATE 2-18-16
CHECKED BY O. S. Fairbanks DATE 2-18-16

carry away bad odors. The opening of the flue in the box should be screened against flies.

Portable Privy.

A design for a sanitary, flyproof, portable privy for use in connection with camp buildings, or in convict camps subject to more or less frequent moving, is shown in Plate IV. It is so arranged as to provide a separate and private compartment for each occupant, and may be constructed to accommodate as many occupants as desired, as each compartment forms a section of the entire building. At least one section should be provided for every 15 convicts. The door is provided with a hinged spring so that it will close automatically and the ventilating and other openings are all screened. The screened opening at the bottom of the door serves not only as a ventilator, but also, by affording a view of the legs of the occupant from the outside, as a means of checking the abuses which frequently arise in convict camps where it is possible for more than one person to occupy a privy compartment at the same time.

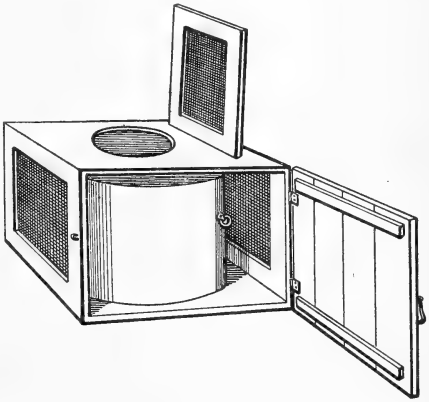


Fig. 4.—The boxed can. Flies are excluded by the fly-tight box. Such a device is safe, sanitary, and convenient, and may be placed in an existing privy or in any suitable outbuilding.

Sewers and Sewer Plumbing.

Camps in which running water is supplied also must be provided with an adequate system of sewers and sewer plumbing to carry off the water and water-borne wastes of the kitchen, lavatories, shower baths, and water-closets.

The sewer or the main pipe leading from the camp to the point of disposal should be of salt-glazed, vitrified clay not less than 6 inches in diameter, with bell and spigot joints, and the joints should be filled with cement mortar. The pipe should be laid in as nearly a straight line as possible from the camp to the disposal point, and care should be observed to eliminate abrupt irregularities in the grade. In relatively temporary camps the pipe need be buried only about 1 foot under the ground, except under roadways, where it should be at least 18 inches under the surface. In permanent camps it will be well to lay the pipe from 2 to 4 feet below the surface of the ground. In no case should a sewer pipe be laid within 100 feet of a well.

The sewer plumbing carries the waste water from the water-using fixtures to a point about two feet outside of the building or buildings, where it joins the sewer tile.

The various pipes of the plumbing system are termed, according to the function they serve, house drains, soil pipes, waste pipes, and vent pipes, which terms are defined as follows:

House drain: That part of the main horizontal drain and its branches inside the walls of a building and extending to and connecting with the sewer tile.

Soil pipe: A vertical or nearly vertical pipe line extending through the roof, receiving the discharge of one or more water-closets with or without other fixtures.

Waste pipe: A pipe extending through the roof receiving the discharge from any fixtures except water-closets.

Vent pipe: A special pipe provided to ventilate the system of piping and to prevent trap siphonage and back pressure.

All the pipes of the system should be of extra heavy cast iron, and the diameters of pipes of the various kinds should not be less than as follows:

House drains, 4 inches; soil pipes, 4 inches; waste pipes, 2 inches; vent pipes, 2 inches.

All pipes should be water-tight and air-tight and all joints should be tightly calked with oakum and molten lead, the amount of lead required for a joint being about 12 ounces for each inch in the diameter of the pipe.

All changes in direction of both house-plumbing pipes and sewers should be made with one-eighth and one-sixteenth bends, not with quarter bends; and all connections of two pipes should be made with Y branches, never with T's.

As previously intimated, all soil and waste pipes should be carried vertically upward, beyond the highest fixture discharging into them to an open end above the roof in order to provide free outlet for all gases to the outside air.

To prevent foul gases from entering the buildings through the fixtures, every fixture should be separately provided with a water-sealing trap, placed as close to the fixture outlet as possible. The action of the trap is explained by reference to the diagrammatic representation of a U-trap shown in figure 5(a). The pipe A receives the liquid and solid wastes of a sink, basin, or water-closet, while the lower end, B, connects with the sewer. Foul gases rise in the pipe B, but are prevented from passing to the fixture by the water which stands in the trap.

In addition to its function as an outlet for the gases the vent pipe serves to prevent the destruction of the action of the trap by siphon-

age. This action is explained by reference to figure 5(b). When a considerable body of water rushes down through the pipe A, it forms a suction, and if the pipe is made air-tight, this suction is often sufficient to prevent enough water remaining in the trap to form a seal, thus leaving an opening for the passage of foul gases, as in figure 5. By connecting the upper bend of the trap with the outside air by means of the vent pipe V, figure 5(a), the suction will be stopped and the water in the pipe A will not fall below the level of the outlet at b.[1]

Sewage Purification and Disposal.

In temporary camps provided with running water, it will be satisfactory to drain the used water and sewage into a cesspool or pit,

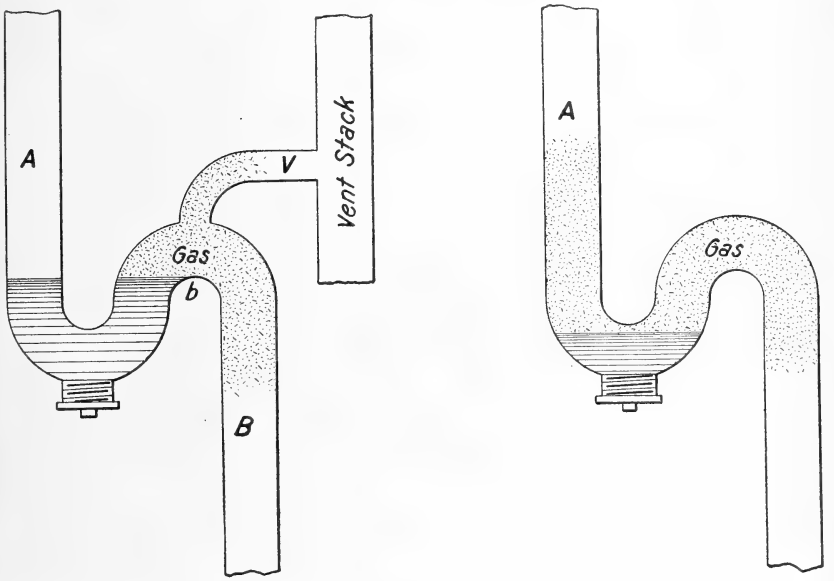


Fig. 5.—Explanation of the action of the U-trap and vent-pipe.

located if possible at a considerably lower elevation than the camp quarters, and at least 300 feet away from the well or water-source. The size of the cesspool will depend on the population of the camp and the character of the soil. In an impervious soil the dimensions of the pit should be large, else it will fill up rapidly and another will have to be dug. When the soil is light and porous enough to permit the liquid contents of the pool to run off through it, the filling up will be less rapid and the dimensions of the pool may be smaller. Cesspools always should be covered to confine the objectionable odors; and this may be done very simply by means of beams cov-

[1] Kidder, "Architects' and Builders' Pocketbook," p. 1327.

ered by planks loosely laid, and these covered with 1 or 2 inches of earth from the excavation.

In large or permanent camps the problem of disposal is not so simple. For such camps, when they can not be connected with a city or town sewage system, purification of some sort must be provided. This may be effected by a septic tank for the preliminary treatment and ultimate disposal on the surface, by subsurface distribution, or by sand filtration. Such an installation usually will be found to be beyond the skill of the average official in charge of the camp and it will be advisable, in any case, to consult a reliable sanitary engineer. It will be required in so few camps and the details of the construction are of such a technical nature that no attempt will be made to enter into the subject here. It is treated as simply as possible in a previous bulletin of the department.[1] The department, through the Office of Public Roads and Rural Engineering, is prepared to give advice based on specific conditions on application.

METHODS OF GARBAGE DISPOSAL.

The following methods of garbage disposal, arranged in order of merit, were found in use in convict camps: (1) Incineration; (2) carting away by farmers; (3) burial; (4) dumping into covered pits; (5) feeding to hogs at the camp; (6) spreading over the surface of the ground.

The simplest of the foregoing methods is that of having the garbage hauled away by farmers, who, as a rule, are glad to take it for its value as hog feed. As it is also a matter of great convenience to the camp authorities to have the garbage removed at regular and frequent intervals, this method generally is used whenever the necessary arrangements can be made. Furthermore, if there be proper provision for the sanitary storage of the waste material for the time during which it necessarily must remain at the camp, there can be no objection to it from a sanitary standpoint. But as actually practiced in many of the camps visited the method of storage was very primitive. It was the custom, after each meal, to dump both liquid and solid garbage into one or two wooden barrels, usually placed from 100 to 200 feet from the main camp structures. Such containers are rarely cleaned or provided with covers and, standing open, their contents rapidly become sour and attract swarms of flies. The barrels swell and warp and allow the liquid garbage to leak through and saturate the ground; and they rapidly deteriorate, often to the point of falling apart altogether in the process of dumping. Much better containers, of metal with tight-fitting covers, can be

[1] Bulletin No. 57, U. S. Department of Agriculture: "Water Supply, Plumbing, and Sewage Disposal for Country Homes." Copies of this bulletin may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents a copy.

purchased at almost any hardware store for a sum not exceeding $1.50. Such receptacles are water-tight and very serviceable, and when left covered remain free from flies and do not give off disagreeable odors. To prevent them from becoming unnecessarily foul they should be washed and scalded with boiling water at frequent intervals. As moisture is the immediate cause of souring, if the garbage be drained and wrapped in paper before being placed in the can it will not smell in hot weather, the can will not become dirty, and will not require emptying more than once or twice a week. This expedient will also prevent the garbage from freezing and sticking to the can in cold weather.

At many camps, especially those in the South, garbage is collected in open pails in the kitchen and fed to hogs. The latter are oftentimes allowed to run loose around the camps and even have been seen inside the dining quarters of prisoners. The garbage is thrown into a trough or on the surface of the ground at some convenient spot not far from the kitchen door and left to the hogs to dispose of. Such primitive conditions should be tolerated no longer at any convict camp, and hogs, if kept at all, should be penned securely at a distance not less than one quarter of a mile from the camp.

Small, open garbage pails in the kitchens scarcely can be avoided, and are not objectionable if the kitchens are screened from flies and the pails emptied and cleaned after each meal. Camps have been seen, however, where the kitchens were not screened and garbage pails were hung at convenient angles on nails outside the kitchen windows. Most of the garbage dumped through the windows would fall into the pails, but some would drop down the sides of the buildings to the ground.

At many camps with plenty of vacant land surrounding them garbage is carried once a day to a spot 100 yards or more from the camp and water supply and is buried in shallow trenches. Under these conditions there can be no serious objection to this method of disposal. The trenches should be from 12 to 18 inches in depth and the garbage spread over the bottom in a layer about 2 inches thick and covered with earth immediately.

Garbage pits are in use at a few camps. They consist usually of a hole about 3 feet wide, 5 feet long, and 4 feet deep. The top is covered first with boards and then with earth, and a small trap door is constructed through which the garbage and slops are dumped. When the camp is moved the space which remains is filled with earth. Garbage pits are not as satisfactory as the shallow trenches already described. They are more liable to pollute the ground water, and their contents may remain in the ground unchanged for long periods of time and be uncovered by animals. They should be avoided whenever better methods of disposal are possible.

The disposal of garbage is accomplished in some instances by spreading it over the surface of the ground at a distance of 100 to 300 feet from the camp. The moisture evaporates rapidly in dry, hot weather and the remains, though unsightly, are greatly reduced in bulk and have but little odor. In damp weather, however, the garbage retains its moisture for a long time. It ferments and attracts large numbers of flies, and the odors are offensive for considerable distances. The rains wash it over the surface of the ground and may even carry some of it back to the camp, causing unpleasant odors and attracting flies. Under these conditions springs and wells are not free from danger of pollution. This method is, therefore, very unsatisfactory and should not be used.

Incineration.

Destruction by fire of both liquid and solid garbage wastes gives absolute security. Only one convict camp was encountered where an incinerator was in use, and in this case not only was garbage destroyed but all general camp wastes, including horse manure. The officers of the camp were enthusiastic over the results which had been attained by the use of the incinerator, the sanitary condition of the camp was excellent, and flies were few in number.

A very simple type of incinerator is constructed by digging a pit 5 feet long, 2½ feet wide, 6 inches deep at one end and 12 inches deep at the other. The pit is then filled with field stones upon which the fire is built, and the excavated earth is banked about the sides. After the stones have become thoroughly heated liquid wastes are poured into the pit at the shallow end. They come into contact with the hot stones at the bottom of the pit and are evaporated without quenching the fire. The solid wastes are placed on the fire where they soon dry out and burn as fuel. If stones are not available, tin cans may be substituted and used repeatedly. When neither stones nor cans are at hand a fire made in a pit of this character will destroy a considerable amount of garbage, both liquid and solid, but the use of stones or cans is preferable.

Caldwell (or English) crematory.[1]

Whenever fuel is scarce and stones few, this style of crematory may be improvised readily and is very efficient. It consists of a trench 10 feet long and 1 foot wide, about 15 inches deep at the middle and thence gradually shallowing up at each end to the surface level. Over the deep part, with one end resting on the edges of the trench, a barrel is placed, and around it clay, earth, or sod, sprinkled with water, is packed tightly. A fire is made in the interior and the barrel burned out, after which there remains a hollow cone of earth. Fuel and garbage are dropped down this chimney. Of the two openings

[1] Havard, Valery, "Military Hygiene," pp. 654-655.

in the trench at the bottom of the chimney the one to leeward is closed. A bed of tin cans in the fireplace makes a fair substitute for a grate. Every morning, or as often as necessary, the ashes and cans are raked out and a fresh fire started on a new bed of cans. If the soil is porous, a large quantity of liquids can be evaporated by pouring them into the trench slowly.

FOUR-OPENING CREMATORY.

A four-opening crematory may be made by digging two trenches bisecting each other at right angles. This has the great advantage of having one of the trenches always in the direction of the wind, and a good draft always can be secured by plugging the throats of the other trenches.

When two bisecting trenches are used the chimney is built over the point of the intersection, and four boards, flat stones, or pieces of sheet iron must be laid across the trenches for its support. If iron bars, old rails, or scrap iron are available they can be placed in so as to form a grate.

If a few pieces of corrugated roof metal are at hand they can be shaped easily into a serviceable chimney, thus saving time and labor.

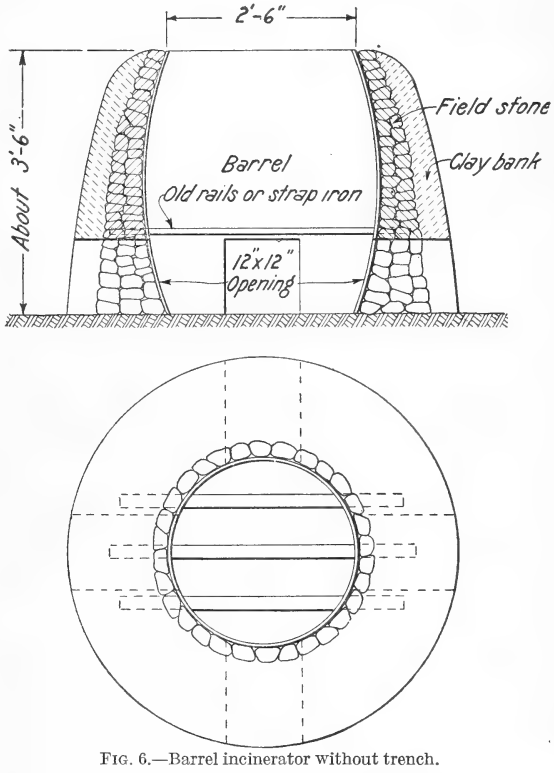


FIG. 6.—Barrel incinerator without trench.

BARREL INCINERATOR WITHOUT TRENCH.

This type of incinerator (fig. 6) may be constructed of field stones, as shown, or of fire brick. The stones or brick are built around a barrel, and laid in and covered with moist clay. When the clay has dried and hardened sufficiently to cement the stones the barrel may be burned out. An incinerator of this kind is suitable for a camp of 125 persons.

DISPOSAL OF GENERAL CAMP WASTES.

Metal receptacles with tightly fitting covers should be placed at convenient points about the camp and all waste materials placed in them. They should be emptied once each day and their contents disposed of by burning. The incinerators may be used to good advantage in this connection. Materials not entirely consumed by the fire should be buried. Tin cans always should be placed in the fire and then buried. If left on the surface of the ground with particles of food and moisture adhering to them, they may furnish breeding places for flies and mosquitoes.

Some one prisoner should be made responsible for the cleanliness of the camp grounds and their surroundings and daily inspection should be made by the camp authorities in order to see that wastes are properly collected and disposed of.

DISPOSAL OF BATH AND LAUNDRY WASTES.

Water which has come in contact with the body during the process of bathing, and that which has been used in washing dirty clothing, may contain the germs of any disease with which any person in the camp happens to be afflicted. In spite of this fact, however, it is a common custom to empty bath and laundry wastes on the surface of the ground in the vicinity of the camp structures, where they cause pollution of the soil and are unsightly and ill-smelling. Water-tight covered receptacles should be provided for all liquid wastes, which should then be evaporated in the incinerator, or carried 100 yards or more from the camp, poured into shallow trenches, and covered with earth.

FLIES AND MOSQUITOES.

In almost all convict camps flies and mosquitoes are present in such numbers as to be a veritable scourge. In general, only rather feeble attempts are made to get rid of them because the actual menace which they present, the conditions under which they breed, and effective methods for their destruction and prevention are understood but little by those in charge of camps.

Flies.

The danger of the transmission of disease by flies in particular can not be emphasized too strongly. They breed in and feed upon the filth of privies and manure piles and carry particles of it on their bodies and legs to kitchens and mess rooms, where they come into contact with and contaminate the food. In this way there is reason to believe that flies convey infection in such diseases as typhoid fever, cholera, dysentery, diarrhea, smallpox, hook-worm disease, tuberculosis, measles. scarlet fever, diphtheria, skin infections, and many others.

It has been found that a single fly may carry more than 6,000,000 germs on the outside of its body and as many as 28,000,000 in its intestinal canal. What it means, therefore, to have a fly fall into milk or other liquid food is seen readily.

The suppression of flies at convict camps can be successfully accomplished only by doing away with their breeding places. Screens, flytraps, sticky fly paper, and poisons all are useful in waging war against them but are not, in themselves, sufficient. The fundamental rule which should be enforced rigidly is that of absolute cleanliness of the camp and its surroundings. Human excreta, garbage, and other wastes must be protected from flies by methods described under paragraphs dealing with those subjects, and such breeding places as stables, chicken yards, and hogpens should be removed as far as possible from the main structures. As flies seldom travel more than 500 yards from their breeding places, it follows that if the mess and living quarters be separated from such places by at least that distance immunity from flies will be practically assured. But it is usually impracticable to locate the stable at such a remote distance, and, since piles of manure are favorite breeding places, special measures must be adopted for their disposal or treatment. The most practical of such measures are outlined as follows:

(1) The manure may be placed in covered barrels each morning for removal by farmers at least twice a week, and the polluted ground about corrals may be sprinkled with kerosene; (2) the manure may be burned in an incinerator; (3) the borax treatment: Apply 0.62 pound borax, or 0.75 pound calcined colemanite, to every 10 cubic feet (8 bushels) of manure immediately on its removal from the barn. Apply the borax with a flour sifter or any fine sieve, particularly around the outer edges of the pile, and sprinkle 2 or 3 gallons of water over the borax-treated manure.[1] With regard to the effect of this treatment upon the value of the manure as a fertilizer, it is recommended that not more than 15 tons of the borax-treated manure be applied to an acre, as its effect has not been studied in connection with all crops. With borax at from 5 to 6 cents per pound the cost of the treatment will be about 1 cent per horse per day, and if calcined colemanite be purchased in large quantities the cost should be considerably less; (4) the hellebore treatment: Apply to every 10 cubic feet (8 bushels) of manure a mixture of one-half pound of powdered hellebore in 10 gallons of water. As in the case of the borax treatment, special attention should be given to the outer edges of the pile. This treatment is somewhat more expensive than the borax treatment, the estimated cost per horse per day

[1] Bulletin No. 118, U. S. Department of Agriculture: "Experiments in the Destruction of Fly Larvæ in Horse Manure." Bulletin No. 245, "Further Experiments in the Destruction of Fly Larvæ in Horse Manure."

being about 1.4 cents. But it has the distinct advantage of not affecting the fertilizing value of the manure even when used in excessive amounts.

Mosquitoes.

It is now definitely known that in nature malaria is transmitted only by the sting of certain species of mosquitoes, and the most successful means of avoiding this disease is to provide protection from mosquitoes.

When convict camps are located for an entire summer season in regions where mosquitoes abound, it may be found profitable to strike at the mosquitoes by destroying their breeding places in so far as this is practicable.[1] The antimosquito measures generally employed are briefly described by the United States Public Health Service as follows:

(*a*) Regrading and training of streams, creeks, or similar natural water courses so as to favor a free current.

The shallow grass-grown margins of streams, ponds, or any bodies of water must be cleared and the banks made with a clear-cut edge in order that any top-feeding minnows present may have a clear field for their activity and that this field may be extended.

(*b*) Drainage for the removal of standing water or to produce a movement of water unfavorable to mosquito breeding. Ditches should be as few and as short as possible and so constructed that any water present will be confined to a narrow channel. Open ditches must be kept free of grass, débris, or any other obstructions. They may be made permanent and easy of maintenance by lining with cement, stone, or wood.

Ditches as ordinarily used should have a bottom not over 8 inches wide and the sides sloping.

Subsoil tile drains, while more costly, are more effective.

(*c*) Filling in of places which are too low to drain or which can not be drained economically. For this purpose any available porous material, such as ashes, sawdust, or shavings, may be employed. When using sawdust or shavings, such material should extend 6 inches or more above high water which follows a heavy rain.

(*d*) Oiling and larvicides. Oil may be applied by the use of (1) a garden watering-pot; (2) a knapsack sprayer; (3) a drip can for intermittent or continuous oiling regulated to deliver 18 to 20 drops of oil per minute. The bottom of the drip can should be about 4 feet above the level of the water surface; (4) an oil-saturated bundle of cotton waste. This is to be anchored into place and will serve for about one week. (*e*) Natural enemies. Stocking with top-feeding minnows is a measure applicable in certain ditches, ponds, swamps, streams, and many other bodies of water.

For camps which change their location every few weeks the foregoing measures may be too elaborate for use. It should be remembered, however, that mosquitoes can not live in the hot sun and that the clearing away of high grass and underbrush from the surroundings of the camp will aid materially in diminishing their number. All barrels and tubs used for the storage of water should be covered tightly with thicknesses of burlap, sheeting, or cheesecloth, held in place by well-fitting hoops, and should be fitted with spigots so that

[1] Reprint No. 272, From the Public Health Reports, U. S. Public Health Service, Apr. 30, 1915.

they need not be uncovered except for cleaning and filling. Wooden covers are not satisfactory, as they do not fit tightly enough to keep out mosquitoes and are liable to warp. Cesspools and privies must be constructed in such manner as to prevent access of mosquitoes, while tin cans, broken bottles, sagging gutters, holes in rocks, hollows in trees, or any other places which may hold water and serve as breeding places for mosquitoes, should not be allowed to remain about a camp. Areas of stagnant water, when they can not be drained, should be treated once every ten days with a half and half mixture of crude oil and kerosene.

Screens and mosquito bars are indispensable in keeping out mosquitoes wherever they are prevalent, and in some places both screens and bars will be found necessary. At those camps in which steel convict cages are in use screening is comparatively simple and inexpensive, and satisfactory results are obtained by carefully screening the four open sides. Experience has shown that mosquitoes can sometimes pass through a metal-wire screen containing 16 strands or 15 meshes to the inch, but can not pass through one which contains 20 strands or 19 meshes to the inch.[1] Screens made of iron wire are cheapest at first cost, but require painting in order to make them last through a season. The paint reduces the size of the mesh, so that ventilation is interfered with to a considerable extent. On the other hand, screens of brass or copper last almost indefinitely and though expensive at first may be cheapest in the end.

Mosquito bars are well adapted for camp use and should be a part of the regular equipment in regions where mosquitoes are numerous. They may be suspended from the ceiling and tucked in around bunks or may be arranged so as to rest upon the floor all around the bed.

VOLATILE OILS.

Oil of citronella, oil of pennyroyal, and similar substances are used frequently to rub on the face and hands and to place on the bedclothes at night, and have some effect in keeping away mosquitoes. They evaporate rapidly, however, so that their benefits are only temporary. None of them will last through the night.

ISOLATION AND PROTECTION OF PERSONS SUFFERING WITH MALARIA.

Any prisoner who is suffering with symptoms which may reasonably be ascribed to malaria should be isolated at once and carefully protected from mosquitoes by mosquito bars. This will prevent mosquitoes which are not infected from biting the patient and so becoming infected and capable of transmitting the disease to others. Mosquitoes can not transmit malaria without first biting a person

[1] Rosenau, "Preventative Medicine and Hygiene," p. 205.

who has the disease in his system, so the importance of this method of prevention is apparent.

PREVENTION OF MALARIA BY THE DAILY ADMINISTRATION OF SMALL QUANTITIES OF QUININE.

This method of preventing malaria often may be useful in camps which are established in malarial regions for short periods of time, but it does not take the place of measures for mosquito suppression. From 2 to 3 grains of quinine sulphate daily is the generally accepted amount and often accomplishes good results.

SANITATION OF QUARTERS.

Overcrowding of Sleeping Quarters.

The quarters of a few permanent camps visited were so arranged as to provide space enough between the rows of bunks for chairs and reading tables; but in the great majority of camps visited the sleeping quarters were badly overcrowded, the general rule being to squeeze in as many men as the structures could be made to accommodate. At some of the camps there were no spaces whatever between the beds, and the faces of the sleeping inmates could never be more than 30 inches apart and might be in actual contact, a condition highly favorable to the spread of communicable diseases. In other cases men were crowded into shacks or tents in triple-deck bunks, or bunks of double width for two men were placed side by side or in double tiers, and other camps were seen in which all the regular bunks were occupied and extra ones were provided by placing mattresses over boards laid across beams at the level of the eaves, so that the men slept in the space formed by the pitch of the roof.

The worst cases of overcrowding occur in the cages which are sometimes used for housing convicts. These cages, mounted on wheels, are from 7 to 8 feet in width and height and from 12 to 18 feet in length and closely resemble the cages in which wild animals are driven through the streets in a circus parade. They are fitted with bunks in three tiers which extend along both sides of the cage, leaving an isle 2 or 3 feet wide down the middle. The bunks are $2\frac{1}{2}$ feet in width and 6 feet long, so that 18 men can ordinarily be placed in a cage 18 feet long. A cage was seen in which two men slept in each single bunk, an example of overcrowding scarcely to be imagined. In this instance 49 cubic feet of air space and 7 square feet of floor space was the allowance which each man would receive if the cage were entirely unfurnished, but the actual space was considerably less, owing to the presence of a stove, toilet seat, bunks, and bedding. This particular cage in its original construction had a steel grating on both sides, so that the air could circulate freely through it, but when observed the entire cage had been inclosed in a tight casing of

matched boards. There were two windows 1 foot wide by 1½ feet long on both sides of the cage and four such windows on one end. Every window was tightly shut and some were firmly fastened by strips of wood nailed across on the outside. The only permanent openings were the ones in the floor under the toilet seat and the one in the roof for the stovepipe. Add to the details already presented a dark and dirty interior alive with vermin, blankets indescribably foul and filthy, and a hole underneath filled with uncovered, unprotected human filth, and the picture is complete.

While this condition is the worst which the investigation revealed, many other overcrowded, dirty, vermin-ridden wooden cages were found in use. The steel cages can be kept free from vermin, but, as seen in actual use, they are badly overcrowded and tightly closed on all sides at night by the canvas curtains with which they are provided.

Proper Space Allowance.

The question of the exact number of persons which may properly be assigned to a given space is one which is difficult to answer. It is reasonable to assume, however, that the space in the sleeping quarters of any camp should be sufficiently large to permit a healthful separation of the occupants and to allow the body all necessary freedom of motion. As the result of observations of many convict camps and with a knowledge of the economic problems with which they are confronted, the conclusion has been reached that an allowance of 20 square feet of floor space for each man and a distance of 2 feet between beds or bunks (which should be single) is the least that can be provided without serious overcrowding. The separation of the beds and economy of floor space may be obtained by the use of double-deck bunks. The bunks should be set out a foot or more from the walls of the building, in order to allow a free circulation of air on all sides.

Ventilation.

When human beings are inclosed in a space not provided with adequate means for the entrance of fresh air and the escape of stale air, the atmosphere may become overheated, overmoist, and stagnant, and experience has shown that this is an extremely unhealthful condition in which to live. Not only is the working power diminished, but the vitality of the body and its ability to resist disease also are impaired.

In the winter persons who live in overheated rooms filled with stagnant air made moist by the breath and excretions of the skin are especially susceptible to coughs, colds, pneumonia, and other diseases of respiration which could be avoided to a great extent by good ventilation. In summer, when even the outdoor air is often hot and

moist, the thorough ventilation of living quarters will prevent indoor conditions from being many times worse.

From recent experimental evidence it appears reasonable to conclude that the bad effects of stale air are due to the heat and moisture which it contains and permits to cling around the body, forming what has been called an "aerial blanket." "The breaking up of this zone of concentrated discomfort by circulation of the air is a most important factor in good ventilation."[1]

The regulation of air space alone can be of little value. No matter how large the space, the atmosphere may become stagnant, moist, and overheated, and however small the space, the temperature and humidity may be kept within healthful limits.

The temperature at which the body may best be maintained under ordinary conditions has been found to range between 66° and 70° F., and the problem of ventilating convict camps resolves itself into one of keeping the temperature as nearly within these limits as possible during the winter months and in making inside conditions as nearly as possible like those out of doors in the summer months. This may best be accomplished by making several small inlets for fresh, cool air in both sides of the building at the level of the floor and providing outlets for the heated air in the roof, preferably along the ridge. Ventilating openings should always be screened. The size and number of ventilating openings should depend upon the size and shape of the room, and no general statement will apply under all circumstances. In a large apartment it is usually better to provide a number of small openings for the incoming air rather than one large one, and the same is true of outlet openings.

An excellent type of structure for summer use is that in which the sides and one or both ends are open and protected by screens for a space of 3 or 4 feet in width all the way around.

Tents and other structures whose sides are inclosed only with canvas curtains receive a considerable amount of air which passes through the pores of the canvas, but when the temperature of the inside and outside air is about the same, and in wet weather when the pores become closed by the swelling of the canvas, the ventilation may be bad, and openings should always be provided at the ridge. Types of poorly ventilated quarters are shown in Plate V, figures 1 and 2.

Heating.

Almost all convict camps use wood-burning stoves for heating purposes and find the method generally satisfactory. The stoves are placed as near as practicable to the center of the room, or distributed along the aisles when more than one is required. At one camp of a somewhat permanent character a complete hot-water heating

[1] Winslow, C. E. A.

system had been installed. The boiler was located in a covered concrete pit outside the bunk house and was large enough to furnish an ample supply of hot water for shower baths and washbasins.

One large camp under canvas obtained very satisfactory results in heating the tents by using stoves consisting only of a cone of sheet iron with a grate at the base and a stovepipe fitted to the upper end. There is a door in one side and the ground is hollowed out slightly so as to allow the air access to the grate from underneath. The cost of these stoves is about $3 each.

Lighting.

Light usually is provided by lanterns and small oil lamps, but camps occasionally are seen in which large drop-lights are furnished for reading purposes. Many camps are located so that electric lights are possible.

Sanitary Provisions for the Keeping of Extra Clothing.

At many camps pigeonholes or shelves for the keeping of extra articles of clothing are furnished in a space set apart expressly for that purpose. This space may be in the laundry shed or tent, or it may be a part of the storeroom. Small boxes in which the prisoners may keep letters, toilet articles, and small personal belongings generally are nailed to the walls at the head of each bunk. Camps with facilities such as these can be kept in a neat and orderly condition and are cleaned readily. Unfortunately, however, there are camps where all the clothing of the prisoners must be kept in the already overcrowded bunk houses. Boxes filled with clothing and other possessions are placed on the floor under the bunks; articles of every description are suspended from hooks and nails driven into the framework of the structures; and ropes and twine upon which to hang objects which can not be disposed of elsewhere are strung about the room. Many things are placed on the bunks in the daytime and under the mattresses or on the floors at night. Not only do quarters thus cluttered present an extremely disorderly appearance, but the free circulation of air is prevented, valuable space is taken up, the articles collect dust and dirt, and proper cleaning is made extremely difficult.

Cleaning of Bunk Houses.

Most of the dust and dirt which finds its way into the bunk houses is carried in on the feet and may be reduced greatly by the use of scrapers and metallic mats at the doors. In addition to the mud and dirt, the floors also receive sputum, fragments of food, and other organic débris shaken from the clothing and bedding. These impurities, when dry and ground into a fine dust under the feet of the occupants, are set in motion by air currents, scattered widely over

all the objects in the room, and breathed in with the air. Ordinary dry sweeping stirs up a great deal of dust which settles again over the same or different parts of the room and meanwhile pollutes the air. This method of sweeping, therefore, is worse than none at all. The proper method of cleaning floors is by using a damp mop, not by sweeping. The mop should be dipped in a bucket of water, wrung out, rubbed on the floor, then washed and rinsed in another bucket of water. The method of cleaning floors by flooding them with water and then scrubbing and sweeping is bad, because the dampness promotes the growth of bacteria and the water gets into the holes and fissures, causing the wood to warp and crack.

A practice by which much labor in sweeping and scrubbing may be saved is that of coating the floors of bunk houses with an oil floor dressing. The particles of dust adhere to the dressing, but may be removed easily by sweeping, because they are too heavy to rise and float in the air.

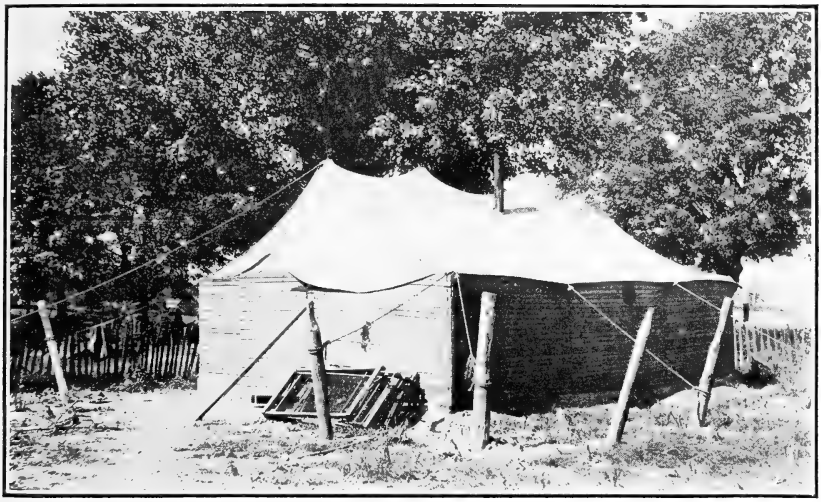
Such a dressing preserves the wood and tends to keep out vermin and insects. Oil dressings for this purpose are well known and extensively used and may be purchased through almost any hardware store. The price ranges from 20 to 30 cents a gallon in 1-barrel lots, containing from 50 to 53 gallons. It is also possible to purchase the dressing in 5-gallon lots, but at a higher price. One gallon properly applied will cover about 600 square feet of floor space, and a single application is said to be effective for two or three months.

Spittoons.

Spittoons are used in some camps, but not in all. In many cases boxes filled with sawdust are provided, and the contents are burned each day. Such boxes, while far better than nothing, are almost impossible to clean and disinfect, and while being dumped on the fire the sawdust contaminated with sputum is often caught by the wind and scattered broadcast about the camp. A much better receptacle for the sputum is a metal or fiber spittoon which rests firmly on the floor and has a wide opening to permit easy cleaning. Spittoons should be removed each day to the place where other excreta are disposed of and cleaned, preferably with boiling water, then partially filled with a disinfecting solution. Since, without the knowledge of the men who eject it, sputum may contain the germs of tuberculosis, diphtheria, pneumonia, and many other diseases, rules against promiscuous spitting about the camp and in the quarters should be enforced rigidly.

Vermin.

Convict camps are especially liable to vermin infestation, and constant care and watchfulness are necessary to keep the quarters free. The bathing of all incoming prisoners and disinfection of their cloth-



OPRRE11699

FIG. 1.—POORLY VENTILATED TEMPORARY SHACK.

OPRRE12056

FIG. 2.—POORLY VENTILATED PERMANENT QUARTERS.

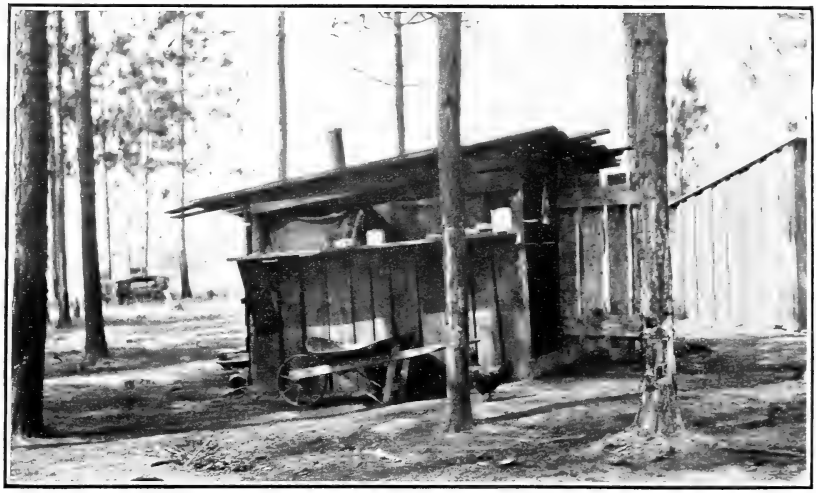


FIG. 1.—RAMSHACKLE AND INSANITARY KITCHEN.

OPRRE11726

FIG. 2.—INSANITARY PRIVY.

ing, as recommended elsewhere, is the surest means of preventing the introduction of vermin, but even at camps where every precaution is taken infestation may occur. It has been said that the guards sometimes bring vermin to a camp after returning from leave of absence.

The bedbug, or "chinch," is the commonest of the camp vermin, although the body louse is encountered sometimes. Bedbugs are particularly difficult to control in the wooden convict cages and in those camps in which the bunks are made of wood. They thrive under filthy conditions. They secrete themselves in cracks and crevices in the wood and have been dug out of holes made by nail heads deeply driven. At convict camps where folding Army cots had been in use it was stated that the bugs were found frequently between the canvas and the wooden frames.

Bugs may be eradicated by spraying or painting the crevices and cracks of woodwork with kerosene, gasoline, oil of turpentine, or corrosive sublimate solution in 1 to 1,000 dilution. The superficial spraying or sprinkling of floors and bedclothes with formalin or other disinfecting solutions is absolutely useless, although it is a favorite camp method for combating almost every evil resulting from dirt and neglect.

Sulphur fumigation is a very cheap and effective method of destroying vermin and insects of all kinds. When this is to be used, every crack and opening in the building must be closed by strips of newspaper smeared with flour paste. Chimney openings and keyholes should not be overlooked. Sulphur, in the proportion of 2 pounds for every 1,000 cubic feet of air space in the building, should be broken into small pieces and placed in a shallow vessel, preferably of iron. The dish should have a wide opening so that as large a surface of sulphur as possible may be exposed to the air in order to favor combustion. In a large building it is well to distribute the sulphur about the space in several pots. To avoid danger of fire, the pot containing the sulphur should be placed in a large metal receptacle, such as a metal washtub, with a few inches of water in the bottom of the latter. The whole should then be supported 3 or 4 inches above the floor by means of two pieces of wood, pipe, or other convenient material. When the sulphur pots and pans are all in place and all openings are pasted up securely except the one exit for the man who is to fire the sulphur, the operator, beginning with the pot farthest from the door, should pour into each sulphur pot about half a cup of wood alcohol or denatured alcohol from a closed can (the ordinary kerosene oil can is safest), and then throw in a lighted match. After he has lighted all the pots and withdrawn, the exit should be closed tightly and strips of paper pasted outside over the cracks between the door and the frame. The building should remain

closed for at least 10 hours, and longer if possible. Doors and windows should then be thrown open and the building aired thoroughly. Sulphur gas corrodes metal, and, where moisture is present, injures fabrics, often fading and rotting them. Blankets and clothing should therefore be removed from bunk houses before fumigation takes place and beaten out and sunned for several hours. If the fumigation is done on a day when the atmosphere is dry, however, and safeguarding from fire can be accomplished without the use of water in the pans, then blankets and clothing may be exposed to the fumes to advantage and without fear of injury. Sulphur fumes are just as destructive to insects and vermin in a dry as in a moist atmosphere. Metal cooking and eating utensils, and all food supplies, should be removed before fumigation. Any polished metal that can not be taken out may be protected by smearing vaseline over it.

Kitchen and Mess Quarters.

In camps of the better sort the kitchen and mess quarters are well constructed and the kitchen, at least, floored. Doors and windows are screened properly, flytraps are in use both inside and outside the quarters, and the condition of tables, benches, and cooking and eating equipment compares favorably with conditions found in the average household. But at some camps, mess rooms and kitchens are in a frightfully insanitary condition. The structures themselves are sometimes miserable, ramshackle huts, as shown in Plate VI, figure 1, and both space and facilities are so limited that any attempt at order or cleanliness is out of the question. Frequently unfloored, the ground within the kitchens in particular becomes muddy from slops spilled accidentally, and fragments of food litter the tables and the ground. Flies swarm over the food and around the sour, open garbage pail, which usually occupies a position just outside the door. Frequently a mess room is not provided in this type of camp, and after receiving their pans of food at the kitchen window the prisoners seat themselves about the camp grounds on stumps or any other objects which can be made to serve the purpose. In bad weather they eat while sitting on their bunks.

At several camps visited dining tables and benches were placed under canvas awnings or shelters of frame construction, and sometimes a wooden flooring was provided. Such an arrangement may be made to have a very neat and attractive appearance, as shown in Plate VII, figure 1, and is far preferable to a dirty, overcrowded space in a frame structure or tent. However, dining shelters of this type can not be used except where the climate is warm and dry.

There are many camps where an attempt has been made to screen the dining room and kitchen, but where the flies seem quite as numerous as in structures not screened at all. The lack of success

is due largely to the carelessness of the kitchen force, which allows the screen doors to remain open much longer than is necessary. Screen doors should be provided with firm springs in order to keep them closed, and knot holes and all other spaces in the walls of the dining room and kitchen must be stopped if flies are to be kept out.

At camps in which the responsibility for keeping these quarters neat and clean is placed upon one man much better results are attained than is the case when the kitchen force in general is supposed to attend to this duty. The kitchen and dining room should be cleaned thoroughly at least once a week and the floors should be mopped daily.

Tables should be brushed after each meal, scrubbed with soap and hot water, rinsed with clean water, and dried. Saltcellars, pepper boxes, vinegar cruets, mustard pots, and sugar bowls should be wiped with a dry cloth after each meal, and care should be taken to see that they are filled properly.

Dishes should be washed first in water in which there is plenty of soap and should then be scalded. Flatware—knives, forks, spoons—should be washed clean in a separate pan, and then scalded and wiped dry. The scalding of dishes and flatware is of great importance and never must be omitted; otherwise there is danger of infectious diseases being carried from one person to another.

HEALTH CONDITIONS AND CARE OF SICK AND INJURED.

Complete physical examinations are seldom made at the time the men are sent to the road camps. Prisoners are examined upon their admission to the penitentiaries and their records thereafter are known in a general way to the prison physicians. If they have not been sick during their stay in the prison they generally are considered as being in good physical condition. In some States the only necessary qualification is that the men shall apparently be able to work. When the men enter the camps under these conditions, the ones who are able to work do so and the others are sent to the State farms or county hospitals for treatment. It is not intended that prisoners suffering from venereal diseases should be permitted to enter the road camps, but in the vast majority of camps visited venereal diseases were not entirely absent.

PHYSICAL CONDITIONS OF CONVICTS IN CAMPS AND DISEASES PRESENT.

The physical condition of the convicts employed on road work depends very largely upon the care which has been used in their selection and the motives which have actuated physicians and wardens in their choice. Camps in which the main purpose is to accomplish the greatest possible amount of work usually are composed of stalwart laboring men in the prime of life, well suited in every way

to do the work they are called upon to perform. Other camps, especially those operated under the honor system, are more representative of the convict class as a whole and are composed of men of all ages and from many different walks of life. Prisoners over 60 years of age are not infrequently seen at work on the roads, but since it is generally recognized that they are not able to do as much work as younger men, allowances are made and they are permitted to remain so long as they show a willing spirit and conduct themselves in a proper manner. Others not at all accustomed to hard manual labor also are employed on the roads, but are neither required nor expected to measure up to the standard of more experienced laborers. A cheerful attitude toward the work and a disposition to abide by the rules of the camp are the principal requirements.

In the Eastern and Western States very few diseases are found among the prisoners in the camps. It is rather common to find one or two cases of chronic gonorrhea in camps consisting of from 50 to 100 white prisoners, and several cases with a history of syphilis, but without clinical symptoms, usually can be found by questioning. Serious illnesses are very few and it is seldom that a prisoner is obliged to lay off for more than one or two days at a time.

Two camps were found in which cases of typhoid fever had occurred. In each instance it was definitely ascertained that the disease had resulted from the drinking of polluted water outside of the camp supply. At both camps prisoners were warned against drinking water from unknown sources and in addition to this each man received the antityphoid inoculation. In one State, all persons who were admitted to the penitentiary were vaccinated for smallpox and received the antityphoid inoculation, but in general neither the convicts in the penitentiaries nor those in road camps undergo either of these treatments.

In the southern camps, where a large majority of the convicts are negroes, venereal diseases are extremely prevalent and in most cases no attempt is made to prevent prisoners with these afflictions from entering the camps. Superintendents of negro camps admit freely that many of their men are suffering from venereal diseases in one form or another and that they are greatly hampered in their work from this cause. Mercury and potassium iodide always are kept in stock and negroes showing symptoms of syphilis receive sufficient treatment to enable them to keep at their work. In certain camps negro convicts have been seen with fever, headache, mucous patches in the throat, pains in the bones, and syphilitic scars and ulcerations on the body, and it is said that convicts frequently are sent to the camps in this condition and that it is useless to return them for treatment because other cases as bad or worse may be sent in exchange. It is a common custom when prisoners are transferred

from one camp to another for the superintendent to choose his syphilitics to send to the next camp. Superintendents say that they try to keep the washbasins, towels, and dishes of such prisoners separate from the rest, but it is almost impossible to care properly for syphilitics in a camp and they never should be sent there.

Hookworm disease is found frequently among convicts in the South. One physician stated that 15 out of 17 convicts whom he had examined at one camp were infected with hookworm. No attempt is made to cure such cases.

Pellagra was found at only one camp, the others being remarkably free from this disease.

Cases of tuberculosis are not infrequently discovered in the negro camps but, as a rule, are sent immediately to the State or county hospitals for treatment.

The daily sick rate at 40 camps in different parts of the country was found to vary from less than 1 per cent to 6 per cent. This variation is attributable to a number of different factors. Many men who report themselves sick are suffering from slight indispositions with vague and indefinite symptoms which lay them up for a day or two. Others are incapacitated temporarily by sore muscles, lame backs, boils, and minor cuts and bruises. Disturbances of digestion, due to overeating, are rather common among men entering the camps after long terms in the prisons. Such cases occur much more frequently at the camps where a good variety of appetizing food is served. An epidemic of coughs and colds or influenza increases the average sick rate of a camp very materially. It happens not infrequently that a prisoner may receive an injury which incapacitates him for work for several weeks. Under ordinary conditions such a man is returned to the prison and a substitute is sent, but at honor camps a man recovering from an injury often is kept at the camp because it is considered a hardship to return him to the prison and because the life outside will hasten his recovery. Cases have been encountered where men were kept at the camps even though they were obliged to remain on the sick list for six weeks or longer, although this humane treatment entails a high sick rate.

In States where the examination of prisoners is lax, men subject to frequent attacks of illness such as rheumatism, tonsilitis, hemorrhoids, and boils may be sent to remote camps. They are able to work only a part of the time and yet are kept at the camps because of the expense and inconvenience of returning them to the prisons. This practice increases the sick rate but is no fault of the camp authorities.

Cases of pretended sickness occur occasionally at practically all convict camps. The personality of the superintendent of the camp is of great importance in preventing this difficulty and instances have

been observed where a change of superintendents resulted in an immediate decrease of 50 per cent in the daily number of men sick.

ARRANGEMENTS WITH PHYSICIANS FOR THE TREATMENT OF CONVICTS IN ROAD CAMPS.

All convict camps have arrangements whereby the services of physicians may be secured when necessary. The methods of securing medical and surgical aid vary in different camps and under different conditions and are as follows:

Treatment by Prison Physicians.

When camps are located within a reasonable distance of the State penitentiary, medical and surgical treatment always is furnished by the prison physicians so that the camp is under no extra expense for medical care. The prison physicians make visits to the camp at regular intervals, and, in addition to prescribing treatment, give advice regarding the sanitary upkeep of the camps. This is an excellent arrangement and the results are very satisfactory.

Treatment by State Medical Officers.

In the State of Florida two physicians are employed at salaries of $1,800 per year, who devote their entire time to visiting all camps in which State convicts are employed. They examine prisoners who report themselves sick and prescribe treatment at the camp or order them to be sent to the hospital at the State farm if their illnesses are such as to incapacitate them for work. They also inspect the camps to see that they are kept in proper sanitary condition and supervise the feeding of the men. Each camp is visited by one of these physicians about once in every three weeks. In the meantime a local physician is employed to see that orders are carried out and to take charge in emergencies.

Treatment by County Physicians.

County convict camps usually are under the supervision of the county physicians. The camp duties of these officers are a usual part of their regular work and extra salaries are seldom paid therefor. County physicians sometimes visit camps at regular intervals and also advise as to the methods of sanitation to be employed, but more often they do not visit the camp unless they receive special calls.

Treatment by Contract With Local Physicians.

Many camps in which State prisoners are employed, enter into monthly contracts with local physicians by which the latter agree to furnish whatever medical and surgical treatment may be necessary. The contract prices range from $25 to $50 per month and in some

cases the price is set at $1 per month per man. In rare instances contract physicians visit the camps in their charge once every day, but more often they come only when called and in many camps the calls do not average more than three or four a month.

Treatment by Local Physicians Paid by the State.

At some camps it is deemed expedient to employ local physicians at a fixed price for each visit they are called upon to make. The price ranges from $2 to $5 a visit, depending upon the distance to be traveled. This is an economical arrangement when the sick rate is low and when serious injuries are few.

FACILITIES FOR THE CARE OF SICK AND INJURED AT THE CAMP.

It is not intended that prisoners with infectious diseases or otherwise seriously sick or injured shall remain at the camp. Such men are transferred immediately to prison, county, or State farm hospitals as soon as they have been seen by a physician. Only two camps were provided with rooms for the isolation of prisoners who were sick. But at one other camp any man who reported himself sick was kept apart from the other prisoners and fed on a short ration as a matter of policy. The superintendent believed that fewer men complained of being ill and that recovery was more rapid when this method was employed.

One of the New York honor camps, with a population of about 60 men from Sing Sing prison, was provided with a two-room hospital. One room was fitted out as a sort of out-patient department where medicines were stored and dispensed and where the records were kept, and an adjoining room contained two beds and was useful both as an examination room and for isolating sick cases.

Prisoners who are not sick enough to be removed from the camp remain in their bunks in the general sleeping quarters, and in cases where bunks of double width are provided, the sick man is obliged to share the space with his partner. In the camps where the sleeping men are so close to one another as to be in actual contact any disease of an infectious character may be conveyed readily from one to another.

Many camps are well equipped with first-aid outfits and a few simple remedies, and some person at the camp, either the superintendent or foreman or one of the prisoners, frequently has had enough experience to enable him to render first aid to the injured and to administer medicine. In some States camp superintendents receive a short course of training in first-aid requirements from the prison physicians. In other States no medical or surgical supplies are furnished and those in charge of the camps purchase medicine and

bandages at their own expense so that they may be able to give some relief before the arrival of a doctor.

While serious accidents occur only rarely, it would appear nevertheless that every camp outfit ought to be prepared to meet any emergency. At one of the camps visited it was recorded that a convict had received a compound fracture of the thigh from being struck with a piece of flying rock and at another, one of the prisoners received an injury which resulted in the loss of one hand. Both of these cases were cared for successfully at the camps until the services of a physician could be secured. Practically all of the camps were provided with telephones and were so located that medical aid could be procured within a reasonable time.

DISCUSSION AND RECOMMENDATIONS.

Benefits Derived from Outdoor Work.

Camp life and out-of-door work without doubt are far more healthful and beneficial than life behind prison walls and are sought eagerly by prisoners. The best results are being accomplished at those camps where the men are not selected for the sole purpose of constructing a road, but where the first consideration is the good which may be derived by the men themselves. Prisoners who have proved themselves worthy of trust are among those upon whom it would appear especially fitting to bestow the benefits and advantages of outdoor life and exercise.

While it is a fact that diseased men should not be sent to the camp, it is true also that certain of the less robust individuals can be developed and benefited greatly by the opportunities which the camps afford. It is very possible that mental and physical breakdowns often could be avoided in such a way as this, and it would appear a small matter, indeed, if the number of days lost on account of minor ailments should remain somewhat above the average for the first few weeks if the men themselves eventually were benefited and strengthened. At camps where the welfare of the men is borne in mind, there is no disposition on the part of the officers to require more than they can reasonably do, and the attitude of both keepers and men is that of a "square deal" all around.

Physical Examinations.

The importance of thorough physical examinations by competent physicians scarcely can be overestimated. It is only in this way that men suffering from infectious diseases can be prevented from entering the camp and becoming a menace to the health of the entire force. Those suffering from heart disease, Bright's disease, hernia, and similar afflictions may also be detected, thereby protecting the individuals from possible serious injury and saving the camp much

needless trouble and expense. The physical examination should be conducted as shortly before sending the man to camp as practicable.

Cooks and others having to do with preparation of food should receive a special laboratory examination to insure that they are not typhoid carriers.

Vaccination and antityphoid inoculation would be valuable preventive measures to apply to every prisoner before he is sent to the camp.

Isolation of the Sick.

Nearly every camp has some room or small tent which could be used for the isolation of those who are sick. It happens frequently that a prisoner is ailing and unable to work for several days before it is thought necessary to call a doctor. Certain diseases are communicable several days before their true nature is recognizable, and therefore a systematic isolation of all cases of illness might, at times, result in the prevention of a widespread epidemic. A great deal of time lost through epidemics of coughs, colds, and grippe may be avoided if the first cases are properly isolated. Isolation is said to be a powerful weapon against pretended illness and is worthy of consideration from this point of view.

Where the prisoners sleep in close proximity, a distance of 2 feet between the faces certainly is the least that can be demanded and this requires that the sides of the beds shall be at least 2 feet apart.

Medical and Surgical Supplies Desirable for a Camp.

A first-aid outfit and a medicine chest consisting of the following articles should be on hand in every camp:

First-Aid Requirements.

One 2-ounce bottle of aromatic spirits of ammonia (to be renewed every three months).

One 2-ounce bottle of 4 per cent aqueous boric-acid solution.

One 2-ounce bottle of 3 per cent alcoholic iodine.

Two 3-ounce tubes of 3 per cent bicarbonate of soda in petrolatum.

One 2-ounce bottle of Jamaica ginger.

One 1-ounce jar of green soap (to cleanse hands).

One half-pint bottle grain alcohol.

One 3-inch by 10-yards roll of gauze bandage.

One 2-inch by 10-yards roll of gauze bandage.

Two 1-inch by 10-yards rolls of gauze bandage.

One roll of absorbent cotton (1.5 ounces).

One 4-inch by 5-yards spool of adhesive plaster.

Six yards of 24-inch Canton flannel to make triangular slings.

Six paraffin envelopes, each containing 6 by 36 inch sterilized-gauze dressings for wounds, burns, etc.

Two splints 30 inches by $\frac{3}{16}$ inch, white wood, and one wire-gauze splint about 30 by 4 inches, for fractures. Never put on a splint over a bandage. Put the bandage over the splint, being extremely careful not to make it very tight.

One medicine glass.
One dozen drinking cups (paper), to be used once only.
One eyecup.
One teaspoon.
Two medicine droppers.
One nailbrush.
One 12-inch basin, enameled, or nonrustable material.
One pair 4½-inch scissors.
One pair surgical scissors.
Four 6-inch haemostats.
Two scalpels.
One probe.
One smooth-dressing forceps.
Two soft-rubber catheters, No. 20 F (1 year).
Twelve large safety pins.
Three tubes sterilized catgut sutures, assorted sizes.
One dozen surgical needles, assorted.

MEDICINAL REQUIREMENTS.

Sixteen ounces castor oil.
Sixteen ounces Epsom salts.
One hundred ½-grain tablets calomel and soda.
Five hundred compound cathartic pills.
One hundred 5-grain tablets quinine sulphate.
One hundred 5-grain tablets aspirin.
One hundred 5-grain tablets bismuth subcarbonate.
Eight ounces bicarbonate of soda.
Five hundred tablets Brown's mixture.
Eight ounces potassium iodide solution, 10 grains to the teaspoonful.
Sixteen ounces chloroform liniment.
Eight ounces boric ointment, U. S. P.
Eight ounces sulphur ointment, U. S. P.
Eight ounces mercurial ointment, U. S. P.
One hot-water bag.

How to Check Bleeding.

When an injury to a blood vessel has occurred and a doctor is not within immediate reach, the bleeding must, of course, be controlled. When the bleeding is from an arm or a leg and some distance from the body, a bandage or clean handkerchief should be wrapped around the limb between the place of injury and the body and drawn tight enough to stop the bleeding. The Spanish windlass is made by knotting the handkerchief around the limb loosely, passing a stick through the slack part, and taking up the slack by twisting the stick. To prevent untwisting, the stick then is bound to the limb with one or two other handkerchiefs or bandages. A small, round stone, a cork, or similar object placed in the folds of the handkerchief directly over the blood vessel will assist. Barely sufficient pressure to stop the bleeding should be exerted. The windlass should be loosened every twenty minutes to give the life blood a chance to flow through the part as there is great danger of gangrene (mortification) if the blood is shut off entirely for a longer period.

PERSONAL CLEANLINESS.

When a number of persons are thrown constantly into contact with one another, as they are in camp life, personal cleanliness and good sanitary habits are especially necessary for the preservation of health.

BATHING.

A weekly or semi-weekly bath is insisted upon at practically all camps, and is not infrequently considered by the prisoners the greatest hardship which has to be endured. In a few cases the prisoners are not required to bathe at stated intervals, but are allowed to follow their own inclinations in this respect. This arrangement is unsatisfactory and often results in scuffles among the prisoners, accompanied by more or less ill feeling, because of the forcible bathing by his comrades of some prisoner who has become obnoxious through personal neglect.

Many camps are provided with shower baths, some of which are supplied with hot and cold water. The heating systems are attached to the kitchen range at the smaller camps, and to specially constructed hot-water heaters at some of the larger camps. When such facilities are provided the men are encouraged to bathe daily, but are required to bathe once or twice a week. Certain large camps in the South are equipped with excellent shower-bath systems and require that daily baths be taken by all the convicts. Individual towels and an abundance of soap are furnished. Other camps, while not insisting upon the daily bath, require each man to bathe his feet before going to bed, an excellent rule to be established.

The shower bath is especially well adapted for the use of convict camps. A simple and easily handled apparatus will suffice, and but little water and time are necessary for the bath. The transmission of disease which may occur with the use of a tub is impossible with the shower bath, and the tonic effect of the cold water is of great benefit. The popularity of the shower baths was much greater at those camps where the water was heated, but whenever warm water is used it always should be followed by water as cold as can be borne, and it is well that the men should become accustomed gradually to cold water, at least in the summer. It should be remembered, however, that the shock of a cold bath is severe and that it is dangerous for men who have heart trouble or diseased blood vessels.

At camps where shower baths are not provided, water for bathing purposes is usually heated in large iron kettles suspended over wood fires out of doors. The heated water then is transferred to wooden washtubs or galvanized-iron pails and carried to the nearest place which affords protection. At other camps the water is heated on the kitchen stoves or in metal washtubs placed on open fires.

When tubs or pails are used for bathing purposes it is absolutely necessary that they be scalded out with boiling hot water after every individual bath, in order to avoid the danger of transmitting disease from one person to another.

At one camp a novel method of washing the convicts was in use. Immediately after returning from work the men removed their clothing, formed in line, and the superintendent sprayed them with a hose placed in a tub of water and worked by a hand pump. After the first wetting they were given time to soap themselves, following which the superintendent rinsed them.

Prisoners often are permitted and encouraged to bathe in near-by rivers and ponds in the summer, and this is a privilege which is thoroughly enjoyed. Camp officials should inform themselves as to the condition of the water, however, and men should not be permitted to bathe in dirty water polluted with filth. The best time for bathing is about two hours after a meal. Prisoners should not be permitted to enter the water too soon after eating, when perspiring very much, or when chilled.

Facilities for Washing Face and Hands.

Prisoners at all camps are compelled to wash their faces and hands before meals. Tin washbasins usually are provided, and roughly-constructed washstands are placed at convenient points about the camp. Water for washing purposes is stored near by in barrels or buckets, and soap and individual towels are furnished. At some camps an effort is made to provide individual washbasins, but it is doubtful if this is ever strictly carried out. When cases of syphilis and skin diseases are present in camp, the danger of infection is considerable. Each man should be required to cleanse the basin thoroughly before and after using it.

The washing of the hands after visiting the toilet is one of the most important duties to be performed. It has been absolutely proved that many persons who show no signs of sickness carry the germs of various infectious diseases in their intestinal canals, and the contamination of fingers with those germs is always possible while visiting the toilet, especially by men of unclean habits. Infection then may be carried to the bunk house, mess room, or kitchen. Washing the hands therefore should be insisted upon, and the necessary conveniences should be provided.

Care of the Clothing.

At practically all camps personal clothing is washed either once or twice a week. It is a common custom to detail one or two men to do the laundry work and to give them no other task until the week's wash is completed. As a rule, one or two days are sufficient for this

purpose, but at the large camps a longer time is necessary. After being laundered, the clothing is sorted and placed in pigeonholes or on shelves until given out again at the end of the week. Necessary clothing repairs are made by the laundrymen. At a few camps there are no definite rules in regard to washing the clothes, and each man does his own wash in his leisure time. In such cases Sunday morning usually is chosen for laundry work, but there is no assurance that all the men are desirous of keeping their clothing decently clean.

The better camps provide laundry sheds or tents equipped with clothes-washing machines, scrubbing boards, wringers, and other paraphernalia. Water is heated in iron heaters made especially for the purpose and consisting of a firebox and large iron caldron. Boiling water is drawn from the heaters into metal tubs, in which the clothes are washed with soap. Lines are strung in the sun for the purpose of drying the clothes. In other cases the laundry rooms are provided with cookstoves, on which water is heated in wash boilers or metal tubs.

At one camp a ditch was dug from a rapidly-flowing mountain stream to the laundry tent, and then led back to the stream at a point lower down. By this means a plentiful supply of running water was obtained easily.

At some camps a large iron kettle is suspended over a fire out of doors for heating the water for laundry and bathing purposes, or metal washtubs may be placed directly over the open fires and the clothing boiled out in that way. In such cases the laundry work is all done out of doors, without overhead protection.

In the process of laundering, the clothing should first be soaked in cold or tepid water. This removes a certain amount of the dirt and filth which would not come out so easily if heated first, and the water becomes laden with germs from the skin and body which may be very dangerous. It is important, therefore, that this water should be disposed of in such a way that it will not pollute the soil or the water supply of the camp.[1] After the preliminary soaking the clothing should be boiled with soap, and then rinsed in pure water until clean. Boiling destroys any germs which may be in the clothing, but it does not remove the bad-smelling substances absorbed from the skin. Rinsing in a sufficient amount of pure water (preferably running water) will accomplish this and at the same time remove the soap, which might prove irritating to the skin if allowed to remain. Properly laundered clothing should have no other than a clean, sweet smell.

Convicts entering a camp from the jails are sometimes in a filthy condition and loaded with vermin. In order to guard against the introduction of disease germs and vermin, every new man who is

[1] See Disposal of Wastes, p. 104.

sent to a camp should be bathed and provided with clean clothing before being allowed to enter the quarters, and his old clothing should be thrown immediately into boiling water and thoroughly washed out.

Night Clothes and Bedding.

Night clothes are furnished at a few camps, and these, with rare exceptions, are in the South. At a great majority of the convict camps the prisoners remove their outer clothing consisting of shirt, pants, shoes, and socks and sleep in their underclothes which they have worn while at work during the day. This clothing, wet with perspiration and soiled with the excretions of the skin, often remains in contact with the body for a week at a time, a condition not conducive to cleanliness or health.

Sheets are furnished at some of the southern camps, but are seldom found elsewhere. Thus the underclothing worn at hard manual labor throughout the day comes into direct contact with the blankets. In many camps the blankets never are washed, even when a change of ownership occurs. They become indescribably filthy and constitute a very dangerous means by which infectious matter may be conveyed from one man to another.

Mattresses stuffed with cotton, moss, hay, or straw are in common use and seldom receive attention until they are worn out. At certain camps, however, mattress covers are washed and refilled with fresh hay or straw at intervals varying from one to six months.

Pillows filled with hen feathers or moss are almost always furnished, and are provided with slips which are washed each week.

At some camps all bedding is hung out of doors in the sunlight for several hours one day each week and may also be beaten, but at other camps the care of the bedding is left to the men themselves, with the result that it receives no attention at all.

Proper Care of Night Clothes and Bedding.

No camp can be considered as showing proper regard for the principles of cleanliness and health unless nightshirts and sheets are provided and their use is insisted upon. They should be washed once a week. A certain number of the southern camps have put this plan into operation, and are well satisfied with the results.

All bedding should be taken out of doors and shaken, sunned, and aired for several hours once or twice a week. The purifying action of the sun is of great value in keeping bedding in good condition. Blankets may be prevented from becoming foul by the use of sheets, but should be laundered at least twice a year, and whenever a change of ownership occurs. Every man who enters a camp should be given fresh, clean blankets.

Iron bunks are much better than wooden bunks. They can be kept free from vermin easily, and are more comfortable and durable. When bunks with straw bedding are used, the straw or hay should be changed at least once a week.

QUARTERS AND STRUCTURES.

The quarters and structures in use in convict camps in the United States are of the following types: (1) Frame structures built for relatively permanent occupation; (2) cheap shacks with tar-paper roofing or covered on all sides with tar paper; (3) structures with galvanized metal roofs and canvas sides; (4) shacks with wooden sides and canvas roofs; (5) abandoned cabins or farm houses; (6) buildings of the portable or "knock-down" variety; (7) canvas tents; (8) wooden or steel cars or cages mounted on wheels.

Each of these types may serve to good purpose when used in connection with the conditions to which they are fitted and when represented by structures of good design; but, as frequently happens, they also may be used inappropriately in an environment to which they do not belong, and in such cases, even though the structures themselves are of good design, their use may result in inadequacy or lack of economy.

In any case, the choice of type will be influenced by a number of conditions, such as the following:

(*a*) The normal range of temperature of the locality. Thus, though the generally warm or mild temperatures of the extreme southern sections of the country will permit of the use of tents or even of shelters with open sides, the cold winters of the Northern States demand tightly constructed buildings.

(*b*) The rainfall and humidity of the section. In a section of heavy precipitation, such as the coastal regions of the States of Oregon and Washington, only buildings of the closed-in, tightly constructed types should be used, and these should be raised above the ground in order to escape the evil effects of the excessive moisture. Canvas tents would be out of place under such conditions not only because of the small protection they afford but because they would deteriorate very rapidly in such a climate. On the other hand, in the arid and semiarid sections of Arizona, New Mexico, and neighboring States tents make ideal quarters. Not only do they provide sufficient protection against weather but in the absence of moisture and heavy winds they give excellent service for relatively long periods.

(*c*) The availability of building material. The inducement to use wood in the construction of quarters in those sections of the country which are heavily wooded, and where wood is accordingly cheap, may be sufficient to outweigh a number of other important considerations; but in the Central and Middle Western States the use of

wooden quarters probably would be avoided, at least for temporary camps, on account of the scarcity of wood.

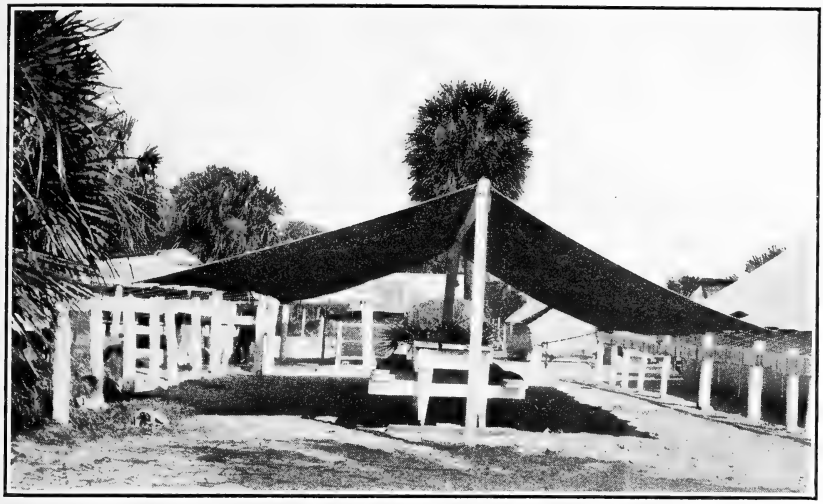
(*d*) The relative permanence of the camp on one site. A camp which reasonably may be expected to remain in one place for four or five years or longer may be treated as a permanent establishment and a type of construction may and should be adopted which, for more temporary quarters, would be too wasteful. Obviously, tents are suitable only for what are termed "flying camps" and would be out of place in a permanent camp.

(*e*) As between the various types suitable to the purposes of a temporary camp, the choice of a particular type will be affected by a consideration of the frequency of the moves, the probable distances between successive camp sites, and the character of the roads over which it will be necessary to move the camp equipment. When moves are to be frequent, distances great, and roads bad, the lightness of tent equipment might be expected to outweigh many other considerations. Under more favorable road conditions considerations of economy might recommend the use of cars or cages, though the use of such equipment is to be avoided whenever possible on account of the extremely unpleasant associations attending their use. Finally, for camps of a somewhat less mobile character well-designed portable houses of metal or wood will serve admirably.

(*f*) Lastly, an important consideration is the character of the inmates to be housed, with respect to their relative trustworthiness, race, crimes, and sentences, it being obvious that a more secure type of building is necessary for the confinement of the desperate and unreconciled than for "honor" men and "trusties."

After the most convenient type of building has been selected in view of the foregoing considerations, attention should be given to see that the structures selected or designed embody certain essential properties which should be common to buildings of all types.

First of these is economy. But giving this property the first consideration does not mean that it should be achieved at the expense of all the other properties essential to a good structure, but, rather, that it should be considered in providing for the other properties, all of which may be attained in either an extravagant or an economical manner. In general, it may be stated that the interests of true economy are best served by those forms of structures which embody all the properties essential to their purpose, including longest service for least cost, which is obviously not equivalent to mere cheapness of first cost. For example, a well-designed portable building would undoubtedly be found more economical for a temporary camp than many of the cheap shacks which are used for that purpose, for, though the latter are less expensive at first, their frequent tearing down and rebuilding, accompanied by a necessary loss of material, make them

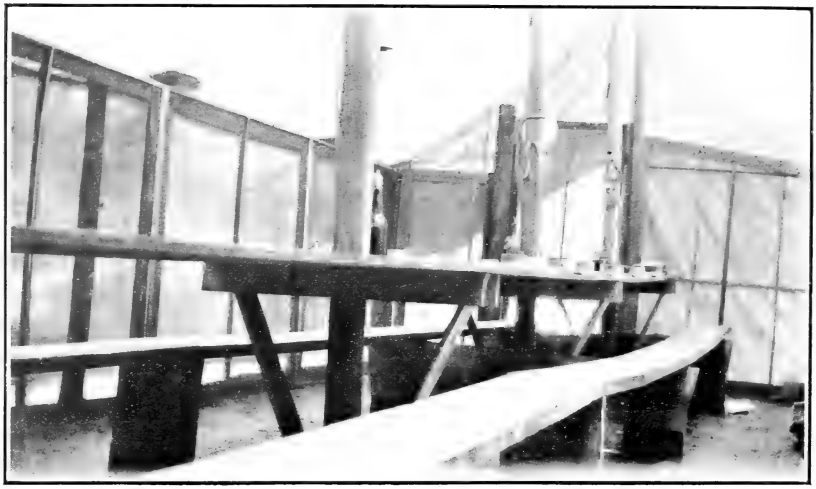


OPRRE12098

FIG. 1.—NEAT AND ATTRACTIVE MESS SHELTER.

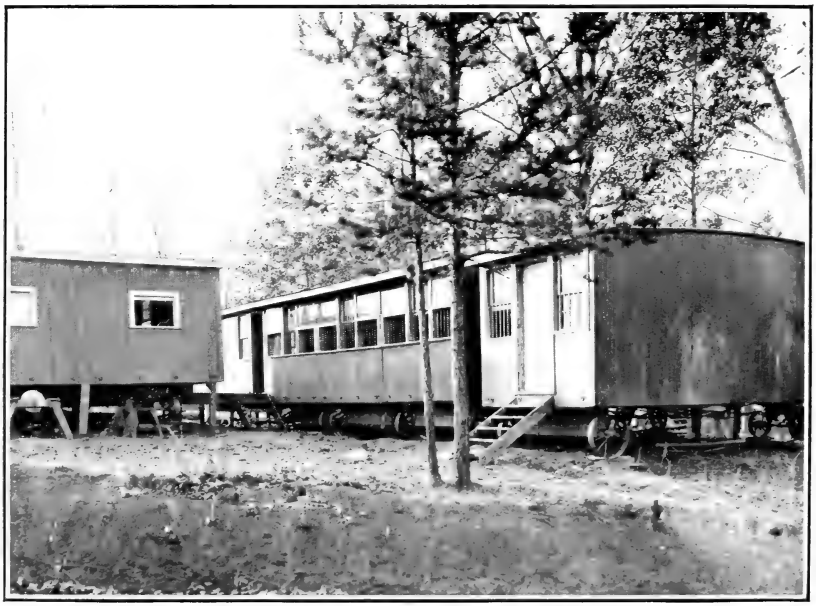
OPRRE12112

FIG. 2.—POORLY ARRANGED AND UNINVITING MESS SHELTER.



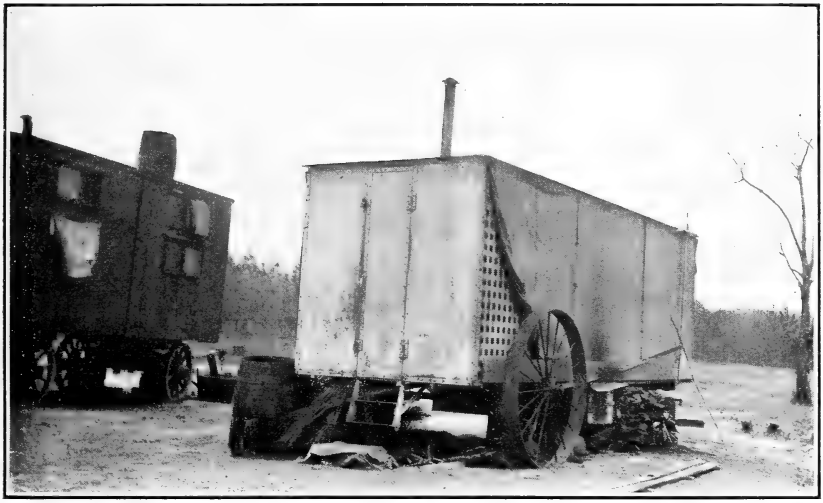
OPRRE12063

FIG. 1.—SCREENED MESS TENT.



OPRRE2347

FIG. 2.—CONVICT CARS JOINED TO MAKE ONE BUILDING.



OPRRE12110

FIG. 1.—TYPE OF ALL-STEEL CAGE.

OPRRE12113

FIG. 2.—TYPE OF WOODEN CAGES.

FIG. 2.—PORTABLE BUILDINGS.

OPRRE12126

FIG. 2.—PERMANENT FRAME QUARTERS OF GOOD DESIGN.

more costly in the long run. In fact, it is often found less costly to abandon these shacks completely.

Bearing in mind, then, what has been said about economy, the second essential property of a good camp structure is that it shall present a neat and well-kept appearance and that the peculiar nature of its use as a place of confinement for criminals should not be obtrusively apparent. As illustrative of the effect of this attention to appearance, it will be well for the reader to compare the views of the two mess shelters shown on Plate VII. In all structural essentials the two shelters are exactly similar, both consisting of a simple center table with continuous benches on each side, the whole covered by a canvas "fly" or roof. The more pleasing appearance of the one is attained at the expense of a single coat of whitewash, the cheapest of paints.

The third essential property of all structures is that they should be so planned as best to serve the convenience of their occupants. Thus, in the first of the two photographs discussed in connection with the preceding paragraph it will appear that the benches along each side are attached to the side posts, being separated from the table by a distance of several feet, a most inconvenient arrangement which prevents the proper use of the table. How readily this condition might have been improved at no greater cost is demonstrated by the second photograph. This is typical of the numerous simple expedients which may be adopted to promote the convenience of quarters of all sorts. Others, such as the proper placing of toilets and baths with reference to sleeping quarters, of the commissary or storeroom with reference to the kitchen and dining room, the provision for hanging clothing in the sleeping quarters, need only to be mentioned to be appreciated.

As a fourth common property, all camp structures should be planned with reasonable consideration for the physical comfort of the inmates. Structures designed for use in warm climates should be so arranged that they may be thrown open to admit an abundance of fresh outside air, and, on the other hand, buildings to be used during extremely cold weather should have double-sheeted walls and double floors so that they may be adequately heated.

That their arrangement should prevent, as far as possible, the accumulation of filth, and should permit easy cleaning is another property which structures of all types should have in common. Re-entrant angles, cracks, crevices, holes, and other places of lodgment for dust and vermin should be avoided, and when this is not possible they should be made readily accessible for the purpose of cleaning. Furthermore, it is a good plan to paint all interior wooden

surfaces in such way as to proclaim rather than conceal the presence of dirt.

Proper observance of the rules of ventilation and screening, given elsewhere, should be another common property of all structures for camp use. Attention to these features is a great aid toward assuring the health of the inmates.

A measure of security commensurate with the requirements of the particular grades of convicts which they are designed to house should also be provided by all convict-camp structures. Buildings designed for the quartering of "honor convicts" may be relatively insecure, but the lower or more desperate characters must be held by the various means of bars and locks, chains and stockades.

Finally, it is frequently desirable, in camps of variable population, to design the structures so as to allow ready reductions or increases in capacity.

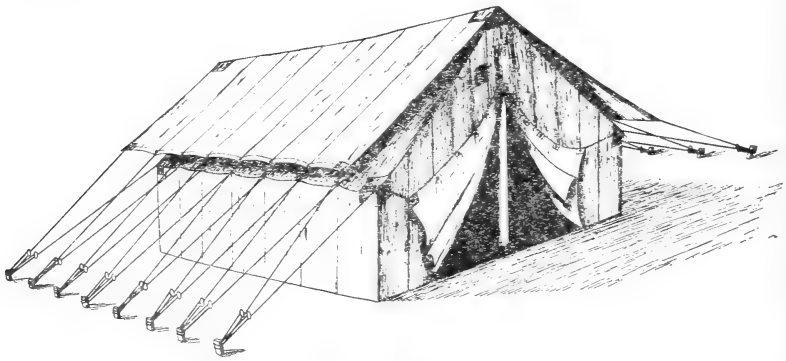


FIG. 7.—Wall tent.

The foregoing are the principal properties which should be realized in all types of camp buildings. In order to indicate how these properties may be embodied in such structures, the various types are hereafter discussed in detail, with plans, specifications, costs, and other available data given for a number of structures.

TENTS.

The form of tent used most extensively in connection with convict camps in the United States is the "wall tent" shown in figure 7. Such tents are supplied by the trade in various weights of cotton duck, designated according to the weight per yard, as 6½, 8, 10, and 12 ounce duck, the last-named weight being the heaviest goods in common use. Lightweight twills, measuring 30 inches in breadth and weighing from 6½ to 8 ounces per yard, are the materials usually employed in the construction of the largest sized tops, while 8, 10, and 12 ounce ducks are used in the smaller sizes.

The door openings usually consist of flaps placed in the ends of the tent, though special side-opening tents also are obtainable. The

ventilator and stovepipe opening is another very desirable one, always provided in Government tents. This opening usually is placed directly below the ridge at the left of the entrance. It measures 6 inches in breath and 8 inches in length, and is covered by a lapel secured on the inner side.

Tents may be screened effectively by hangings of five-mesh English bobbinet around the sides and over all openings, or by means of galvanized-wire screen sections inserted as indicated in Plate VIII, figure 1.

For winter use tents should be floored at least 12 inches above the ground.

Tables 14 and 15 show the common sizes of wall tents, their dimensions and approximate costs when made of the various grades of material, and also the maximum permissible number of occupants for each size. The prices given are list prices for 1915, include poles and stakes, and are subject to a discount of from 35 to 50 per cent.

Table 16 shows the dimensions of a number of sizes of stable tents and gives the prices of each of the sizes made of the various grades of duck. The prices are approximate list prices of 1915, and are subject to from 35 to 50 per cent discount, but they are for complete tents, including tops, sides, and all necessary poles and stakes. For the top, poles, and stakes, but without sides the list prices run from 65 to 75 per cent of those given in the table.

TABLE 14.—*Wall tents, not roped.*

Size.	Height of ridge.	Height of wall.	List prices as of 1915, subject to from 35 to 50 per cent discount.						Maximum number of occupants permitted.
			8-ounce duck, single filling.	10-ounce duck, single filling.	10-ounce duck, double filling.	12-ounce duck, double filling.	12-ounce army duck or No. 10.	15-ounce army duck or No. 8.	
Feet.	*Feet.*	*Feet.*							
7 by 7	7	3	$8.00	$9.35	$10.35	$12.25	$14.55	$17.50	1
7 by 9	7	3	9.50	11.05	12.30	14.60	17.40	20.90	2
8 by 8	7	3	9.36	10.91	12.13	14.37	17.12	20.57	2
9 by 9	7½	3	10.95	12.80	14.30	17.00	20.30	24.50	2
9½ by 12	7½	3	12.90	15.05	16.80	19.95	23.80	28.70	4
9½ by 14	7½	3	14.65	17.10	19.10	22.65	27.05	32.55	4
12 by 12	8	3½	15.30	17.95	20.00	23.75	28.40	34.25	4
12 by 14	8	3½	17.30	20.20	22.55	26.80	32.05	38.60	6
12 by 16	8	3½	19.20	22.45	25.05	29.80	35.65	43.00	6
12 by 18	8	3½	21.35	24.95	27.80	33.00	39.45	47.50	8
14 by 14	9	4	20.60	24.15	26.95	32.10	38.45	46.45	6
14 by 16	9	4	22.70	26.65	29.80	35.50	42.55	51.35	8
14 by 18	9	4	25.35	29.75	33.20	39.45	47.30	57.10	10
14 by 20	9	4	28.20	32.75	36.40	43.00	51.15	61.40	10
14 by 24	9	4	31.80	36.90	41.00	48.10	57.25	68.75	12
16 by 16	10	5	28.20	33.20	37.15	44.10	53.05	64.25	10
16 by 18	10	5	30.95	36.40	40.75	48.25	58.00	70.20	12
16 by 20	10	5	34.10	39.80	44.30	52.15	62.30	75.00	14
16 by 24	10	5	38.85	45.20	50.25	59.05	70.40	84.65	16
16 by 30	10	5	47.00	54.75	60.85	71.50	85.30	102.60	22
16 by 35	10	5	52.60	61.30	68.10	80.20	95.60	114.95	26
18 by 18	11	5	35.40	41.60	46.45	55.20	66.20	79.95	14
18 by 20	11	5	39.00	45.45	50.50	59.70	71.10	85.45	14
18 by 24	11	5	43.60	50.85	56.50	66.50	79.25	95.25	18
18 by 30	11	5	52.25	60.90	67.75	79.95	95.35	114.65	22
18 by 35	11	5	58.15	67.80	75.40	89.05	106.25	127.75	26

TABLE 15.—*Wall tents, roped.*

Size.	Height of ridge.	Height of wall.	List prices as of 1915, subject to from 35 to 50 per cent discount.						Maximum number of occupants permitted.
			8-ounce duck, single filling.	10-ounce duck, single filling.	10-ounce duck, double filling.	12-ounce duck, double filling.	12-ounce army duck or No. 10.	15-ounce army duck or No. 8.	
Feet.	*Feet.*	*Feet.*							
21 by 30	12	5	$89.00	$101.00	$113.00	$127.50	$141.50	$173.50	24
21 by 35	12	5	104.50	118.50	132.50	149.50	166.00	204.00	28
21 by 40	12	5	115.00	130.50	146.00	164.50	182.50	224.50	36
21 by 49	12	5	136.00	154.50	173.00	194.50	216.50	265.50	44
24 by 28	13	6	105.50	120.00	134.50	151.00	168.00	206.50	28
24 by 35	13	6	125.00	142.00	159.00	179.00	199.00	244.00	38
24 by 42	13	6	144.50	164.00	183.50	206.50	229.50	282.00	48
24 by 51	13	6	169.50	192.50	215.50	242.50	269.50	331.00	58
24 by 60	13	6	195.00	221.50	248.00	279.00	310.00	381.00	68
24 by 65	13	6	207.50	236.00	264.50	297.50	330.50	406.00	70
30 by 37	15	6	160.00	182.00	204.00	229.50	255.00	313.00	48
30 by 42	15	6	175.00	199.00	223.00	250.50	278.50	342.50	58
30 by 47	15	6	189.50	215.50	241.50	271.50	301.50	370.50	60
30 by 51	15	6	204.00	232.00	260.00	292.50	325.00	399.00	70
30 by 56	15	6	219.00	249.00	279.00	313.50	348.50	428.50	72
30 by 60	15	6	233.50	265.50	297.50	334.50	371.50	456.50	82
30 by 65	15	6	248.50	282.50	316.50	356.00	395.50	486.00	84
30 by 70	15	6	263.00	299.00	335.00	376.50	418.50	514.50	94

TABLE No. 16.—*Stable tents.*

Size.	Height of wall.	Height of pole.	10-ounce double filling or 8-ounce army duck.	12-ounce double filling or 10-ounce army duck.	12-ounce army or No. 10 duck.	15-ounce army or No. 8 duck.
Feet.	*Feet.*	*Feet.*				
24 by 21	5	12	$104.00	$117.00	$130.00	$160.00
24 by 33	5	12	142.00	160.00	178.00	218.50
24 by 42	5	12	173.00	194.50	216.50	265.50
24 by 60	5	12	234.50	264.00	293.50	360.50
24 by 72	5	12	273.00	307.50	341.50	419.50
26 by 21	5	12½	111.50	125.50	139.50	171.00
26 by 33	5	12½	152.00	170.50	189.50	233.00
26 by 42	5	12½	184.00	207.50	230.50	283.00
26 by 51	5	12½	216.00	243.00	270.00	332.00
26 by 60	5	12½	248.50	279.50	311.00	382.00
26 by 72	5	12½	289.00	325.00	361.00	444.00
26 by 82	5	12½	321.00	361.00	401.00	493.00
26 by 91	5	12½	333.50	397.50	441.50	542.50
28 by 24	5	13	128.25	144.25	160.25	197.00
28 by 35	5	13	170.75	192.25	213.50	262.25
28 by 42	5	13	196.50	221.25	245.75	302.00
28 by 51	5	13	230.25	259.00	287.75	353.50
28 by 60	5	13	265.00	298.00	331.00	406.75
28 by 72	5	13	307.50	346.00	384.50	472.00
28 by 84	5	13	353.00	397.00	441.00	542.00
28 by 100	5	13	416.50	469.00	521.00	640.00
30 by 24	5	14	139.00	156.00	173.50	213.50
30 by 35	5	14	184.00	207.50	230.50	283.00
30 by 42	5	14	211.00	237.50	264.00	324.00
30 by 60	5	14	283.50	319.00	354.00	435.00
30 by 72	5	14	328.00	369.00	410.00	504.00
30 by 84	5	14	373.00	419.50	466.00	573.00
30 by 100	5	14	445.00	501.00	556.50	683.50

The following are the United States Army specifications for duck adopted April 27, 1915:

KHAKI, 12.4-OUNCE.

Material.—The yarn to be made of American cotton. The fabric woven in a workmanlike manner and free from imperfections. To be thoroughly brushed to remove motes or other foreign substances.

Threads.—To contain not less than 46 threads of 3-ply yarn to the inch of warp, and not less than 32 threads of 4-ply yarn to the inch of filling.

Strength.—To sustain a tensile strength of not less than 116 pounds to the one-half inch in the warp and not less than 90 pounds to the one-half inch of filling.

Width.—To be full 29½ inches wide when finished, with a blue thread of 3-ply yarn woven in the fabric 1 inch from each selvage.

Weight.—To weigh not less than 12.4 ounces nor more than 13 ounces to the linear yard.

Color.—To be a khaki shade as represented by the sealed standard sample and may be dyed in the raw stock, yarn, or piece. Bleaching, half bleaching, or scouring before dyeing is not permitted. To be evenly and regularly dyed and to be subjected to the following official tests for ascertaining permancy of color:

1. Boiling for 10 minutes in a solution of soap (80 grains of olein soap, army issue, to 1 pint of water).

2. Boiling 10 minutes in a solution of soda (10 grains of bicarbonate of soda to 1 pint of water).

3. Whenever deemed necessary by the contracting officer the duck will be subjected to exposure to sunlight, air, and moisture for a period of 30 days.

KHAKI, 8-OUNCE.

Material.—The yarn to be made of American cotton. The fabric woven in a workmanlike manner, free from imperfections. To be thoroughly brushed to remove motes or other foreign substances.

Threads.—To contain not less than 54 threads of 2-ply yarn to the inch of warp, and not less than 34 threads of 2-ply yarn to the inch of filling.

Strength.—To sustain a tensile strength of not less than 75 pounds to the one-half inch in the warp and not less than 50 pounds to the one-half inch in the filling.

Width.—To be full 28½ inches wide when finished, with a blue thread of 3-ply yarn woven in the fabric 1 inch from each selvage.

Weight.—To weigh not less than 8 ounces nor more than 8½ ounces to the linear yard.

Color.—To be a khaki shade as represented by the sealed standard sample and may be dyed in the raw stock, yarn, or piece. Bleaching, half bleaching, or scouring before dyeing is not permitted. To be evenly and regularly dyed and to be subjected to the following official tests for ascertaining permanency of color:

1. Boiling for 10 minutes in a solution of soap (80 grains of olein soap, army issue, to 1 pint of water.

2. Boiling 10 minutes in a solution of soda (10 grains of bicarbonate of soda to 1 pint of water).

3. Whenever deemed necessary by the contracting officer, the duck will be subjected to exposure to sunlight, air, and moisture for a period of 30 days.

The life of tents depends so greatly upon climatic conditions that no general estimate can be made here. Experience indicates that the period of satisfactory service will vary from six months to three years. In humid regions and in sections of prevailing high winds little more than the lower limit of usefulness can be expected; but in relatively dry climates and where high winds are infrequent the life

of canvas may be even greater than the three-year period mentioned. Tents which are improperly cared for frequently deteriorate rapidly from mildew. This usually is the result of rolling and storing the canvas while wet, and the best means of preventing it is to dry the tentage thoroughly before storing. A number of processes have been devised for mildew-proofing, but none has given entire satisfaction. The process in most general use consists of immersing the duck for a suitable period in a solution of alum and sugar of lead, the proportions being 4 pounds of each ingredient to one barrel of water. Other recipes for this purpose follow:

1. Dissolve 1 pound of zinc sulphate in 40 gallons of water; add 1 pound of washing soda, and when this is dissolved add 2 ounces of tartaric acid. Soak the material 24 hours and allow it to dry without wringing.

2. Dissolve 2 pounds of alum in 7 gallons of hot water. Dissolve 1 pound of gelatin in 4 gallons of hot water. Mix these two solutions, then dissolve 2 pounds of blue vitriol in 1 gallon of hot water and add the solution to the mixture of the first two. Soak the duck in the resulting mixture 24 hours and allow to dry without wringing.

CAGES AND CARS.

Movable convict quarters mounted on wheels, known as cages (or lately, in response to a change in public feeling, as cars), have long been in common use in the United States, particularly in the South.

Formerly constructed entirely of wood, they now are also manufactured wholly of steel by a number of firms. In dimensions they are usually 12 or 18 feet in net length and from 7 to 8 feet in width and height.

The cost of a steel cage 18 by 8 by 8 feet is approximately $500, which is at the rate of 43.4 cents per cubic foot of space provided. By way of comparison, it may be stated that an excellent portable building, similar to that described in a succeeding paragraph, can be constructed at a cost of not more than 7 cents per cubic foot of space provided below the eaves, entirely omitting from consideration the additional space between the eaves and the ridge. Such a structure should have a life of at least five years. If, therefore, omitting for the present the consideration of the relative portability of the two types of quarters, the cage is to equal the portable building in economy, it must have a life approximately six times as long, or at least 30 years. It is not known precisely what life may be expected of the cage, for the reason that steel cages have not been in use long enough to provide any basis for an estimate; but it is not probable that its life will equal the 30-year period which is necessary to place it on an economic parity with the portable building.

From the standpoint of mobility the cage usually is regarded as somewhat superior to the portable building, because in transporting the latter there is involved the tearing down and reerecting processes in addition to the actual transportation of the buildings, whereas the cage mounted on wheels has only to be hauled from one location to another and is always ready for occupancy. However, this advantage never is fully realized, owing to the fact that the great weight of the cage, from 3 to 4 tons, makes it extremely difficult to transport over bad roads. In one county in Alabama it required two days for eight teams of mules to move a steel cage 12 miles over the muddy roads. Though this is, perhaps, an extreme example, the same objection applies in lesser degree under better conditions.

Furthermore, the time in moving saved by the use of cages is unimportant except in those cases where the camp is moved very frequently, which frequent moving implies the performance of very light road work shown elsewhere to be generally uneconomical with convicts. When the camp is maintained in one location for from four to six months or longer, as is desirable, the interest and depreciation on the running gear usually will be found practically to absorb the value of the time saved in moving.

Thus, from the standpoint of economy alone, apart from the sanitary and sentimental objections, the cage is found to be unsatisfactory.

The illustrations in Plate IX, figures 1 and 2, show types of wooden cars and steel cages, and Plate VIII, figure 2, represents a somewhat less objectionable type of wooden car. The latter is so arranged that by removing the adjacent sides two or more cars can be joined to form a single building as shown.

PORTABLE BUILDINGS.

For the purposes of temporary camps, probably the best type of housing is the portable building. This type has been adopted in many places with excellent success, and no doubt it will be brought into wider use when its merits are more widely recognized. Properly designed and constructed, buildings of this type have much the same advantages as tents in point of mobility, and they have the further merits of furnishing greater protection from weather and greater security and longer life than tents; also, they furnish sufficient security at lower cost and with less objectionable appearance than cars or cages.

They may be constructed of wood or metal or of a combination of the two materials. Those made entirely of metal have the advantage of long life and of being fireproof and relatively vermin proof, but

they are much more expensive than wooden structures, somewhat heavier, inconvenient to replace in case of breakage and deterioration, hot in summer and cold in winter. When made principally of wood they are less expensive, much cooler in summer, lighter and easier to move and handle, but subject to damage or destruction by fire, more difficult to keep clean and free from vermin, and with shorter lives than metal buildings.

Whatever material be used in the construction, the following desirable features should be embodied in the design:

(1) The sections of which the building is composed should be of such size as to permit convenient hauling and erecting. They should not be too large for transportation on an ordinary wagon bed, and in weight they should not exceed approximately 200 pounds, the maximum weight which can be handled successfully by two men in erecting and tearing down.

(2) The sections should be so designed and the connections so made as to secure the maximum of flexibility in the building and permit ready reduction or increase in capacity to accommodate any number of inmates.

(3) All parts and sections should be constructed by template or pattern, in order that similar parts may be absolutely interchangeable.

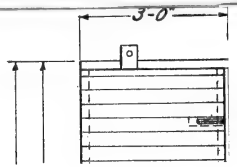
(4) All units should be so simple in design that they may be constructed by relatively inexperienced labor. Complicated joints, irregular shapes, and difficult cuts should be avoided.

(5) All the parts should be so-called stock articles or easy to improvise, in order that the cost may be reduced to a minimum and that renewals may be made with the greatest ease.

Stock buildings of either metal or wood, embodying the above desirable features, may be purchased from a number of manufacturers in various parts of the United States, or they may be very readily constructed by the regular convict force under the leadership and supervision of a good carpenter. The latter means probably will appeal more strongly to prison officials, as the convict labor usually is available for the work, and by employing it the buildings can be constructed at a lower cost than they can be bought.

For the assistance of communities in which it is desired to erect buildings of this character, the Office of Public Roads and Rural Engineering is prepared to furnish upon application complete detailed plans and specifications of the portable building shown in Plate X, figure 1, the general plans of which are given in Plate XI.

In the preparation of these plans careful attention has been given to all the features mentioned above as desirable. The sections are designed for rapid erection of buildings 18 feet square, or, by pro-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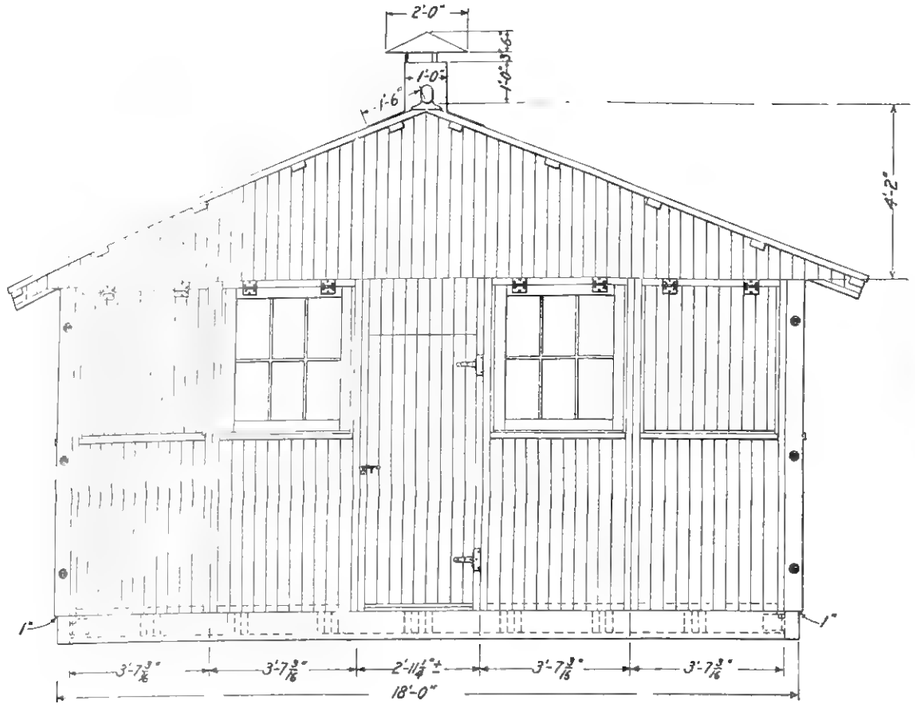
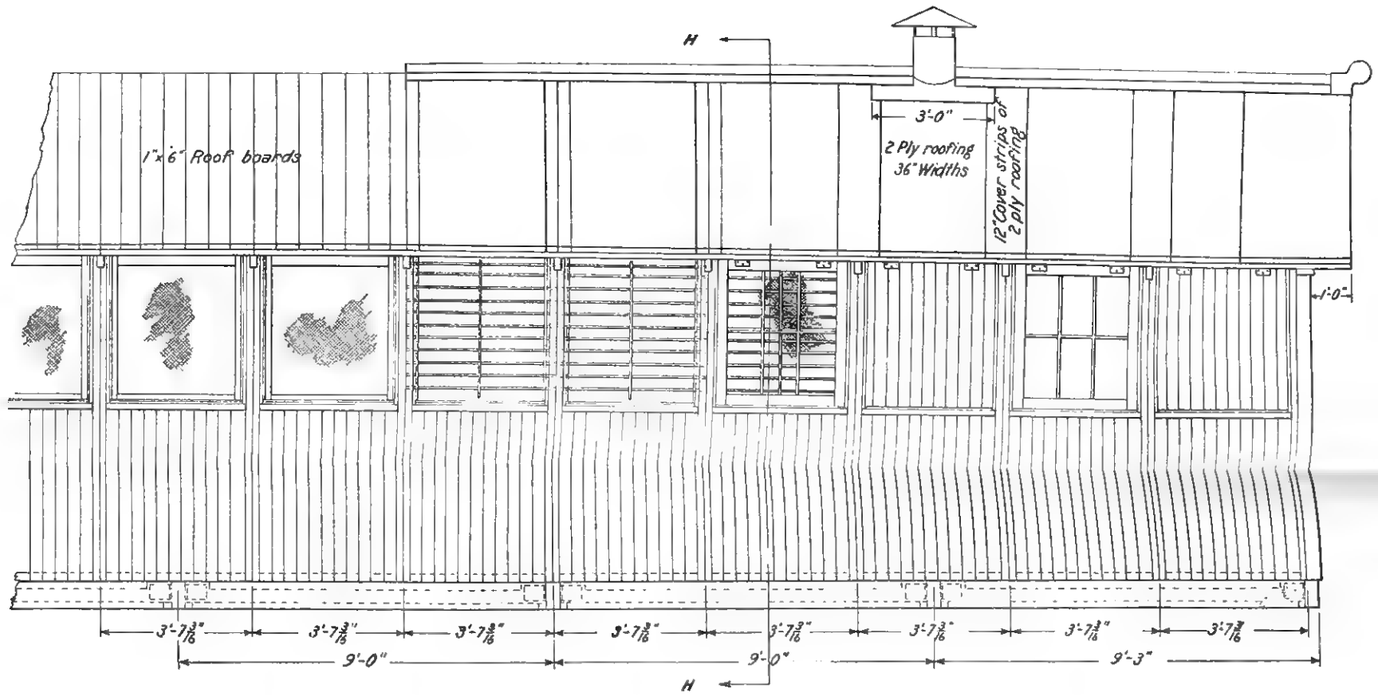
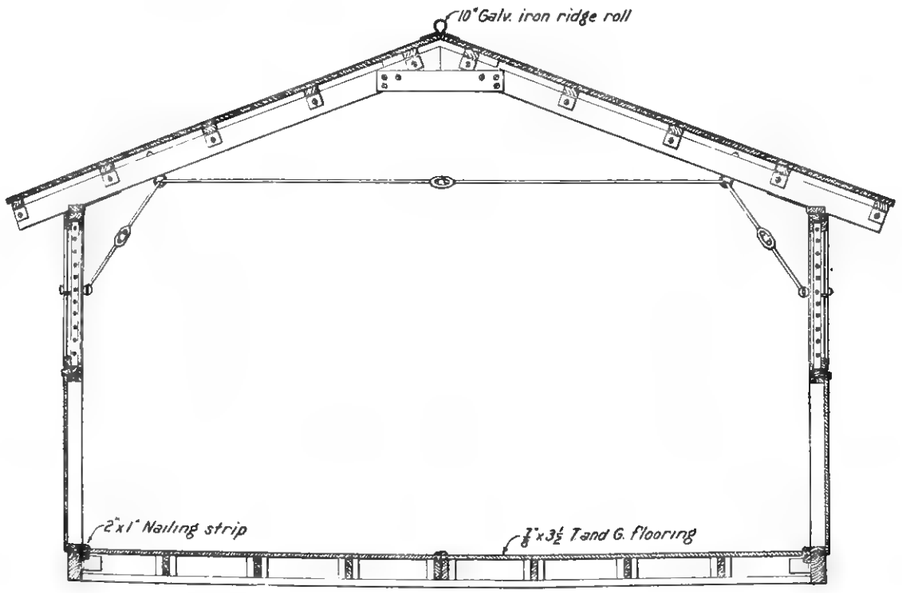


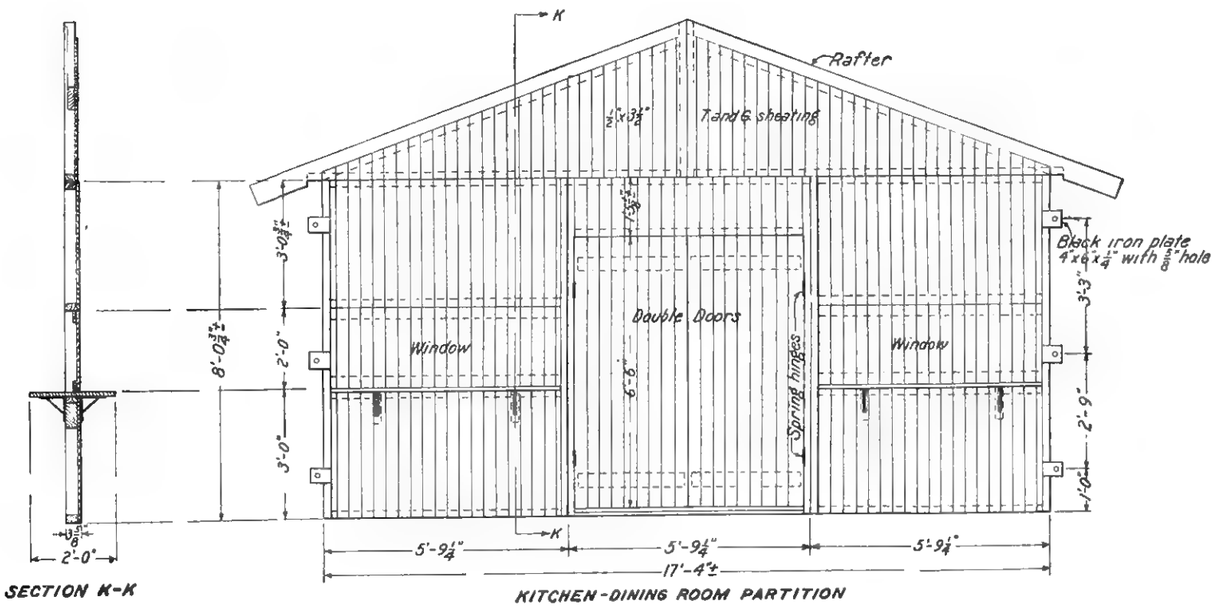
END VIEW



SIDE VIEW



SECTION H-H



SECTION K-K

KITCHEN-DINING ROOM PARTITION

U.S OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING
ROAD ECONOMICS

GENERAL VIEWS
PORTABLE CONVICT CAMP BUILDING

SCALE, 1/2" = 1'-0"

CORRECT H. S. Fairbank HIGHWAY ENGINEER

APPROVED J. E. Pennybacker CHIEF ROAD ECONOMICS

E-57

DESIGNED BY H. S. Fairbank DATE 2-15-16
TRACED BY O. P. Eaton DATE 3-24-16
CHECKED BY H. S. Fairbank DATE 3-24-16

vision for the joining of several buildings, into buildings 18 by 36 feet, 18 by 54 feet, or larger. They are adaptable for either guarded or honor camps and for all the purposes of such camps, as for convicts' sleeping quarters, mess halls, kitchens, storehouses, lavatories, and baths, and for guards' and superintendents' quarters, or office buildings. As sleeping quarters each 18 by 18 foot building will accommodate a maximum of 16 persons, by the use of double-decked metal cots arranged along each side of the building with their length perpendicular to the walls, which arrangement provides for an aisle of 4½ feet down the center. With this maximum number of inmates, the building provides approximately 20 square feet of floor space and 200 cubic feet of air space per inmate, which allowance, in view of the excellent means of ventilation provided, is entirely adequate. Window spaces, 42 inches deep, closed by solid wooden shutters and glazed sashes, extend the full length of all sides of the building, with the exception of the space necessary for doors, and by opening these windows in summer it is possible to keep the air inside the buildings down to the temperature of the outer air. The shutters and windows are hinged at the top and swing outward, and when they are open they act as awnings for protection from the weather. All doors and windows are provided with 16-mesh galvanized-wire screens. Security can be provided in guarded camps by barring the windows, by chaining the prisoners to their bunks, and by the insertion of a cage vestibule inside one of the doors of the sleeping quarters as a station for the armed night guard. Such a cage may be constructed of No. 5 steel-wire screening with a 2-inch mesh (fig. 8).

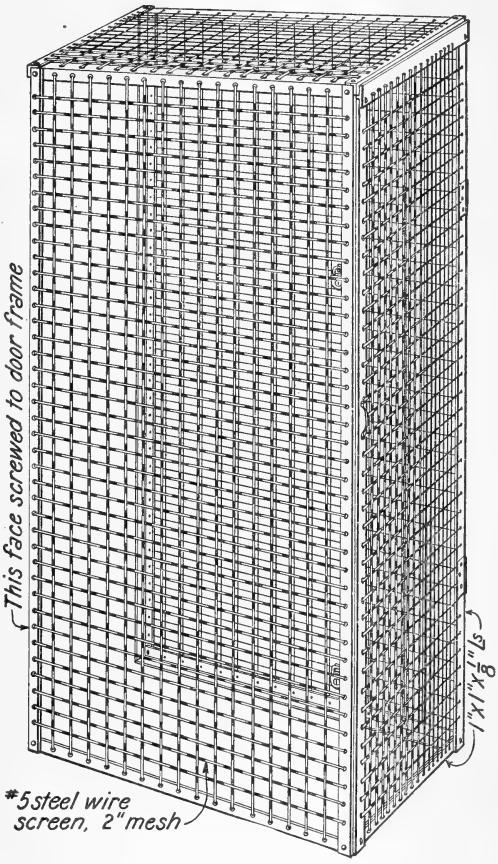


FIG. 8.—Cage vestibule.

The cost of these buildings complete, including painting, is approximately 6 cents per cubic foot. For all the purposes of a camp of 40 convicts 10 of the 18-foot units are required, as follows:

For sleeping quarters of convicts	3
For kitchen and mess	3
For storehouse	1
For bathhouse	1
For office and superintendent's quarters	1
For quarters for foremen and guards	1
Total	10

With lumber at $20 per thousand, carpenters' labor at $2.50 per day of 10 hours, foreman's wages at $4 per day of 10 hours, and prices of hardware and miscellaneous supplies as in Fulton County, Ga., the cost of the complete equipment of 10 sections will be approximately $1,900, itemized as follows:

Lumber, 27,800 board feet, at $20 per M	$556
Hardware	397
Sashes, screens, and roofing	284
Carpenter, blacksmith, and machinist labor	400
Paint and painters' labor	263
Total cost	1,900

The cubic contents of the 10 buildings are 32,400 cubic feet. Therefore the principal items of cost per cubic foot are:

Lumber	$0.017
Hardware	.012
Sashes, screens, and roofing	.009
Carpenter, blacksmith, and machinist labor	.012
Paint and painters' labor	.008
Total cost per cubic foot	.058

It is estimated that the economic life of these buildings will be not less than five years, and upon this basis, with interest at 6 per cent per annum, it may be determined that their cost will not exceed 3.4 cents per convict per calendar day.

Complete plans and specifications for all-metal portable buildings and for buildings with metallic frames and canvas roof and sides are contained in a joint bulletin of the North Carolina State Board of Health and State Highway Commission.[1]

[1] Joint Bul. No. 57, N. C. State Board of Health and State Highway Com.: "The Sanitary and Hygienic Care of Prisoners."

STRUCTURES WITH GALVANIZED-METAL ROOF AND CANVAS SIDES.

Buildings of this general type are in common use in the convict camps of Virginia. As shown in Plate XII, figures 1 and 2, they consist simply of a V-crimped tin or corrugated galvanized-iron roof laid on 1 by 10 inch purlins which rest on 2 by 6 inch rafters spaced about 3 feet on centers and braced with 2 by 4 inch ties. The rafters rest on 2 by 6 inch plates which are spiked to 6-inch rough posts, which in turn are planted about 3 feet in the ground. The gables usually are covered with metal of the same weight as that used in the roof and the sides are protected with drop curtains of 10-ounce duck. The continuous wooden platforms, 6 feet 6 inches wide, raised about 18 inches above the floor and extending along the two sides of the building in the sleeping quarters, take the place of separate bunks or cots. The pallets are laid on these platforms, side by side, with usually no space between them. The mess building, officers' quarters, and storehouses are similar in construction to the quarters or "cell house," the mess building, however, usually being unfloored.

The buildings in use in the Virginia camps are not fly-proof, and the investigation indicates that the cracks and crevices in the surface of the bunk platforms afford excellent lodging places for vermin and filth. These faults may be remedied by inserting screens between the 6-inch posts and by substituting separate metal cots for the wooden bunk platforms. If double, instead of single, decked cots be used, a wider separation of the inmates will be possible in quarters of the same size.

With these modifications, this general type of structure will be satisfactory for use during the summer throughout the United States and the year round in the extreme southern section. That it does not provide adequate protection against the winter weather in Virginia is the testimony of camp officials whose opinion was sought.

Buildings of this type may be considered relatively portable, and the use of the metal roof makes them somewhat more durable than tents, but they are neither so readily moved nor so durable as the portable buildings previously discussed. To provide for all the necessities of a camp of 40 men the following buildings of this type would be necessary:

One building 20 by 70 feet for convicts' sleeping quarters and clothes storage; one building 20 by 70 feet for dining room, kitchen, and pantry or commissary; one building 20 by 40 feet for office and officers' quarters and a wall tent 16 by 20 feet to be used for bathing purposes.

The estimated itemized cost of this equipment of structures is as follows:

Lumber, 14,000 board feet, at $18 per M	$252
Roofing, 20-gauge galvanized iron, 2½-inch corrugations, 6,000 square feet, at 11½ cents	690
Ridge roll, bolts, nails, etc	20
Canvas curtains, 10-ounce duck, 500 yards, 29 inches wide, at 27 cents per yard	135
Screens, 3,360 square feet, at 8 cents	270
Labor	300
16 by 20 foot wall tent, 12-ounce army duck	45
Total	1,712

Reducing this estimate to a cost per cubic foot, the costs of the principal items are as follows:

Lumber	$0.007
Roofing	.019
Ridge roll, bolts, nails, etc	.001
Canvas curtains	.003
Screens	.003
Labor	.008
Tent	.001
Total cost per cubic foot	.042

While the above cost is only a little more than two-thirds as great as that of the portable buildings designed by the Office of Public Roads and Rural Engineering, it should be borne in mind that those buildings are of a much higher type of construction and are suitable for winter as well as summer use. Furthermore, the canvas used in these buildings will have to be replaced every two years under normal conditions, and the metal roofing also will depreciate much more rapidly than any part of the portable buildings. For these reasons, notwithstanding their lower initial cost and narrower field of usefulness, it is believed that buildings of this general type will cost, in the long run, practically as much as the portable buildings previously described.

SHACKS.

Shacks of rough lumber made weather tight with a covering of tarpaper, similar to those used generally in free contracting camps, may be economically used for temporary camp purposes in sections where lumber is very cheap. Experience has shown that it does not pay to attempt to move them with the camp, the cost of taking them apart and the large proportion of lumber ruined being usually greater than the cost of new lumber.

Structures of this kind can be built for from 2½ to 3 cents per cubic foot.

PERMANENT FRAME STRUCTURES.

Structures of this type, similar to that shown in Plate X, figure 2, are used in the concentration or central camps of a few of the southern counties. In design, they are similar to frame structures used for other purposes, and hence they will be given no special treatment in this bulletin.

MISCELLANEOUS DATA ON BUILDING MATERIALS.

Paint.

The solid ingredient of paint is called the pigment; and the liquid part, the vehicle. White lead and white zinc are the common white pigments, and the vehicle usually is linseed oil, with sometimes the addition of a little turpentine or other volatile solvent.

DRIERS.

These are compounds of lead and manganese dissolved in oil, and this solution thinned with turpentine or benzine. They act as carriers of oxygen from the air to the oil, and their addition to a paint makes it dry more rapidly. Not more than 10 per cent by volume of a drier should be added to oil.

PRIMING COAT.

This is the first coat applied to the clean surface. The priming coat for wood usually is made by thinning a gallon of ordinary paint with a gallon of raw linseed oil. In all woodwork, nail holes and other defects should be filled with putty after the priming coat has been applied; but if the wood be resinous, knots and resinous places should be covered with shellac before the priming coat is put on. Pitchy woods, such as southern yellow pine and cypress, do not absorb oil readily, and turpentine should be substituted for part of the oil.

SECOND AND THIRD COATS.

The priming coat, having been absorbed largely by the wood, a second, and possibly a third, coat of paint should be applied. The most common paint used on houses is white lead. This is commonly sold as paste white lead containing 8 per cent of oil, 100 pounds being equal to 2.8 gallons in volume, and it is commonly mixed with $3\frac{1}{2}$ gallons of raw linseed oil, 1 quart of turpentine, and 1 pint of drier to make $6\frac{2}{3}$ gallons of paint for the second coat, or with 4 gallons of oil, 1 pint of turpentine, and 1 pint of drier for the third coat. If a vehicle composed of half linseed oil and half turpentine be used in the paint for the second coat, it will have the effect of making the paint dry with a dull or "flat" surface instead of a glossy surface, and the third coat will adhere better. If white zinc is used, $9\frac{1}{2}$ pounds of dry zinc oxide and 0.57 gallon of oil make 1 gallon of paint;

to this turpentine and drier also should be added. White lead is used everywhere, but tends to yellow somewhat in the dark. White zinc is used chiefly on interior work, being the whitest paint known. Colored paints are commonly made by adding colored pigments to lead or zinc. White, light blue, and light green are less durable than yellow, gray, or dark colors.

Painting always should be done in dry weather, and paint should not be applied to lumber that is not dry. A week or more should be allowed to elapse between successive coats. A gallon of paint will cover from 400 to 600 square feet of surface, depending upon the character of the surface.

WHITEWASH.

Ordinary whitewash is made by slaking quicklime in water in a pail or barrel covered with cloth or burlap. The proportions of lime and water should be about 10 pounds of the former to 2 gallons of the latter, and the lime should be allowed to slake for one hour. When the slaking is complete, enough water should be added to bring the whitewash to a consistency which may be applied readily.

Weatherproof whitewash for exterior surfaces may be made as follows:

(1) Slake 1 bushel of quicklime in 12 gallons of hot water; (2) dissolve 2 pounds of common salt and 1 pound of sulphate of zinc in 2 gallons of boiling water; (3) pour (2) into (1), add 2 gallons of skim milk, and mix thoroughly.

Roofing Materials.

PREPARED ROOFING.

There are on the market a large number of so-called "prepared" or "ready" roofings for covering the sheathing of wooden roofs. They are made by cementing together two, three, or more layers of tar-saturated felt or felt and burlap, then coating the combination either with a hard solution of the same cementing material or with a mixture of hot pitch or asphalt and sand or fine gravel. These roofings are commonly put up in rolls 36 inches wide and are applied by lapping the strips 2 inches, with a coat of cementing material between, and nailing every 2 or 3 inches with tin-capped roofing nails. A sufficient quantity of cement, nails, and tin caps is packed in the middle of the rolls. These roofings are especially suitable for use in convict camps, for the reason that no previous experience is required for laying them.

In the construction of the portable buildings previously described the prepared roofing can be fastened to the roof sections very satisfactorily with No. 9 flaked glue.

CORRUGATED IRON AND STEEL SHEETS.

Corrugated sheets of iron and steel, usually galvanized, are used frequently for roofing convict camps. The best grades are made of double-refined box-annealed iron or steel. The weight and thickness of the metal from which the corrugated sheets are rolled is represented by gauge numbers based on standard gauges established by act of Congress and known as United States standard gauge.

The following table gives the weights and thicknesses of the different gauges from No. 16 to No. 28, between which limits are included practically all the weights useful for ordinary roofing. Galvanizing the sheets adds about $2\frac{1}{2}$ ounces per square foot to the weights given.

United States standard gauge for sheet iron or steel.

No. of gauge.	Approximate thickness in fractions of an inch.	Weight per square foot in ounces.	No. of gauge.	Approximate thickness in fractions of an inch.	Weight per square foot in ounces.
16	$\frac{1}{16}$	40	23	$\frac{9}{320}$	18
17	$\frac{9}{160}$	36	24	$\frac{1}{40}$	16
18	$\frac{1}{20}$	32	25	$\frac{7}{320}$	14
19	$\frac{7}{160}$	28	26	$\frac{3}{160}$	12
20	$\frac{3}{80}$	24	27	$\frac{11}{640}$	11
21	$\frac{11}{320}$	22	28	$\frac{1}{64}$	10
22	$\frac{1}{32}$	20			

The sheets generally used have corrugations measuring $2\frac{1}{2}$ inches from center to center. They are made in all gauges from No. 16 to No. 28, and are carried in stock in 4, 5, 6, 7, 8, 9, and 10 foot lengths, and can be obtained as long as 12 feet at a cost of 5 per cent extra per foot. The 8-foot length is most commonly used. The width of the sheets, as a rule, is 24 inches between the centers of the outer corrugations. All sheets are sold by the square (100 square feet), measuring the actual widths and lengths of the corrugated sheets.

The thickness or gauge required depends upon the distance between the supports on which the sheets are laid. The maximum distances between supports for the various gauges should be as follows:

For No. 26 to 28 gauge, from 1 to 2 feet, center to center.

For No. 24 gauge, from 2 to $2\frac{1}{2}$ feet, center to center.

For No. 22 and 20 gauge, from 2 to 3 feet, center to center.

For No. 18 gauge, from 4 to 5 feet, center to center.

For No. 16 gauge, 5 to 6 feet, center to center.

The least pitch which should be given to roofs that are to be covered with corrugated sheets is 3 inches to the foot, and the sheets, as laid on the roof, should have a lap at the lower end of

from 3 to 6 inches, the larger laps being used on the lower pitches. For the side lap it is recommended that each alternate sheet be laid upside down and lapped as shown in (*a*) rather than (*b*), figure 9. By this method, when water is blown through the first lap, it will stop and not pass the half lap, but run down and out at the end of the sheet.

In applying to the sheathing or wooden strips, the sheets should be secured by nailing through the tops of the corrugations, the nails being driven through every alternate corrugation at the ends and about 8 inches apart at the sides.

In ordering corrugated sheets an allowance must be made for the laps. The following table (17) gives the number of square feet

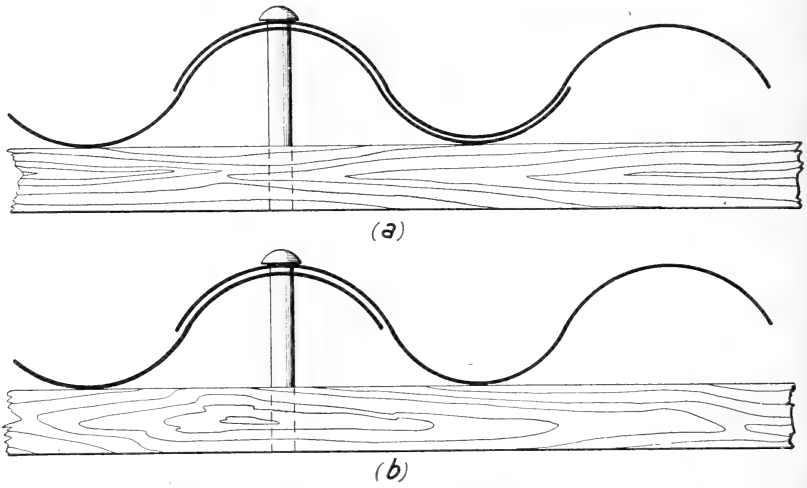


FIG. 9.—Proper (a) and improper (b) manner of laying corrugated roofing.

necessary to cover 100 square feet of actual surface, using sheets 8 feet long. If shorter sheets are used, the allowance must be slightly increased.

TABLE 17.—*Number of square feet of corrugated sheets to cover 100 square feet of roof.*

End laps.	1 inch.	2 inches.	3 inches.	4 inches.	5 inches.	6 inches.
	Square feet.	*Square. feet.*	*Square feet.*	*Square feet.*	*Square feet.*	*Square feet.*
Side lap, one corrugation	110	111	112	113	114	115
Side lap, one and one-half corrugations	116	117	118	119	120	121
Side lap, two corrugations	123	124	125	126	127	128

CEMENT CONCRETE.

Portland cement concrete may be used in a convict camp for various purposes, such as the construction of floors, building foundations, well casings, and protective coverings, etc. Necessary information

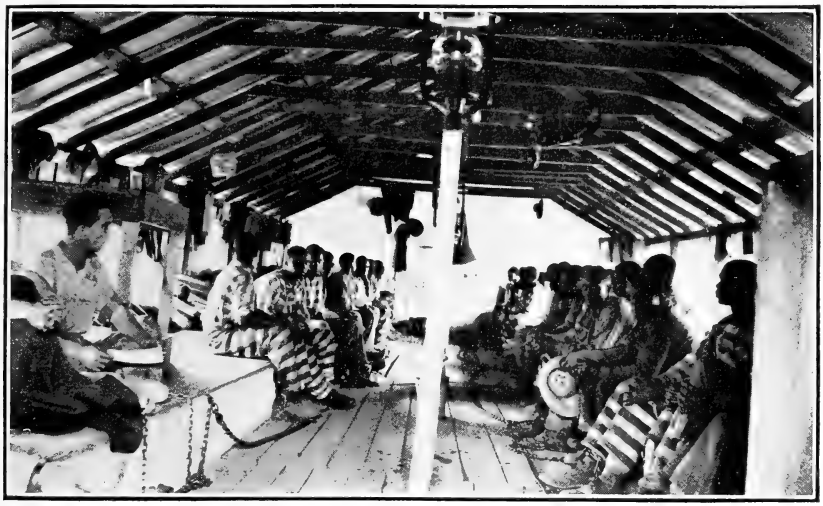


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FIG. 1.—INTERIOR OF VIRGINIA BUNK HOUSE.

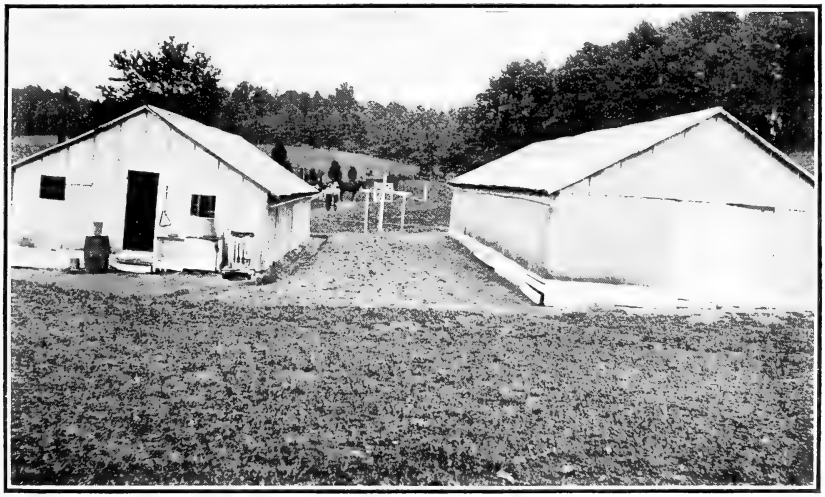

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FIG. 2.—EXTERIOR OF VIRGINIA CONVICT CAMP BUILDINGS.

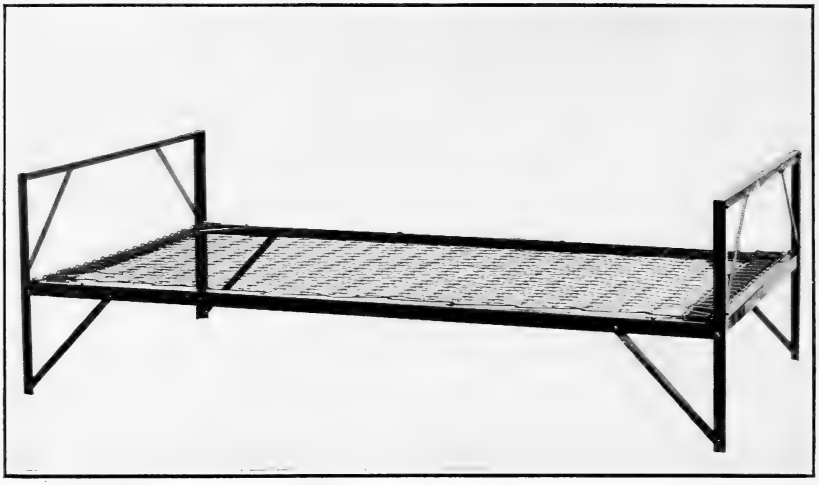

FIG. 1.—SINGLE-DECK METAL COT.

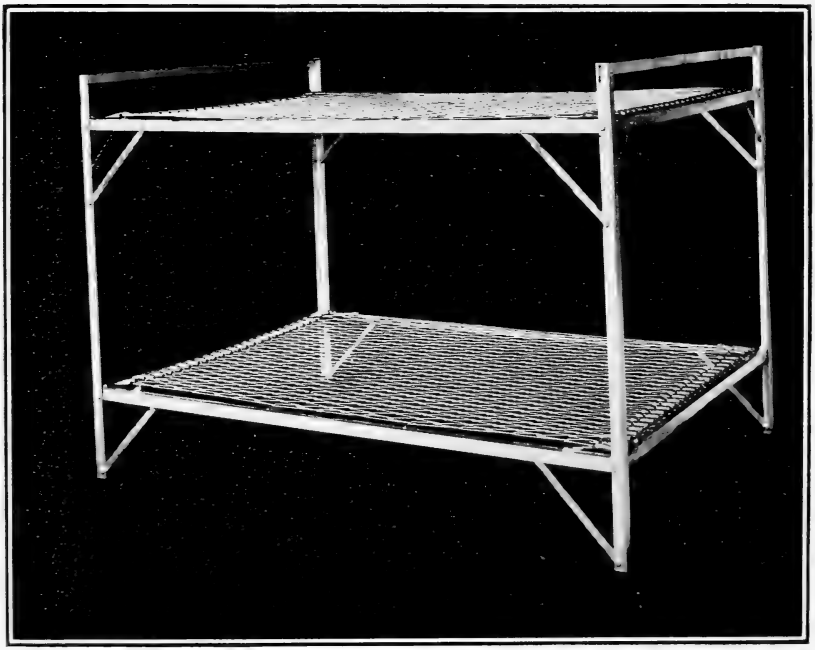

FIG. 2.—DOUBLE-DECK METAL COT.

with regard to the selection of the three ingredients, cement, sand, and stone, and the best methods of preparing the concrete, building forms, etc., is contained in Farmers' Bulletin No. 461, "The Use of Concrete on the Farm," prepared by the Office of Public Roads and Rural Engineering. Persons desiring copies of this bulletin may obtain them free from the United States Department of Agriculture, Washington, D. C.

CLOTHING, CAMP SUPPLIES, AND EQUIPMENT.

The problem of supplying and equipping a convict camp is a most complex one, and one which, for its handling, demands a broad study of the relative costs, durability, and suitability of the large number of trade articles and supplies which are available. Too often, in the hurry to put the camp into operation so as to realize the benefits of the convicts' work on the roads, the purchase of supplies and equipment receives but scant attention; articles are bought with little reference to their suitability and adequacy, to say nothing of their durability, simply because they are easily obtained locally. This haste results in rapid deterioration, discomfort, inconvenience, and loss of time which materially affect the economy of operation of the camp.

Though space does not permit a full discussion of all the items of supplies and equipment which have their places in a well-designed convict camp, and though the subject is such as to require particular study under the special conditions of each camp, a few of the more important items are discussed below from the standpoints of convenience, durability, and cost, and a number of other articles, with their approximate costs, are briefly listed. It is not considered that all the articles mentioned are necessary for all camps. They are given simply as suggestions of the articles available for supplying the clearly defined wants of convict camps, primarily with the purpose of recalling their availability to officials charged with equipping camps.

CLOTHING.

The clothing worn in convict camps varies considerably in quality and quantity; while the durability of various articles of the same grade, as reported from different localities, varies even more widely. This, however, may be expected to vary with climatic conditions and with the character of the work upon which the convicts are employed. In general, it will be found that the life of most articles of clothing will be shorter in a wet climate than a dry one; and such work as rock excavation and quarrying causes more wear and tear than those works on which the danger of tearing is less and the material handled is softer.

The principal items of clothing used in convict camps are: Coats, trousers, vests, underclothing, socks, shoes, shirts, nightshirts, hats or caps, and such special articles as slickers or oilcoats, rubber boots, fur-lined hats, and rubber capes.

The characters of the more important articles in use are stated below, the ranges of prevailing prices are given, and an estimate of the limits of durability is made on the basis of reports obtained in a number of widely distributed localities.

Coats, Trousers, and Vests.

The use of the vest as a prison garment is confined almost entirely to the Northeastern States. In these States it is generally made of woolen tweed and costs from 80 cents to $1. It is believed that it serves no useful purpose and is not recommended for general use.

Coats and trousers are made of cotton, wool, or part wool, and of solid gray, blue, and brown or in black and white stripes. The general practice in the Southern States is to provide 8 or 10 ounce woolen garments for winter use and 8-ounce cotton goods for summer wear. The woolen suits cost about $2.75 each, $1.50 for the coat and $1.25 for the trousers. The same weight of goods is used in stripes and plain material. It is customary to supply each convict with two full suits at one time, and the average wear of such goods is reported as from three to six months, depending on the nature of the climate and the service. A good rule, it is said, is to allow two of such suits per man for a winter season. For summer use the woolen clothes are replaced by cotton goods, of which the coats and trousers cost from 66 cents to $1 each. These also are supplied two at a time for each convict, and their average life is said to be from three to four months, the coats lasting somewhat longer than the trousers.

In the South the majority of reports indicate that each convict will wear out one woolen suit and two cotton suits each year, and that the average cost per man per year for these articles is about $6.50.

In the States of New York, New Jersey, and New Mexico a much heavier goods, in the nature of a woolen tweed, is used. Coats of this material are reported as costing from $2.85 to $3 each, and trousers from $1.78 to $1.90. But, though they exceed in first cost the quality of goods used so widely in the South, it is reported that their life greatly exceeds that of the latter. In New Mexico an accurate record kept at the State penitentiary shows a life of nearly two years for these garments, and in New York a life of more than one year is reported as the average. Usually the coat is not worn on the work, and the trousers are protected by overalls, which cost from 50 to 75 cents per pair and last from three to six months. Supplies of two pieces of each garment are maintained for each prisoner, as in the Southern States, and the approximate cost of coats, trousers,

and overalls for each prisoner per year is from $6.50 to $7. In the States in which there is a penitentiary, the clothing for the road forces generally is made in the prison shops. In a number of the Southern States it is bought ready made from private manufacturers. In certain other States and counties the cloth is bought in large quantities and made into clothing by the female prisoners of the county or State, and as an instance of another method, in Chatham County, Ga., clothing for the road forces is made at the county courthouse by the poor people of the city of Savannah, who are paid at the rate of 5 cents per garment for cutting and from 10 to 14 cents for sewing.

Shirts.

Shirts usually are made of ticking, or cotton duck, though a cheap cotton madras is used in at least one State. In cost they range from 31 cents, as quoted in New Mexico, for a shirt of ticking, to 75 cents for an 8-ounce duck shirt in Fulton County, Ga., and $1 for a shirt of herring-bone material used in Arizona. According to the reports of durability, as made by officials in charge, all grades wear from six to eight months. In a number of the southern counties the shirts are worn without coats during the summer season. The average cost of shirts per convict per year is approximately $1.

Night Shirts.

The investigation showed that special garments for night wear were in use only in very few of the States, and these all in the Southeastern section. From a sanitary standpoint they are absolutely essential and from the standpoint of economy they are justified by the saving in wear of the underclothes. They also make possible a reduction in cost of laundering bed clothing. They are usually made of ticking at costs varying from 30 to 75 cents per garment, and wear from six months to one year. The average cost per man per year is 75 cents.

Underclothes.

Underclothes, shirts and drawers, usually are made of fleece-lined cotton or Canton flannel. Garments of the former goods cost about 37½ cents each for shirts and drawers, and of the latter goods 45 to 50 cents each. In the Southern States, as a general rule, underclothes are used in winter only. A life of from three to five months per garment is reported from a number of widely scattered localities, and the average cost per man per year for underclothing is $2.50.

Socks.

Socks for summer wear are made of cotton, for winter use of wool. The cost varies from 5 to 16 cents per pair and the life from 2 to 6 weeks per pair. The average cost of an equipment of socks is $1 per man per year.

Shoes.

The form of shoes usually provided is that known as brogans. In a number of the States the shoes used by the road-working convicts are made in the penitentiary shops. Some attempts have been made to prolong the life of shoes by reinforcing them with metal about the heel. These attempts, however, are not satisfactory, as the stiffness of the heel thus reinforced is a common cause of lameness which seriously impairs the efficiency of the workers. The costs of shoes used range from $1.37 per pair in Virginia to $3 per pair in Washington. The more usual costs are from $1.75 to $2.25, and the average cost is about $2 per pair. Reports of the life of shoes indicate that they will last under average conditions about 4 months; on rock work or work in marshes, however, their life probably will be shorter, and on light work somewhat longer than the average. The average cost of shoes per man per year as reported is $6.

Hats and Caps.

The hats and caps in use are of various forms, such as the ordinary convict-striped skull caps, golf caps, felt hats, and broad-brimmed straw hats. They vary in cost from 40 cents to $1 each and last from six months to one year. The average cost per man per year is approximately $1.

Special Articles.

Besides the staple articles above mentioned a number of special articles are supplied for use in rainy and cold weather. Among these are slickers, or oilcoats, rubber boots, rubber capes, and warm hats and overcoats. Usually such articles are supplied for the use of only a part of the force for the reason that it is the practice to employ only a few men away from shelter in bad weather. It is a good policy to provide about a dozen of each of the articles in a camp of 40 men, and such supplies will last at least one year. The cost of each are approximately as follows: Slickers, $2 each; rubber boots, $2.40 per pair; rubber hip boots, $4.90 per pair; rubber capes, $1.75 each; warm hats lined with fur, $1 each. The average costs of all clothing may be approximately summarized as follows:

Item.	Quantity per year.	Cost per man per year.	Item.	Quantity per year.	Cost per man per year.
Coats	1 to 3	$3.50	Socks	8 to 24	$1.00
Trousers	1 to 3	3.00	Special articles, including slickers, boots, etc.		1.00
Shirts	2	1.00			
Night shirts	1 to 2	.75			
Underclothes	2 to 4	2.50	Total cost of clothing per man		19.75
Shoes	3	6.00			
Hats or caps	1 to 2	1.00			

COTS AND BEDS.

The usual forms of beds provided may be described as box bunks, pallets, wooden or Army cots, and metal cots. The box bunks consist simply of a rough box placed directly on the floor or elevated

about 18 inches above it and usually filled with hay or straw upon which the bed covering is spread. The boxes sometimes are constructed in tiers, especially in the wooden cars. They are inexpensive, but apt to be very insanitary, and at best can only be regarded as makeshifts.

The pallets are made of mattresses, blankets, or quilts and are laid either directly on the floor or on continuous platforms, as in the Virginia camps.

The wooden cots usually are arranged to fold up and are either equipped with springs or made in the form of the Army cot, in which the springs are replaced by a sheet of canvas. These, as well as all forms of beds made of wood, are objectionable because it is difficult to keep them free from vermin. Metal cots were found in use in a few camps, in tiers in the steel cages and as single-deck or double-deck cots in the tents and wooden structures. These, as well as all other forms of beds, frequently are placed contiguous to one another.

The metal cot is by far the most desirable type from the standpoints of durability, economy, and cleanliness. They may be purchased at very reasonable prices from a number of manufacturers in various parts of the United States. The most suitable for the purposes of convict camps are those made of galvanized or aluminum-painted steel angles with sleeping surfaces of wire-link fabric, and helical springs at each end. In dimension they should be at least $2\frac{1}{2}$ feet wide and $6\frac{1}{2}$ feet long. They are manufactured in both double and single deck forms, and are so constructed as to be readily and quickly knocked down when the camp is moved. Desirable forms of double and single deck metal bunks are shown in Plate XIII, figures 1 and 2. A single-deck cot similar to the one shown can be purchased for not more than $3, and the cost of the double-deck cot will not be greater than $6. Bought in quantities of 25 or more it will be found usually that the cots can be supplied at about 20 per cent less than the foregoing prices.

BEDDING AND BEDCLOTHES.

For sanitary reasons mattresses stuffed with hay or straw are preferable to those filled with cotton batting. The ticks may be made very conveniently by women convicts, or in the penitentiary tailor shop. About 5 yards of ticking 36 inches wide are required for one tick, and the cost of the ticking is about 12 cents per yard, making the cost of a mattress tick about 60 cents for material alone. Such a tick will last about two years.

Pillow Ticks.

Pillow ticks made of the same material as the mattress ticks and in the same way will cost about 18 cents each and last about the same length of time.

Sheets and Pillow Cases.

At least four sheets, two sets of two each, should be provided for each inmate. The most suitable material of which to make them is unbleached cotton. About 3 yards of material will be required for each sheet, and, at the usual cost of 7½ cents per yard, a complement of sheets for one man will cost 90 cents. Each man may be expected to wear out two sheets a year, at a cost per year of 45 cents.

Pillow slips are as important as sheets and should be furnished. An allowance of two for each inmate should be made, and these will be worn out approximately at the rate of one per year. Each slip, made of unbleached cotton, will require 2 yards of goods, and the cost of one, as well as the cost per man per year, will be about 15 cents.

Blankets.

Gray cotton blankets, such as already are in use in a large majority of the camps, are the most suitable for the purpose. For a cot 2½ feet by 6½ feet they should be at least 5 feet by 7 feet in size, and enough of them should be on hand to keep the inmates comfortable without heating the sleeping rooms. This will require an outfit of at least 5 blankets per man, at a cost of 87½ cents each, or a total of $4.37. Under ordinary conditions each man will wear out one blanket a year, making the annual charge per man about 88 cents.

Summary of Cost of Bedding.

The foregoing costs of items of bedding per man per year are summarized as follows:

Mattress ticks	$0.30
Pillow ticks	.09
Sheets	.45
Pillow slips	.15
Blankets	.88
Totol cost of bedding per man per year	1.87

TABLES.

Plans for the construction of a very convenient form of mess table with benches combined are given in figure 10. Each table 10 feet long will seat 8 men without crowding. In the interest of neatness it is desirable to cover the top with white oilcloth. The bill of materials for the table is as follows:

Lumber—
- 2 pieces, 1½ by 10 inches, 10 feet long, dressed four sides.
- 1 piece, 1 by 12 inches, 10 feet long, dressed four sides.
- 2 pieces, 1 by 10 inches, 10 feet long, dressed four sides.
- 3 pieces, 1 by 4 inches, 10 feet long, dressed four sides.
- 1 piece, 1 by 4 inches, 12 feet long, dressed four sides.
- 1 piece, 2 by 4 inches, 18 feet long, dressed four sides.

Oilcloth, 3½ yards.

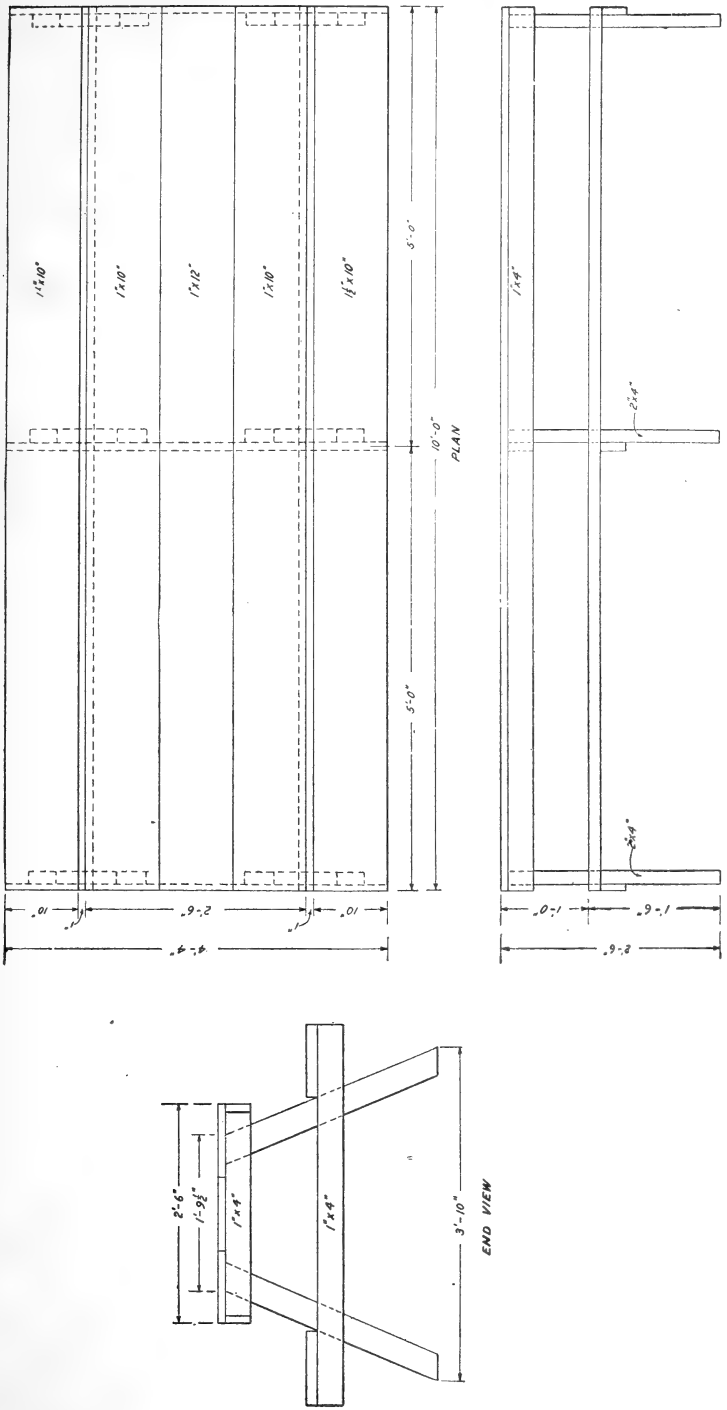

FIG. 10.—Details of mess table for convict camp.

Using yellow-pine lumber at $30 per M board feet, oilcloth at 25 cents per yard, and labor at $2.50 per eight-hour day the cost of such a table is approximately as follows:

Lumber, 78 feet b. m., at $30 per M	$2.34
Oilcloth, 3½ yards, at 25 cents per yard	.88
Labor, 2 hours, at 31 cents per hour	.62
Total cost of table	3.84

MESS UTENSILS.

The mess utensils commonly furnished to each prisoner are as follows: One tin dinner plate, one tin pint cup, one cheap metal spoon, and a tin dinner bucket of about 2 quarts capacity. In some camps knives and forks also are furnished. In general, the equipment furnished seems to be entirely suitable, but enameled-ware plates and cups are to be preferred to tinware.

SUMMARY OF SUPPLIES AND EQUIPMENT.

The prices given in the following summary are approximate only, and will vary from time to time and from section to section, but it is believed that they will give a fairly accurate idea of the relative cost of the various articles. All the articles are classified according to the grouping suggested under "Records and cost accounts," page 36, and the quantity of each article is that suggested for the stock of a camp of 40 convicts.

List of supplies, equipment, etc., for a camp of 40 convicts.

CLOTHING.

12 boots, rubber, knee length	per pair	$2.40
12 boots, rubber, hip length	do	4.90
Buttons, assortment.		
48 caps	each	.50
96 coats, cotton, stripes or plain color	do	.85
96 coats, woolen, stripes or plain color	do	1.50
96 coats, woolen tweed, stripes or plain color	do	2.90
96 drawers, fleece-lined cotton	do	.37½
96 drawers, Canton flannel	do	.50
48 hats, felt	do	1.00
48 hats, broad-brimmed straw	do	.20
50 pounds leather, sole	per pound	.43
96 nightshirts, ticking	each	.50
12 oil coats	do	2.00
96 shirts, ticking	do	.35
96 shirts, cotton duck	do	.75
96 pairs shoes	per pair	2.00
96 pairs socks, cotton	do	.07
96 pairs socks, woolen	do	.15
48 spools thread	per dozen	.50
96 trousers, cotton	each	.85
96 trousers, woolen	do	1.25

96 trousers, woolen tweed	each	$1.85
96 undershirts, fleece-lined cotton	do	.37½
96 undershirts, Canton flannel	do	.50
96 vests, woolen tweed	do	.90

QUARTERS.

Bolts, assorted.		
6 fire extinguishers	each	10.00
6 fire extinguishers	do	7.00
25 pounds floor filler	per pound	.10
100 gallons floor oil	per gallon	.50
2 glass cutters	each	.10
Hardware for buildings, assortment.		
Nails, assortment.		
2 putty knives	do	.10
Tacks, assortment.		
Washers, assortment.		
Window glass in size of lights	per square foot	.08

FURNITURE AND EQUIPMENT.

1 air compressor.		
1 air pump.		
1 air tank.		
2 alarm clocks	each	1.50
48 basins, enameled ware	do	.60
48 basins, tinware, capacity 3 quarts	do	.18
6 baskets, chip	do	.05
6 batteries, electric dry cell	do	.18
50 feet belt lacing, leather, ½ inch wide	per foot	.01½
200 blankets, cotton	each	.88
6 brooms, house	do	.40
2 brooms, whisk	do	.20
3 brushes, dust	do	.10
6 brushes, hair, stiff bristles	do	.35
3 brushes, paint, flat, 4-inch	do	.75
3 brushes, paint, flat, 2-inch	do	.50
6 brushes, scrub, stiff, white bristles	do	.15
3 brushes, shaving	do	.35
2 brushes, shoe (paste and polisher combined)	do	.25
2 brushes, stove (paste and polisher combined)	do	.15
12 chairs, folding arm	do	1.50
2 chamois skins	do	.50
12 checkerboards	do	.10
1 chisel set, ¼ to 2 inch sizes		3.30
2 chisels, cold	each	.25
1 pair clippers, barber's	per pair	2.50
2 gross clothespins	per gross	.80
200 feet clothesline wire	per foot	.004
1 clothes-washing machine	each	6.50
1 clothes wringer		4.00
6 coal hods, galvanized, large size	each	.50
6 combs, hair	do	.40
12 comforts, officers'	do	1.25
20 cots, double-deck, prisoners', 2 feet 6 inches by 6 feet 6 inches	do	6.00
40 cots, single-deck, prisoners', 2 feet 6 inches by 6 feet 6 inches	do	3.00

8 cots, single, officers', 3 feet by 6 feet 6 inches	each	$0.50
6 cuspidors, fiber, loose-covered	do	.50
1 desk, flat-top.		
3 gallons disinfectant and sprayer		4.00
3 dustpans, household size	each	.15
500 sheets fly paper, at		5.50
12 fly swatters	each	.10
12 fly traps, wire style	do	.12
6 garbage cans, heavy galvanized, capacity 25 gallons	do	1.50
1 gas engine, 2¾ horsepower, at		62.75
1 grindstone, 24 inches, mounted, at		2.90
3 hammers, claw	each	.50
6 handlanterns, white globes	do	.45
2 hatchets	do	.75
1 hot-water heater, at		20.00
1 hot-water tank.		
24 lamp chimneys	each	05
12 lamps, wall, with reflectors	do	.75
8 mattresses, cotton, 3 by 6 feet	do	3.75
96 mattress ticks, 2 feet 6 inches by 6 feet 6 inches	do	.60
2 monkey wrenches, small	do	.50
12 mop heads	do	.25
6 mousetraps	do	.10
12 packages needles, large eyes.		
2 oiling cans	each	.40
20 yards oilcloth	per yard	.25
12 pails, galvanized wash, capacity three gallons	each	.35
96 pillow slips	do	.15
48 pillow ticks	do	.18
12 boxes polish, stove	do	.10
3 razors	do	1.50
1 razor strop	do	1.00
1 saw, crosscut		1.60
1 saw, rip		1.60
1 scales, spring, 30 pounds capacity		3.50
3 screw drivers	each	.25
— pounds shaving soap	per pound	.25
3 shaving cups, glass	each	.25
1 shears, barber		.75
168 sheets, unbleached cotton	each	.23
2 shovels, fire	do	.15
2 shovels, square point	do	.50
144 bars soap, personal use	do	.03
6 soap dishes, enameled	do	.10
6 sponges, rough, large size	do	.40
24 stools, camp, folding canvas seats	do	.40
6 stoves, heating	do	8.50
6 tarpaulins, 12 by 30 feet	do	24.00
.. rolls toilet paper	do	.05
50 yards towel, crash, at		1.75
144 towels, plain, Turkish	each	.10
4 washboards, glass front	do	.50
4 washtubs, galvanized, capacity 20 gallons	do	1.10
1 whetstone, at		.10

KITCHEN AND MESS SUPPLIES.

6 bread pans, sheet iron, 12 by 24 by 3 inches deep	each	$1.50
6 cake turners, handled	do	.08½
2 can openers	do	.10
1 cleaner, meat, medium size	do	.25
1 coffee pot, enameled, capacity 4 gallons	do	2.00
1 coffee grinder, mill style, capacity 1 pound	do	6.00
2 corkscrews, with patent lighting appliance	do	.25
12 glass cruets, with spring metal tops, capacity 1 pint	do	.15
24 cups, china	do	.07
48 cups, enameled, capacity 1 pint	do	.12
48 cups, tin, capacity 1 pint	do	.05
48 dinner buckets, tin, capacity 2 quarts	do	.10
12 dippers, tin	do	.05
4 dishpans, agate ware, capacity 6 gallons	do	1.00
2 forks, carving, galvanized, with wooden handle	do	.25
2 forks, cooking	do	.15
60 forks, table, nickeled ware	do	.07½
2 frying pans, 15 inches diameter, 2 inches deep	do	.90
2 frying pans, 8 inches diameter, 2 inches deep	do	.45
3 funnels, small, medium, and large sizes		.10, 15 and .20
1 grater, tin		.10
1 grinder, meat, large size		2.00
1 kitchen range, hotel style		
2 knives, carving	each	.30
60 knives, table, nickeled ware	do	.07½
3 ladles, soup, enameled, capacity 1 pint	do	.25
1 measure, half-bushel		.30
1 measure, pint		.25
1 measure, quart		.25
1 measure, half gallon		.40
1 meat block brush, heavy wire bristles		.15
1 meat saw		.35
2 milk cans, capacity 5 gallons	each	1.00
4 paring knives	do	.10
4 pepper shakers, table, aluminum, weighted base	do	.10
6 pitchers, enameled, capacity 6 quarts	do	.95
24 plates, China, dinner	do	.12½
48 plates, enameled, dinner	do	.12½
48 plates, tin, pie	do	.02½
1 gross cans potash	do	.05½
1 refrigerator		25.00
2 roast pans, double	each	1.50
1 rolling pin		.15
1 salt box, container size for cook		.25
4 salt shakers, table, aluminum, weighted base	each	.10
24 saucers, China	do	.07
4 spoons, cooking	do	.20
24 spoons, table, nickeled ware	do	.12
60 spoons, tea, nickeled ware	do	.07½
6 stew pans, agate, capacity 2 gallons	do	.50
1 stock pot, retinned, copper bottom, capacity 15 gallons		4.50
1 stock pot, retinned, copper bottom, capacity 10 gallons		3.50

1 stock pot, retinned, copper bottom, capacity 5 gallons		$2.50
6 sugar bowls, glass, with spring metal tops	each	.25
6 tables, homemade	do	3.84

FUEL AND LIGHT.

6 electric searchlights, hand size	each	1.50
50 gallons gasoline, variable, per gallon		
50 gallons kerosene, variable, per gallon		
10 tons coal, variable, per ton		

MEDICINE AND MEDICAL ATTENTION.

1 pound absorbent cotton		.25
1 spool adhesive plaster, 4 inches by 5 yards		.75
2 oz. alcoholic solution, iodine, 3 per cent	per ounce	.12½
2 oz. aqueous solution, boric acid, 4 per cent	do	.12½
2 oz. aromatic spirits of ammonia	do	.07½
100 aspirin tablets, 5-grain		.90
1 12-inch basin, enameled		.60
2 tubes, bicarbonate of soda in petrolatum, 3 ounce capacity	each	.15
100 bismuth subcarbonate tablets, 5-grain		.19
8 ounces boric ointment, U. S. P	per ounce	.04½
500 Brown's mixture tablets	per C	.14
100 calomel and soda tablets, one-half grain	per ounce	.12
16 ounces castor oil	do	.02½
3 tubes catgut sutures, sterilized, assorted sizes	per tube	.20
2 catheters, soft rubber	each	.20
16 ounces chloroform liniment	per ounce	.05
500 compound cathartic pills	per C	.20
1 pint eosol		.34
16 ounces Epsom salts	per ounce	.00½
1 eyecup		.10
1 roll gauze bandage, 3 inches by 10 yards		.10
1 roll gauze bandage, 2 inches by 10 yards		.10
1 roll gauze bandage, 1 inch by 10 yards		.10
5 yards gauze dressing	per yard	.06
½ pint grain alcohol	per pint	.60
1 pound green soap		.15
4 6-inch haemostats	each	.90
1 hot-water bag		1.00
2 ounces Jamaica ginger	per ounce	.07½
2 medicine droppers	each	.02½
1 medicine glass		.10
8 ounces mercurial ointment, U. S. P	per ounce	.09
1 nail brush		.05
2 packages opal silk	each	.25
8 ounces potassium iodide solution, 10 grains to the teaspoonful	per ounce	.09½
1 probe		.30
100 tablets quinine sulphate, 5-grain	per C	1.15
12 safety pins, large		.05
2 scalpels	each	.50
1 pair scissors, 4½ inches		.75
1 pair scissors, surgical, 6½ inches		1.25
8 ounces sodium bicarbonate	per pound	.15

2 splints, No. 1	each	$0.50
8 ounces sulphur ointment	per pound	.75
1 smooth-dressing forceps		.50
1 dozen surgical needles		.50
1 ounce toothache drops		.25

RATIONS FOR CONVICTS AT ROAD CAMPS.[1]

INTRODUCTION.

To maintain the body in the highest state of health and efficiency it must be supplied with those foods best adapted to build up the wasted tissues, furnish energy for the production of muscular activity, and yield heat for the upkeep of the temperature.

When a good variety of animal and vegetable foods is at hand in sufficient quantities, the instinct and taste of the individual generally may be relied upon to guide him in the selection of those foods best adapted to his needs, but when, through lack of means or deprivation of freedom, he is compelled to submit to certain limitations of his food necessity, rather than natural desire, may determine how his body shall be nourished. It is highly important, therefore, that those who are to restrict or supervise the feeding of any group of individuals should have some knowledge of foods and their relations to the human body.

Among the most important constituents of food are the substances known as protein, fats, carbohydrates, and mineral salts.

PROTEIN.

Protein is usually considered of first importance in food values, because it is the only constituent of food which contains nitrogen, the element essential for the building and repair of the nitrogenous tissues composing the body itself. Protein is contained in largest quantities and in forms most available to the body in lean meat, fish, cheese, eggs, milk, peas, beans, oatmeal, and wheat flour. It is noticeable that protein is in the greatest amounts and the most useful forms in the more expensive articles of food, and that fat meat, syrup, green vegetables, and molasses are not included. These latter foods, while by no means without great value in other ways, do not alone, with the possible exception of some green vegetables, supply the body with sufficient protein for its needs.

The results obtained from much careful study of different races and groups of individuals have led an investigator of wide experience in India to conclude that all successful people have habitually consumed protein in large amounts, whereas those who have adhered to a low protein standard have not progressed correspondingly physically, mentally, or morally. The following saying concerning the Brahmans,

[1] Credit is given to the Office of Home Economics of the State Relations Service of this department for aid in the preparation of this part of the bulletin.

who are vegetarians, exemplifies the effects likely to accrue from foods deficient in proteins: "It is better to sit than to walk, to lie than to sit, to sleep than to wake, and death is best of all."[1]

Dietary studies have shown that in communities where there exists a generally low condition of mental and physical efficiency, thrift, and commercial success, there, too, may be found a low proportion of proteins in the diet. As examples of this there are pointed out the negro and poor white of the South and the Italian laborer of southern Italy, all of whom are far down the scale as regards their sociological conditions and commercial enterprises and whose diet is very low in protein. Yet when "hog and hominy" are generally supplemented by a more liberal diet consisting of milk, eggs, meat, cheese, cowpeas, and beans their general condition and productive powers have been observed to increase markedly.

It is not denied that it is quite possible to maintain life, a certain degree of health, and a measure of strength on a diet somewhat low in protein, especially if the foods are selected carefully, have little waste, and are calculated to supply all the needed protein "building stones"; but the object to be attained is to provide that food which is best for the efficiency, economy, and general welfare of the body.

FATS AND CARBOHYDRATES.

The fats are contained principally in such foods as butter, oleomargarine, lard, salad oil, fat salt pork, bacon, and fresh meats and fish, while the carbohydrates include the sugars and starches and form the principal constituents of foods derived from plants. These foods can not build tissue, but they maintain the heat of the body and furnish energy to carry on the vital processes and for work and activity. The vegetable or plant foods also contain a considerable amount of indigestible material which affords no nourishment, but furnishes the bulk necessary to stimulate the flow of digestive juices and give the walls of the intestine something to work upon. If the food were all of such a character that it could be absorbed as total nutriment the bowels would not function properly and serious consequences would follow.

MINERAL MATTER OR ASH.

Mineral salts are required by the body for bone formation and other physiological processes. A generous and varied diet is much more likely to supply the required kinds and amounts of these essential constituents than is a diet restricted in quantity and variety. Fresh green vegetables and fruits are not of great value as tissue-building foods or energy producers and are not suitable to use as substitutes for the more substantial foods, but they contain considerable amounts of mineral salts, which are as essential to the health of the body and

[1] D. McCay, "The Protein Element in Nutrition."

its vital processes as are other food constituents and should always be given a place in the diet for this reason. These also are useful for increasing the bulk in a diet which is already sufficiently nutritious but lacking in amount. Then, too, as Dr. Langworthy has observed,[1] the use of fruits, fresh and preserved, often makes palatable an otherwise rather tasteless meal. Jam with bread is a reasonable combination, the highly flavored fruit product whetting the appetite for the needed quantity of rather flavorless bread.

From the preceding paragraphs it is evident that various kinds of food are necessary if the body is to be well nourished. It now remains to be seen in what combination these articles of food should be selected and in what quantities they should be provided.

It has been shown already that a certain amount of protein food is necessary. Under ordinary conditions of life natural tastes and desires generally lead to the selection of suitable foods, and so it comes about that the common articles of food consumed by the great majority of people in good health consist of meats, fish, eggs, milk, butter, cheese, sugar, flour, meal, cereals, fruits, potatoes, and other vegetables. In such foods as these there is plenty of protein material, and when the amount of food consumed is sufficient to satisfy the appetite and produce a feeling of satisfaction there is no doubt but that the body is supplied with a store from which it may pick out those combinations so essential to its nutrition. When, however, economic conditions become such that the more expensive elements (meat, fish, eggs, milk, and cheese) must be curtailed and the diet must be limited to a few articles of food, and those the very cheapest, care must be taken to provide a sufficient amount of proteins.

A diet consisting of salt fat pork, corn meal, a little white flour, syrup or molasses, and a few green vegetables and fruits is high in fats and starches but low in protein. Salt fat pork consists almost wholly of fat, and while it adds much to the energy value of the diet it is very low in protein (tissue-building substance). The other foods also are low in protein, so that the diet is one-sided and poorly balanced. Taken as a whole, the people who live largely on a diet of this sort are more liable to diseases of nutrition (scurvy, beriberi, pellagra) and are neither so robust, active, nor productive of efficient labor as others who are more fortunately situated. Combined with foods of this sort there must be protein foods, such as beans, cowpeas, salt fish, and any others that can be afforded if a suitable diet is to be provided.

THE FOOD IN CONVICT CAMPS.

It is reasonable to assume that the food furnished to convicts at work on the public highways while serving their sentences should be wholesome and nutritious but that the cost should be as low as

[1] U. S. Department of Agriculture: Farmers' Bulletin 293.

is consistent with proper nourishment. In what ways the problems of feeding presented themselves to the various camp officials and with what success they were solved will now be discussed.

In general, it may be said that a wide variation exists in the quality and kind of food furnished at different camps, but without exception the quantity served was always sufficient to satisfy the desires of the men. The greatest differences in food were apparent between the camps in the Southern States and those in the East and West. In each of these sections of the country, however, the prisoners received the kinds of food to which they were accustomed and which seemed to be adapted to their particular needs.

At honor camps the quality of the food is always a prominent feature, because it is hoped that by making the diet attractive and adding certain delicacies the men may be made more contented and less liable to attempt to escape. Numerous articles of food in the dietaries of honor camps are not, therefore, justified on the basis of food values alone, and the cost of feeding does not represent the lowest price for which the proper amount of nourishing food can be provided. In fact, the food frequently is of a higher grade than that which the average laboring man is able to provide for himself and his family. At certain camps the food is so attractive and the quantities so liberal that overeating is a common cause of sickness. Men accustomed to prison fare for long periods of time are especially prone to disturbances of digestion when indulging to excess in the tempting viands of the honor camps.

The following menus in effect at one of the eastern camps visited may serve as examples of the food served at several camps of this type:

Breakfast:
- Fried breakfast bacon and eggs (2 slices of breakfast bacon and 2 eggs to each man).
- Fried potatoes.
- Bread and butter, or hot biscuits and butter (without stint).
- Coffee, with sugar and fresh milk.

Dinner:
- Beefsteak with onion gravy, tomato catsup; or pork chops; or roast meat.
- Mashed potatoes.
- Stewed tomatoes or other vegetable.
- Bread and butter (without stint).
- Mince pie, or pudding, or some other dessert.
- Coffee, with sugar and fresh milk.

Supper:
- Scrambled eggs, or poached eggs on toast (2 to each man).
- Hot biscuits and butter.
- Stewed fruit.
- Cookies or cakes (freshly baked at camp).
- Hot cocoa, fresh milk.

This camp consisted of 18 white prisoners and the cost of the rations was estimated by the camp officials at 30 cents per person per day, which, however, did not include the cost of fresh milk, butter, and eggs. The latter supplies were furnished to the camp by the county in which the men were at work.

The estimated cost is remarkably low for the kind of food furnished, but the camp was located favorably in a rich farming district, and supplies were purchased at an unusually low price.

A diet such as this leaves nothing to be desired as far as general nutritive properties and the pleasure of taste are concerned, but it is largely composed of the more expensive articles of food for which cheaper substitutes might be found readily. Only under exceptional conditions can food of this sort be provided, and for economic reasons its use is quite impractical.

Following is another menu at one of the eastern camps:

Breakfast:
- Oatmeal mush; beef hash, or steak, or ham, or bacon, or eggs.
- Bread and butter (without stint).
- Coffee, with diluted evaporated cream sweetened to prevent waste of sugar.

Lunch (on road):
- Three sandwiches of the following kinds: ham, egg, corned beef, roast beef, bacon, or cheese.
- Tomatoes or fruit.
- Cold coffee or tea.

Dinner:
- Soup or chowder (three times a week).
- One of the following dishes: Roast beef, boiled ham, corned beef and cabbage, boiled beef, Hamburg steak, mutton potpie, beef stew, pork and beans, or fresh fish.
- Boiled or mashed potatoes.
- Stewed corn or rice, or beans or peas, or some other vegetable.
- Bread and butter.
- One of the following kinds of dessert: Pie, pudding, sweet buns, coffee cake, or stewed fruit.
- Coffee, tea, or cocoa, with diluted evaporated cream sweetened.

This camp was composed of 60 white prisoners. A contract had been made for the feeding of the men at the rate of $2.50 a week per man (about 36 cents per day), which included the cost of hauling all supplies for a distance of about 12 miles. The food was prepared and served by prisoners under the supervision of the contractor.

The articles of food furnished comprise a well-balanced mixed diet of considerable variety, with fresh meat in one form or another two or three times a day, but in spite of this the prisoners were dissatisfied and with just cause. The food was served in an unappetizing manner and was poorly apportioned; lunch pails were partially filled the day before they were to be used and were allowed to stand in a warm place so that the contents soured or became stale; and the general

supervision was lax. This is a good illustration of the fact that a high grade of food may be distasteful if prepared and served in a careless manner. These men undoubtedly would have been better satisfied with cheaper articles of food carefully prepared and decently apportioned and served. This was the only honor camp visited in which a contractor was given supervision of the feeding, and it is interesting to note that it is also the only camp at which any complaint was heard in regard to the food.

Following is a menu of a western camp:

Breakfast:
- Cereal (oatmeal mush, hominy, or corn-meal mush), with condensed milk and sugar.
- Fried bacon.
- Bread, with corn sirup.
- Coffee, with condensed milk and sugar.

Dinner:
- Fresh meat (beef, mutton, or pork).
- Potatoes.
- One other vegetable, including a variety of fresh vegetables in season.
- Bread.
- Fresh or preserved fruit.

Supper:
- Meat stew, or cold left-over meat, or pork and beans.
- One or two fresh vegetables, or canned vegetables when fresh vegetables are not available.
- Bread.
- Stewed fruit or fresh fruit.
- Coffee with sugar and condensed milk.

Vienna sausage, macaroni, and cheese also were used for varying the diet.

This camp was composed of 70 prisoners. The food was well prepared by a good cook and neatly served. It furnishes an excellent example of a moderate-priced, well-balanced diet for men at hard muscular labor. The average cost of the ration was 28.8 cents notwithstanding the fact that the camp was located 20 miles or more from the source of supplies.

It should be noted that breakfast consists mainly of cereal, bacon, and bread. This is a nutritious, convenient, and economical meal, and does not require the addition of meat or eggs to make it rational as long as the quantity served is sufficient to satisfy the appetite. Whatever constituents may be lacking will be made up readily at the next meal which consists of meat, vegetables, and fruit.

Dinner is seen to consist of plain substantial food materials, with fresh or preserved fruit in place of pies, puddings, or cakes. Not only are the fruits less likely to cause distress or digestive disturbance than the latter more elaborate and expensive combinations, but they are especially valuable because of their mineral constituents which are needed by the body.

Supper is a well-balanced meal made up from left-over meat and vegetables with an occasional extra dish for variety. Butter is entirely absent from the diet, the fat being furnished by the bacon and the meats.

Another western camp menu is as follows:

Breakfast:
- Oatmeal or corn-meal mush.
- One of the following: Fried steak and onions; fried ham; breakfast bacon; fried liver; corned-beef hash.
- Potatoes (fried, stewed, or potato chips).
- Bread.
- Sirup.
- Coffee, with evaporated milk and sugar.

Dinner:
- Soup (four times a week), tomato, cream of tomato, rice and tomato, or split-pea.
- One of the following: Roast beef with brown gravy, and macaroni and cheese; short ribs of beef; boiled ribs of beef; stewed beef; braised ribs of beef with tomato sauce.
- Potatoes (mashed, browned, or boiled).
- Pink or navy beans and rice, or turnips, or macaroni, or cabbage.
- Dessert (four times a week): Apple roll, raisin roll, or cottage pudding.

Supper:
- Beef stew, or fried hash, or chili con carne, or boiled beef.
- Always one of the following: Stewed navy beans, pink beans, or baked beans.
- Raw cheese and onions (two or three times a week).
- Always one of the following: Stewed prunes; stewed apples; stewed raisins.
- Bread.
- Coffee.

All of the food materials included in this diet are wholesome and nutritious, but a much greater variety than is necessary is furnished at each meal. The redundancy may best be discerned by comparison with the preceding menu.

Soup may be considered a luxury and is justified only when the ingredients for its concoction are at hand and no extra expense is incurred in its preparation. It contains in itself very little nutriment, but is useful for soaking bread and adding to foods which otherwise would be too dry.

Such combinations as meat and macaroni and cheese, or meat and stewed dried beans, or meat and cheese are both costly and unnecessary. All these are the more expensive foods, rich in proteins, and a sufficient quantity of one of these dishes at a meal will give fully as much satisfaction. Then, too, when two or more rich protein foods are provided at one meal the opportunity for variety is greatly reduced—the greater the number of food materials served at one time the oftener they must appear, and the more monotonous they will become.

The cost of this ration in a camp of about 50 men was 41.4 cents, which is more than the average free laborer could afford at his own home.

In the honor camps of the State of Washington the variety of foodstuffs used and the amounts in which they were apportioned were based to a certain extent upon the garrison ration of the United States Army. The camp cooks were given lists of the foods with the quantities allowed each man, and using the amounts designated they selected the food materials and prepared the meals for their respective camps. All food supplies for the day were weighed out each morning, and records of the amounts used were sent to the office for filing. In this way it was possible to keep accurate cost data and to account for all food materials purchased for the camp.

At the guarded camps this system was quite satisfactory and the men were well fed at an approximate cost of 29 cents a man per day; but at the honor camps the principles of the Army ration were not strictly adhered to and butter, eggs, pies, cakes, canned fruits and vegetables, and preserves, were used to such an extent that the cost of the ration was at times well over 50 cents.

The diets shown thus far include most of the foods which are in common use throughout the country and are a fair indication of the kinds of food served in camps composed mostly of white prisoners in the Eastern and Western States. They contain a considerable variety of foods, both animal and vegetable, and in general represent those combinations which years of experience have proved suitable for supplying the needs of the body.

The average cost of camp rations in the Eastern and Western States visited is as follows: New York, 32.9 cents; New Jersey, 34.5 cents; Michigan, 40 cents; Colorado, 28.8 cents; Utah, 25 cents (estimated); Wyoming, 45 cents (estimated); Washington, 42 cents; Oregon, 50 cents (estimated); Arizona, 41.4 cents; New Mexico, 45 cents. General average, 38.5 cents.

In convict camps in the South the negroes form by far the largest proportion of the population and the food requirements are somewhat different from those of the white prisoners. The food which they like and to which they are accustomed, consists mainly of salt fat pork, corn meal, white flour, molasses, salt fish, cowpeas, beans, potatoes, and a limited amount of green vegetables and fruit. These foods may be combined in such a manner as to make a well-balanced diet quite suitable for supplying the needs of the negro laborer. When the diet is limited to these few articles of food, however, much greater care is necessary in order that the protein content may not fall too low. Cowpeas, beans, and salt fish contain protein in greater proportions than the other foods and it is very important

that these should be served regularly and in suitable amounts. Without their use the diet will become one-sided, and the consequences previously mentioned in connection with insufficient protein will follow.

In all southern convict camps it is the endeavor to serve fresh meat, usually beef, either once or twice a week. This forms a very valuable addition to the diet in the way of protein food, and is a pleasing variation from the regular bill of fare. The proportion of fresh meat used is, of course, very small as compared with the amount furnished in the diets of the eastern and western camps. It is estimated that in the average diet in the southern camps beans and peas furnished about 22 per cent of the total proteins and 8 per cent of the total energy, while in the ordinary diet of the free working man beans and peas form from 3 to 4 per cent of the total proteins and 1 per cent of the total energy, the difference being made up largely of the higher priced animal protein of fresh meat.

It is well known that the protein constituents of fresh meat and fish are more like the human body in composition, and so are more thoroughly digested and assimulated than the protein of peas and beans, and a common experience after eating these latter foods in any quantity is the occurrence in the intestines of what is known as flatulence or gas. Convicts at hard labor on the roads, however, seem to experience little difficulty in digesting these foods and in assimilating a high percentage of their proteins. The fact that peas and beans are furnished as a regular part of the ration, and in combination with such other foods as salt pork, bread, vegetables, salt fish, molasses, and coffee is important, because it probably makes their digestion and assimilation more thorough. At most convict camps the ration of dry peas or beans seldom exceeds 4 ounces. This is an amount which experience has shown to be reasonable in the diet of a man at hard labor, but it is doubtful if the quantity should be exceeded except under extraordinary circumstances.

That the food provided is satisfactory in general is best shown by the testimony and state of nutrition of the convicts themselves. They do not complain of the food, although perfectly free to find fault with other conditions. Save an occasional longing for a lemon, a pickle, a piece of cake, or some ice cream, they have no suggestions to offer in regard to the diet, and express themselves as being well satisfied.

Negro convicts at work on the roads were serving sentences of from 10 days to life, and although the majority were perhaps short-term men, a number of prisoners who had lived in the camps for periods of from one to seven years came under observation. These men were almost invariably well nourished and in good condition as far as the

effects of food were concerned. While it was impossible, in the time available, to obtain records of the loss or gain in weight of convicts assigned to road camps, it was asserted very generally and emphatically by camp physicians and superintendents, prison officials, and others having an intimate knowledge of convict camps, that there was, as a rule, a distinct gain in weight and a general betterment in the physical condition of the men after entering the camp. Of this there is scarcely a doubt, for although camp conditions may be far from what they ought to be, they are in many cases better than those to which the prisoners have been accustomed before their arrest, and they are most assuredly far superior to those of many of the jails in which men are oftentimes confined for several months before sentence to the road camps. In writing of the food in the jails of one of the Southern States, the State prison inspector says:

> Prisoners in the jail of —— are fed by the sheriffs without supervision of any kind whatsoever. The food usually consists of a small piece of salt side meat, about three tablespoons full of beans or peas, and a "hunk" of poorly made corn bread, said bread usually being made of meal and water without grease. The sheriffs are recompensed by the State for feeding the prisoners as follows: From 1 to 10 prisoners, for each prisoner, 60 cents per day; for more than 10 and not exceeding 20 prisoners, 50 cents per day; for more than 20 and not exceeding 40 prisoners, 40 cents per day; for more than 40 prisoners, 30 cents per day. In most of the jails only two meals are served daily.
>
> I estimate (and base my figures on frequent inspections and close observations of the meals served, and from reports received) that in one jail in our State the profit to the sheriff is no less than $1,000 a month on his feed bill alone. This is a woeful waste of the State's funds, and should be remedied by some legislative enactment.

Surely the road camps are an improvement over this, and a gain in weight after a period in jail is to be expected.

Diseases such as scurvy, beriberi, and pellagra, which might result from a one-sided or eccentric diet, were diligently sought for, but were conspicuous by their absence, with the single exception of a camp in South Carolina, where, in 1910, 17 cases of beriberi had occurred, and in 1914 five cases of pellagra had developed, resulting in two deaths. It was impossible to obtain from the records of this camp accurate detailed information in regard to the kinds of food which had been used and the amounts consumed, but it may be said safely that such information, could it be accurately obtained, would reveal the fact that the food actually consumed by the stricken men was in some way faulty. It was said that in 1910, when beriberi broke out at the camp, the diet consisted of hominy, salt pork, some kind of fresh vegetable every day, corn bread and molasses, and occasionally potatoes. Fresh meat usually was provided about twice a week. Rice never was served. After the occurrence of the 17 cases of beriberi the location of the camp was changed, and the diet received additions in the form of peas, beans, salt herring, canned

tomatoes, white bread, and rice. These foods are now served as follows:

Breakfast:
- Hominy grits.
- Fried bacon.
- White bread.
- Molasses.
- Coffee with sugar.
- Canned tomatoes (average two days a week).
- Salt herring (average one day a week).

Dinner:
- Stewed beans, or stewed cowpeas, or Irish or sweet potatoes, or cabbage (rarely), or green vegetables.
- Boiled rice (daily).
- Boiled bacon.
- Bread (very seldom have bread for dinner).

Supper:
- Hominy grits.
- Fried bacon.
- White bread with sugar or sirup.

Corn meal is very seldom used at this camp. Fresh meat is supposed to be served once a week, but it is not always possible to obtain it as often as that, and at the time of the visit the cook said that no fresh meat had been served for two months.

After this diet had been in use for about a year, two cases of pellagra developed. They are reported to have recovered after two or three months with no special treatment and no change of diet. From that time up to 1914 sporadic cases have occurred, but have seemed to recover. In 1914 four more cases of pellagra developed, all at about the same time. Two of the stricken men had been in the camp for more than a year, and the other two for about four months each. Two of these cases died in about six months from the time the disease was first noticed, and the other two made an apparent recovery, and were discharged from the camp at the expiration of their terms.

The following tables are fair examples of the meals served in convict camps in the Southern States:

VIRGINIA: COST OF RATION ABOUT 11 CENTS PER DAY.

The food materials and the quantities in which they are intended to be used are as follows:

	Ration (ounces).		Ration (ounces).
Salt fat pork (plates)	7	Salad	13
Fresh meat (Sundays and holidays)	12	Turnips	16
White flour	8½	String beans	13
Corn meal	7⅛	Rice	1⅝
Dried beans or peas	5⅓	Dried apples or peaches	2⅔
Salt fish	4	Sugar	¼
Potatoes	16	Molasses	4
Cabbage	13	Coffee	⅓

These foods are commonly served in the following manner:

Breakfast:
- Fried salt pork.
- White biscuit (three times a week).
- Corn bread (four times a week).
- Molasses.
- Coffee.

Dinner:
- Stewed beans or peas, or one other vegetable.
- Boiled pork (cooked with the beans or vegetable).
- Corn bread.

Supper:
- Salt herring.
- White biscuit (three times a week).
- Corn bread (four times a week).
- Stewed dried fruit.
- Molasses.

A stew of fresh meat and vegetables is provided on Sundays and holidays, and peas or beans are served four times a week, on an average. A dinner consisting of boiled pork, corn bread, and some vegetable is served about twice a week.

At one Virginia camp the officer in charge was able to raise fresh vegetables at the camp and to furnish the men with a greater variety of food than would have been possible otherwise. The money saved by raising vegetables at the camp was expended in pickles and a few other luxuries, which added vastly to the satisfaction of the men.

NORTH CAROLINA: COST OF RATION ABOUT 21 CENTS.

Breakfast:
- Fried salt pork.
- White biscuit.
- Molasses.
- Coffee, with sugar.

Dinner:
- Stewed peas or beans (about three times a week) or cabbage or Irish potatoes or any other vegetable procurable.
- Boiled salt pork.
- Corn bread.

Supper:
- Fried salt pork.
- Corn bread or white biscuit.
- Fresh beef (served twice a week).
- Bread pudding or preserves (served once a week).
- Molasses.
- Coffee.

SOUTH CAROLINA: COST OF RATION ABOUT 18 CENTS.

Breakfast:
- Hominy grits.
- Corn bread or white biscuit.
- Fried salt pork.
- Coffee (not every day).
- Buttermilk on an average of once in two weeks.
- Molasses.

Dinner:

Stewed peas or beans (about four times a week) or potatoes or cabbage or greens or any other vegetable procurable.
Soup at rare intervals.
Boiled salt pork.
Corn bread.
Molasses.

Supper:

Same as breakfast, except flour bread instead of corn bread and salt fish instead of pork sometimes.

Fresh meat is served once a week when it can be obtained.

GEORGIA: COST OF RATION ABOUT 20 CENTS PER DAY.

The Prison Commission of Georgia has prescribed the following ration list as the minimum food allowance which may be given to convicts employed in the road camps:

	Ounces.		Ounces.
Salt pork	12	Sirup (3 times a week)	2
Fresh pork, beef, mutton, or kid (twice each week)	16	Vegetables (3 meals a week)	6.4
Corn meal	9.6	Coffee (1 cup at breakfast)	.32
Wheat bread (3 meals per week), flour per meal	2.4	Salt	.64
Baking powder	.16	Pepper	.02
		Vinegar	.32

The meals actually served at the camps are more liberal than these allowances would indicate. The following is a fair sample:

Breakfast:

White biscuit (from 2.4 ounces flour).
Fried salt pork, 4 ounces.
Molasses.
Coffee.

Dinner:

Fresh meat, 16 ounces (two days a week).
Stewed peas or beans, 4 ounces (three or four days a week).
Some seasonable vegetable when peas or beans are not given.
Boiled salt pork, 4 ounces (when fresh meat is not provided).
Corn bread (as much as desired).

Supper:

Salt fish, 5 ounces.
Boiled rice or left-over vegetable.
Corn bread.
Molasses.

Many of the camps are supplied with fresh vegetables raised on the convict farms. An attempt is made to vary the vegetables as much as possible.

FLORIDA: COST OF RATION ABOUT 25 CENTS.

Breakfast:

Rice or hominy grits.
Corn bread or white biscuit.
Fried salt pork (with tomato sauce occasionally).
Coffee, with sugar and condensed milk.
Molasses.

Dinner:
Fresh meat (twice a week).
Stewed peas or beans (three or four times a week).
Some readily procurable vegetable when peas or beans are not used.
Boiled pork (cooked with beans or vegetables).
Corn bread.
Supper:
Cabbage or turnips or potatoes or yams.
Fried salt pork.
Corn bread.
Molasses.

ALABAMA: COST OF RATION 12 TO 15 CENTS.

Breakfast:
Hominy grits.
Hashed or browned potatoes with gravy or salt pork.
White bread.
Coffee, with sugar.
Dinner:
Stewed peas or beans or boiled cabbage once a week.
Boiled salt pork.
Corn bread.
Supper:
White bread.
Cold beans or peas (if desired) or salt fat pork.
Molasses.
Coffee.

Beef stew with Irish potatoes is served once a week, and sweet potatoes, boiled or baked, are served twice a week in addition to the regular food.

TEXAS: COST OF RATION ABOUT 33 CENTS.

Breakfast:
Boiled rice.
Hot biscuits.
Fried potatoes.
Fried salt pork.
Molasses.
Coffee.
Dinner:
Fresh meat twice a week.
Stewed beans or peas (daily except when fresh meat is used).
Boiled cabbage, or potatoes, or some other vegetable (daily).
Boiled salt pork.
Bread pudding or stewed fruit.
White or corn bread.
Coffee.
Supper:
Hot biscuits.
Cold left-over vegetables.
Fried salt pork, or cold left-over meat.
Molasses.

This is an excellent bill of fare. The camp, however, was composed entirely of white prisoners who were working under the honor system.

In only one camp visited was the following type of "contract" system in use. The superintendent had the contract for feeding the men and received 40 cents apiece per day for the first 20 men and 35 cents for each man over. The camp was composed of 45 convicts. The following table is a comparison between the food served at this camp under the contract system and the food served at a similar camp in an adjoining county where the bills for food were paid directly by the county. The food at both camps was satisfactory in regard to quantity served.

COST OF FOOD SUPPLIED BY CONTRACT AND BY COUNTY.

Food by contract at 40 cents for first 20 men and 35 cents for each man after—45 convicts.

Breakfast:
- Grits.
- White biscuit.
- Fried bacon.
- Molasses.
- Coffee with sugar.

Dinner:
- Stewed beans, or peas, or cabbage.
- Boiled bacon.
- Irish or sweet potatoes.
- Corn bread.
- Fresh green vegetables occasionally.
- (Fresh meat on Sunday.)

Supper:
- Same as breakfast, except rice instead of grits.

Food paid for directly by county at the rate of 24 cents per man per day—30 convicts.

Breakfast:
- Rice or grits.
- White biscuit.
- Fried bacon.
- Peas or beans (left-overs).
- Molasses.
- Coffee, with sugar or molasses.

Dinner:
- Stewed beans or peas, or turnips, or cabbage.
- Boiled potatoes (white or yams).
- Boiled bacon.
- Corn bread.
- Fresh green vegetables occasionally.
- (Fresh meat or fish on Sunday when location of camp permits.)

Supper:
- Same as breakfast.

On the basis of 45 men to each camp the county ,which paid directly for the food would save $73.50 per month and $882 per year, and could if it desired expend this sum in improving the camp.

In all of the foregoing diet tables there is a striking similarity in the character of the food, but except in a few instances quantities are not given, because accurate detailed information could not be obtained. An intensive dietary study to determine the fuel value of the food actually consumed and the amounts of the food constituents, while of great interest, was beyond the scope of this investigation.

Most of the diets would be improved by the addition of a few inexpensive food materials, such as vinegar, pickles, stewed dried fruits and uncooked green vegetables from time to time as opportunity affords.

Vinegar, for beans and certain vegetables, and pickles are actually craved by many of the negro convicts. While these materials add little, if any, fuel value to the food, they contain certain acid substances of which the body may be in need. In cases where they would add greatly to the satisfaction of the men there can be no reason for not providing them.

Stewed dried fruits, cooked unripe green fruits stewed with sugar, and fresh fruits are a valuable part of any diet. They are pleasing to the taste, add variety, and contain important mineral salts. They may be used in the place of desserts, and should be served daily in some form.

Fresh uncooked green vegetables, such as cabbage, onions, radishes, tomatoes, and the like, form healthful additions to the diet and should be served whenever practicable. It is very essential, however, that they should be washed thoroughly in clean water and not come into contact with dirty hands or filth before being served.

DIET TABLES FOR CONVICT CAMPS.

The following diet tables (18 to 25) have been designed for the purpose of meeting the peculiar requirements of convict camps so far as it is possible to do so. It is believed that these tables are composed of the cheapest food materials that can properly be used in the feeding of convicts, and that the amounts and proportions are such as to insure a well-balanced diet of sufficient food value to maintain a man at hard muscular labor. The food requirements of individuals differ considerably and are also influenced markedly by the amount of hard labor actually performed. It is not to be expected that men on yard work about the camp will require the same amount of food as those engaged in pick and shovel work on the road. Actual experience alone can determine the exact requirements of the camp as a whole.

These tables, as well as the entire discussion pertaining to the subject of food, have been approved by the Office of Home Economics of this department, whose cooperation was sought and whose helpful suggestions have been much appreciated.

TABLE 18.—*Diet without fresh meat.*

[Ration, 17.4 cents.]

Foodstuff.	Ounces.	Proteins.	Fats.	Carbohydrates.	Cost per pound (estimated).	Cost per ration (estimated).
		Ounces.	*Ounces.*	*Ounces.*		
White flour (or Graham or whole-wheat flour)	8	1.064	0.120	5.816	$0.04	$0.02
Corn meal	8	.736	.152	6.032	.025	.013
Salt fat pork (plates, backs, bellies.)	8	.592	5.320	.....	.12	.06
Navy beans	4	.900	.072	2.384	.06	.015
Potatoes (Irish, sweet, or yams)	16	.288	.016	2.350	.015	.015
Salt codfish	5	.950	.020	.....	.09	.03
Dried fruit	1 3/10	.027	.....	.933	.12	.009
Sugar	1/2	.....	.....	.500	.06	.002
Molasses	2	.....	.....	1.40	.05	.006
Coffee (1 cup)	2/5	.....	.....	.....	.16	.004
Solids	53 1/5	4.557	5.700	19.415	.....	.174
Calories	.....	524	1,442	2,212	.....	.....

Total calories 4,178.

Nutritive ratio, 1: 6.9.

Ratio fat to carbohydrate, 1: 1.5.

Breakfast:

White or Graham biscuit.
Fried pork, 4 ounces.
Molasses, 2 ounces.
Sugar, one-half ounce, with coffee.
Coffee, 1 cup.

Dinner:

Corn bread (from corn meal, 8 ounces.)
Stewed beans (from dried beans, 4 ounces.)
Boiled salt pork, 4 ounces (boiled with beans.)

Supper:

Stewed codfish (milk sauce.)[1]
Boiled potatoes, 16 ounces.
Stewed fruit.
White or Graham biscuit.

Fresh green vegetables or fruits, in season, cooked or uncooked, should be added to this diet; also pickles in reasonable amounts.

[1] To prepare a milk sauce for codfish and for moistening potatoes: Add 1 ounce condensed milk to 1 ounce water. Season with salt and pepper. Heat and thicken slightly with a little flour dissolved in cold water. Add a little finely chopped pickle and pour over fish. Extra cost=⅛ cent.

TABLE 19.—*Diet without fresh meat.*

[Ration, 16.3 cents.]

Foodstuff.	Ounces.	Proteins.	Fats.	Carbohydrates.	Cost per pound (estimated).	Cost per ration (estimated).
		Ounces.	*Ounces.*	*Ounces.*		
White flour (or Graham or whole-wheat flour)	8	1.064	0.120	5.816	$0.04	$0.02
Corn meal	8	.736	.152	6.032	.025	.013
Oatmeal (or hominy grits)	2	.322	.144	1.350	.04	.005
Dried peas	4	.984	.040	2.480	.06	.015
Salt fat pork (plates, back, bellies)	8	.592	5.320	.....	.12	.06
Potatoes	12	.216	.012	1.764	.015	.012
Onions	1	.014	.003	.089	.02	.001
Salt fish (herring, mackerel)	5	1.025	.440	.....	.05	.016
Dried fruit	$1\frac{3}{10}$	.027	.....	.933	.12	.009
Sugar	$\frac{1}{2}$	.....	.....	.500	.06	.002
Molasses	2	.....	.....	1.40	.05	.006
Coffee	$\frac{2}{5}$	.....	.....	.....	.16	.004
Solids	$52\frac{1}{5}$	4.980	6.231	20.364	.....	.163
Calories	.....	581	1,569	2,394	.....	.....

Total calories, 4,544.

Nutritive ratio, 1: 6.8.
Ratio fat to carbohydrate, 1: 1.5.

Breakfast:

White or Graham biscuit.
Oatmeal mush or grits.
Fried pork, 4 ounces.
Sirup, 2 ounces.
Sugar, one-half ounce, with coffee.
Coffee (1 cup), two-fifths ounce.

Dinner:

Corn bread (from corn meal), 8 ounces.
Stewed peas (from dried peas), 4 ounces.
Boiled salt pork, 4 ounces (boiled with peas).

Supper:

Broiled salt fish.
Lyonnaise potatoes.[1]
Stewed fruit.
White or Graham biscuit.

[1] Lyonnaise potatoes: Boil potatoes until soft. Peel, slice crosswise. Slice 1 ounce onion to each ration. Brown in fat in frying fan. Add to potatoes. Season with salt, pepper, and enough fat to moisten. Bake in pan in oven 30 minutes.

TABLE 20.—*Diet without fresh meat.*

[Ration, 15.4 cents.]

Foodstuff.	Ounces.	Protein.	Fats.	Carbohydrates.	Cost per pound (estimated).	Cost per ration (estimated).
		Ounces.	*Ounces.*	*Ounces.*		
White flour (or Graham or whole-wheat flour)	8	1.064	0.120	5.816	$0.04	$0.02
Corn meal	8	.736	.152	6.032	.025	.013
Navy beans	4	.900	.072	2.384	.06	.015
Salt fat pork	8	.592	5.320	.....	.12	.06
Macaroni	2.4	.322	.022	1.778	.10	.002
Cheese	1.5	.314	.015	.064	.18	.009
Cabbage or turnips or other fresh vegetables	12	.168	.024	.576	.01	.008
Dried fruit	1.3	.027	.....	.933	.12	.009
Sugar	.5	.....	.....	.500	.06	.002
Molasses	4	.....	.....	2.800	.05	.012
Coffee	.4	.....	.....	.....	.16	.004
Solids	50.1	4.123	5.725	20.883	.....	.154
Calories	.....	467	1,442	2,394	.....	.....

Total calories, 4,303.

Nutritive ratio, 1:8.

Ratio fat to carbohydrate, 1:1.6.

Breakfast:

Hot wheat cakes (see recipe No. 7).
Fried pork, 4 ounces.
Molasses, 2 ounces.
Sugar, one-half ounce, with coffee.
Coffee (1 cup), two-fifths ounce.

Dinner:

Baked beans, 4 ounces.
Salt fat pork, 4 ounces, baked with beans.
Corn bread (from 8 ounces corn meal).

Supper:

Baked macaroni and cheese (see recipe No. 30).
Cabbage, or turnip, or other vegetable, 12 ounces.
Stewed fruit.
White or Graham biscuit.

Serve pickles with beans and vinegar with cabbage.

TABLE 21.—*Diet without fresh meat.*

[Ration, 19 cents.]

Foodstuff.	Ounces.	Protein.	Fats.	Carbohydrates.	Cost per pound (estimated).	Cost per ration (estimated).
		Ounces.	*Ounces.*	*Ounces.*		
White flour (or Graham or whole-wheat flour)	8	1.064	0.120	5.816	$0.04	$0.02
Corn meal (or mush)	4	.368	.76	3.016	.025	.007
Condensed milk	1	.096	.093	1.120	.10	.007
Oleomargarine or fat	1	.....	.940	.940	.12	.008
Rice	2	.16	.006	1.580	.06	.007
Onions	1	.014	.003	.089	.02	.001
Potatoes	24	.432	.024	3.525	.015	.023
Cheese	3	.864	1.077	.009	.18	.034
Eggs	4	.838	1.104	.123	[a] .24	.04
Salt fish	5	1.025	.440	1.580	.05	.016
Dried fruit	1 3/10	.027	.....	.933	.12	.009
Sugar	1/2	.....	.....	.500	.06	.002
Molasses	4	.....	.....	2.80	.05	.012
Coffee	2/5	.....	.....	.....	.....	.004
Solids	57 1/5	4.883	4.567	22.031	.....	.190
Calories	.....	559	1,129	2,508	.....	.....

[a] Dozen.

Total calories, 4,206.

Nutritive ratio, 1: 6.5.

Ratio fat to carbohydrate, 1:2.2.

Breakfast:

Corn-meal mush (from 4 ounces corn meal) (see recipe No. 3).
Fried potatoes, 8 ounces.[1]
White or Graham biscuits.
Molasses, 4 ounces.
Sugar, one-half ounce, with coffee.
Coffee (1 cup), two-fifths ounce.

Dinner:

Cheese, 3 ounces, } with bread, as sandwiches.
Fried eggs (2) }
Fried rice and onions (see recipe No. 32).

Supper:

Broiled salt fish.
Potatoes, mashed, 16 ounces.[2]
Stewed fruit.
White or Graham biscuits.

[1] Fried potatoes: Boil until soft. Peel, slice crosswise. Season with salt, adding one-half ounce oleomargarine or grease to each ration. Spread over bottom of well-greased bake pan to depth of 2 inches and bake in hot oven 30 minutes.

[2] Mashed potatoes: Boil until soft. Peel. Mash well. Add one-half ounce oleomargarine or grease and 1 ounce condensed milk to each ration. Season with salt. Mix thoroughly. Serve hot.

TABLE 22.—*Diet without fresh meat.*

[Rations 18.3 cents.]

Foodstuff.	Ounces.	Proteins.	Fats.	Carbohydrates.	Cost per pound (estimated).	Cost per ration (estimated).
		Ounces.	*Ounces.*	*Ounces.*		
White flour (or Graham or whole-wheat flour)	8	1.064	0.120	5.816	$0.04	$0.02
Corn meal	8	.736	.152	6.032	.025	.013
Hominy (or oatmeal)	2	.166	.012	1.580	.03	.004
Salt fat pork	8	.592	5.320	.....	.12	.06
Dried peas	4	.984	.040	2.480	.06	.015
Potatoes	16	.288	.016	2.350	.015	.015
Onions	1	.014	.003	.089	.02	.001
Cheese	3	.864	1.077	.009	.18	.034
Dried fruit	1 3/10	.027	.....	.933	.12	.009
Sugar	1/2	.....	.....	.500	.06	.002
Molasses	2	.....	.....	1.40	.05	.006
Vinegar	1	.....	.....	.....	.....	.....
Coffee	2/5	.....	.....	.....	.16	.004
Solids	54 1/8	4.735	5.740	21.189	.....	.183
Calories	.....	536	1,442	2,394	.....	.....

Total calories, 4,372.

Nutritive ratio, 1:7.1

Ratio fat to carbohydrate, 1:1.6

Breakfast:

White or Graham biscuit.
Hominy grits (boiled or fried).
Fried salt pork, 3 ounces.
Molasses, 2 ounces.
Sugar, one-half ounce with coffee.
Coffee, two-fifths ounce.

Dinner:

Stewed peas.
Corn bread.
Salt fat pork, 4 ounces (stewed with peas).

Supper:

Potatoes, 16 ounces.
Onions, 1 ounce.
Vinegar, 1 ounce.
Water, 1 ounce.
Bacon, 1 ounce.
} Potato salad.[1]
Cheese, 3 ounces.
Stewed fruit.
White or Graham biscuit.

[1]Potato salad: Boil potatoes until well done. Peel. Cut into thin slices. Cut onions into small pieces. Place onions and potatoes together in large dish. Cut bacon into small squares, fry until brown, and while still hot, dash over the potato. Add the vinegar and water. Mix well. Pepper and salt to taste and allow to stand 2 hours before serving.

TABLE 23.—*Diet without fresh meat.*

[Ration 19.2 cents.]

Foodstuff.	Ounces.	Proteins.	Fats.	Carbohydrates.	Cost per pound (estimated).	Cost per ration (estimated).
		Ounces.	*Ounces.*	*Ounces.*		
White flour (or Graham or whole-wheat flour)	16	2.128	0.240	11.632	$0.04	$0.04
Oatmeal, hominy, or corn meal	2	.166	.012	1.580	.03	.004
Kidney beans, or navy beans	4	.900	.072	2.384	.06	.015
Salt fat pork	8	.592	5.320	.....	.12	.06
Cheese	3	.864	1.077	.009	.18	.034
Onions	2	.028	.006	.089	.02	.002
Cabbage, or other vegetable except potatoes	13	.182	.026	.624	.01	.008
Potatoes	8	.144	.008	1.175	.015	.008
Dried fruit	1 3/10	.027	.....	.933	.12	.009
Sugar	1/2	.....	.....	.500	.06	.002
Molasses	2	.....	.....	1.40	.05	.006
Coffee	2/5	.....	.....	.....	.16	.004
Solids	62 1/5	5.031	6.521	19.326	.....	.192
Calories	.....	570	1,645	2,166	.....	.....

Total calories, 4,381.

Nutritive ratio, 1:6.6.

Ratio fat to carbohydrate, 1:1.3.

Breakfast:

White or Graham biscuit.
Oatmeal, hominy, or corn meal (boiled or fried).
Fried pork, 4 ounces.
Molasses, 2 ounces.
Sugar, one-half ounce with coffee.
Coffee (1 cup), two-fifths ounce.

Dinner:

Boiled cabbage, or other vegetable, 13 ounces.
Boiled salt pork, 4 ounces (cooked with vegetables).
White or Graham biscuit.

Supper:

Dry stewed beans, mashed, 4 ounces.
Grated cheese, 3 ounces.
Bread crumbs, 3 ounces.
Grated onion, 2 ounces.
} Mix together, roll into loaf. Bake in oven.
Baked potatoes, 8 ounces.
Stewed fruit.
White or Graham biscuit.

TABLE 24.—*Diet with fresh meat.*

[Ration, 21 cents.]

Foodstuff.	Ounces.	Protein.	Fats.	Carbohydrates.	Cost per pound (estimated).	Cost per ration (estimated).
		Ounces.	*Ounces.*	*Ounces.*		
Fresh meat (as purchased)	14	2	1.320	.....	$0.10	$0.088
White flour (or Graham or whole-wheat flour)	16	2.128	.240	11.632	.04	.04
Rice	2	.16	.006	1.580	.06	.007
Hominy or oatmeal or corn meal	2	.166	.012	1.580	.03	.004
Potatoes	16	.288	.016	2.350	.015	.015
Turnips	1	.009	.001	.057	.02	.001
Carrots	1	.011	.004	.093	.02	.001
Onions	3	.042	.009	.267	.02	.003
Salt fat pork	4	.296	2.660	.....	.12	.03
Dried fruit	1 3/10	.027	.....	.933	.12	.009
Sugar	1 1/2	.....	.....	.500	.06	.002
Molasses	4	.....	.....	2.80	.05	.006
Coffee	2/5	.....	.....	.....	.16	.004
Solids	65 1/8	5.127	4.268	21.792	.....	.21
Calories	.....	570	1,063	2,485	.....	.....

Total calories, 4,118.

Nutritive ratio, 1:6.

Ratio fat to carbohydrate, 1:2.3.

Breakfast:

Hominy, oatmeal, or corn-meal mush (from 2 ounces meal).
Fried salt pork, 4 ounces.
White or Graham bread or biscuit.
Molasses, 2 ounces.
Sugar, one-half ounce with coffee.
Coffee, two-fifths ounce.

Dinner:

Meat stew—
14 ounces meat.
16 ounces potato.
1 ounce turnips.
1 ounce carrots.
1 ounce onions.
White or Graham bread or biscuit.

Supper:

Boiled rice (from 2 ounces rice).
Molasses, 2 ounces.
White or Graham bread or biscuit.
Stewed fruit.

TABLE 25.—*Diet with corned beef or fresh fish.*

[Ration, 19.5 cents.]

Foodstuff.	Ounces.	Protein.	Fats.	Carbohydrates.	Cost per pound (estimated).	Cost per ration (estimated).
		Ounces.	*Ounces.*	*Ounces.*		
Fresh fish (or corned beef, 12 ounces)	12	1.533	3.612	.....	$0.10	$0.075
White flour (or Graham or whole-wheat flour)	16	2.128	.240	11.620	.04	.04
Hominy, oatmeal, or corn meal	2	.166	.012	1.580	.03	.004
Potatoes	16	.288	.016	2.350	.015	.015
Macaroni	3	.402	.027	2.223	.10	.02
Condensed milk	2	.192	.186	.224	.10	.013
Oleomargarine or fat	½	.....	.470	.....	.12	.004
Onions	3	.042	.009	.267	.02	.003
Dried fruit	1 3/10	.027	.....	.933	.12	.009
Sugar	½	.....	.....	.500	.06	.002
Molasses	2	.....	.....	1.40	.05	.006
Coffee	⅜	.....	.....	.....	.16	.004
Solids	58 7/10	4.778	4.572	21.097	.....	.195
Calories	.....	547	1,163	2,394	.....	.....

Total calories, 4,104.

Nutritive ratio, 1:6.5.

Ratio fat to carbohydrate, 1:2.

Breakfast:

Boiled hominy, oatmeal, or corn meal (from 2 ounces dry meal).
Molasses, 2 ounces.
White or Graham bread or biscuit.
Coffee.

Dinner:

Fresh fish, 12 ounces.
Boiled potatoes.
Boiled onions.
White or Graham bread or biscuit.

Or corned-beef hash—

Corned beef.
Potatoes.
Onions.
White or Graham bread or biscuit.

Supper:

Boiled macaroni.
Milk sauce (for macaroni).
Stewed fruit.
White or Graham bread or biscuit.

GARRISON RATION, UNITED STATES ARMY.

The United States War Department after long experience in the feeding of soldiers has determined accurately the kinds and quantities of food materials believed to be best suited to their needs. Fresh meats are ordinarily issued 7 days in 10 and bacon 3 days. The ration includes practically all of the common foods and admits of many combinations which insure variety. It may, however, be supplemented by fresh vegetables and fruits of all kinds when they can be obtained from a post garden or any other convenient source.

The average garrison ration, consisting of fresh beef, soft bread, beans, potatoes, and onions, dried fruit, butter, sirup, and sugar (or their articles of substitution), weighs 65 ounces and contains about 5.5 ounces of proteins, 3.5 ounces of fats, and 17.3 ounces of carbohydrates, with a total fuel value of 3,536 calories. This is about 600 calories less than are usually recommended for men at continued hard muscular labor, such as the building of roads.

The average cost of the garrison ration is now about 27 cents.

TABLE 26.—*Garrison ration, United States Army.*

[Issued to troops in garrison, in permanent camp, and during maneuvers.]

Article.	Quantity.	Substitute article.	Quantity.
	Ounces.		*Ounces.*
Beef, fresh	20	Mutton, fresh	20
		Bacon	12
		Canned meat, when impracticable to furnish fresh meat	16
		Hash, corned beef, when impracticable to furnish fresh meat.	16
		Fish, dried	14
		Fish, pickled	18
		Fish, canned	16
		Chicken or turkey, dressed, on national holidays	16
Flour	18	Hard bread, to be ordered issued only when impracticable to use flour or soft bread.	16
		Soft bread	18
		Corn meal	20
Baking powder	.08		
Beans	2.4	Rice	1.6
		Hominy	1.6
		Potatoes, canned	15
		Onions, in place of an equal quantity of potatoes, but not exceeding 20 per cent of the total issue of potatoes.	
		Tomatoes, canned, in place of an equal quantity of potatoes, but not exceeding 20 per cent of the total issue of potatoes.	
Potatoes	20	Other fresh vegetables (not canned) when they can be obtained in the vicinity or transported in a wholesome condition from a distance, in place of an equal quantity of potatoes, but not exceeding 30 per cent of the total issue of potatoes.	
Prunes	1.28	Peaches, dried or evaporated	1.28
		Apples, dried or evaporated	1.28
		Jam, in place of an equal quantity of prunes, but not to exceed 50 per cent of the total issue of prunes.	
Coffee, roasted and ground	1.12	Coffee, roasted and ground	1.12
		Coffee, green	1.4
		Tea, black or green	.32
Sugar	3.2		
Milk, evaporated, unsweetened	.5		
Vinegar, gill	.16	Pickles, cucumber, in place of an equal quantity of vinegar, but not exceeding 50 per cent of the total issue of vinegar.	
Salt	.64		
Pepper, black	.04		
		Cloves	.014
Cinnamon	.014	Ginger	.014
		Nutmeg	.014
Lard	.64		
Butter	.5	Oleomargarine	.5
Sirup, gill	.32		
Flavoring extract, lemon	.014	Vanilla	.014

The following recipes for the preparation of some of the commonly used foods are taken from the Manual for Army Cooks, War Department Document No. 379. The quantities given are based upon those prescribed in the Army ration and are intended to be used in combi-

nation with the other foods in the ration. They may, however, be easily modified to meet any requirements.

1. Milk for breakfast foods. Ingredients used: Two 1-pound cans evaporated milk; 8 ounces sugar. Add a pinch of salt and sufficient water to make 1 gallon. Whip well a few minutes. This recipe is sufficient for about 20 men.

2. Coffee (for 60 men). Coffee is generally served for breakfast and dinner and should always be prepared fresh at least once a day. The following method is suggested:

Breakfast: Put 7½ gallons of water in the boiler and let come to a boil; add 2¼ pounds roasted and ground coffee, and remove from the range immediately. Allow to stand 15 minutes; add one pint of cold water, and allow to stand a few minutes longer before serving.

To sweeten, add 4 or 5 ounces of sugar to each gallon.

Dinner: Allow the grounds to remain in the boiler and add sufficient water to make 7½ gallons; allow to come to a boil and add 3 ounces of coffee, roasted and ground, for each gallon of fresh water used; remove from the range and allow to stand 15 minutes; add a pint of cold water, and allow to stand a few minutes before serving.

Coffee should be made for immediate use only.

3. Corn-meal mush (for 60 men). Ingredients used: Six pounds corn meal; 1½ pounds sugar, if not on table; 1 ounce salt; 4 gallons water.

Allow the water to come to a boil and pour in the corn meal, meanwhile whipping well to prevent prevent lumping. Allow to cook for about 20 minutes, and then allow to stand about the same length of time where it will remain hot.

Place in vegetable dishes and serve hot with fresh or evaporated milk poured over it.

4. Corn-meal mush, fried (for 60 men). Ingredients: Seven pounds corn meal; 4 gallons water; 2 ounces salt; 2 ounces sugar.

Prepare in the same manner as corn-meal mush; pour into a well-greased bake pan to a depth of about 1 inch and allow to cool. When cool cut into pieces about 2 inches square; roll in a flour batter and fry in deep lard. Serve hot with sirup.

This preparation may be improved by dipping each piece in an egg batter before rolling in flour.

5. Oatmeal mush (for 60 men). Ingredients: Five pounds oatmeal; ¼ pound sugar; 1 ounce salt; 6 cans evaporated milk; 3½ gallons water.

Place the water in a boiler and allow it to come to a boil; whip the oatmeal in slowly and allow to boil for five minutes. Let simmer one-half hour and serve with milk and sugar.

6. Hominy, fried (for 60 men). Ingredients used: Six pounds hominy; 4 gallons water; 2 ounces salt.

Place the water in a boiler on the range; when boiling add the hominy and boil from 20 to 30 minutes; remove from the boiler, spread about 1 inch deep in well-greased pans, and allow to cool; cut into pieces about 2 inches square; roll in flour and fry in deep lard. Serve hot with sirup or butter.

7. Buckwheat cakes (for 60 men). Ingredients used: Five pounds buckwheat flour; 5 pounds wheat flour; 2½ pounds molasses, or 2½ pounds sugar; 2 ounces salt; 10 ounces baking powder.

Mix the flour and molasses (or sugar) together, and add sufficient water to make a stiff batter. When about to make the cakes, grease the griddle with a piece of bacon or ham, and add the baking powder to each portion immediately before using. If, for example, one-tenth of the above amount is to be baked at a time, one ounce of the baking powder should be added to each portion.

Serve hot with butter, sirup, or both.

8. Bacon, fried (for 60 men). Ingredients used, 15 pounds bacon.

Cut about five slices to the inch; place in a bake pan and pour boiling water over it, and allow it to stand for five minutes. Drain off all the water and fry on a hot range or in a quick oven, when done, remove from the range and allow to cool slightly before serving.

9. Bacon and cabbage (for 60 men). Ingredients used: 15 pounds bacon, 30 pounds cabbage.

Wash and clean the cabbage; place in boiler with sufficient water to three-fourths cover the cabbage; place the bacon on top of the cabbage; after boiling two hours remove the bacon and allow the cabbage to boil one hour longer. To prevent discoloration the boiler should be ventilated during the process of cooking. Serve hot, the bacon being placed on top of the cabbage.

10. Biscuits (for 60 men). Ingredients: 10 pounds flour; 1¼ pounds fat (lard preferred); 2 ounces sugar; 2 ounces salt; 10 ounces baking powder.

Mix the dry ingredients and sift; work in the lard and mix thoroughly; add sufficient water to make a soft dough; roll out about one-half inch thick; cut out with a biscuit cutter and place in bake pan about one-half inch apart; bake in a hot oven about 10 minutes. Serve hot with butter or sirup.

When using baking powder it is better to use cold water (or milk) and keep in a cool place before baking.

11. Bread, corn (for 60 men). Ingredients used: 5 pounds corn meal; 3 pounds flour; 1½ ounces sugar; 8 ounces fat (lard or drippings); 8 ounces baking powder.

Mix the ingredients and sift; work in the lard and mix thoroughly; add sufficient water to make a soft dough; spread in bake pan to a depth of 2 inches, and bake for about 40 minutes.

12. Stock—for use in soups, stews, gravies, potpies, hash, etc.

Save all the bones that come into the kitchen; do not throw them away until all the nutriment has been extracted as follows: Place the bones in the soup-stock boiler with sufficient cold water to cover them from 4 to 6 inches, and allow them to simmer until all the particles of meat attached to them have become loose. There will probably now be sufficient soup stock in the boiler for immediate use. Trim off the bones, saw or crack them, and place in the boiler again, adding more water if necessary, and leaving the bones in the stock until all the nutriment has been extracted (this will require from six to nine hours). When boiled beef is prepared, more stock may be obtained.

13. Stock (definition). The liquid or jelly obtained by boiling meat, bones, etc., for several hours in water. It is the basis of most soups made in Army kitchens

14. Meat stew.[1]

Cut the meat into small pieces, removing the fat; try out the fat and brown the meat in it. When well browned cover with boiling water, boil for five minutes, and then cook in a lower temperature until the meat is done. If tender, this will require about three hours on the stove. Cut potatoes, turnips, carrots, and onions into small pieces. Add turnips, carrots, onions, pepper and salt during the last hour of cooking, and the potatoes 15 minutes before serving. Thicken with the flour diluted with cold water. Such a stew may also be made of mutton. If veal or pork is used the vegetables may be omitted or simply a little onion used. Sometimes for variety the browning of the meat is dispensed with.

Almost any bones and trimmings may be used for making soup. Chuck, flank, neck, fore shank, hind shank, and clod, are among the cheapest cuts of meat and may be used in making meat stew.

15. Beef, boiled (for 60 men). Ingredients used: 20 pounds beef (shoulder, brisket, plate, flank, shank, or neck).

[1] U. S. Department oi Agriculture, Farmers' Bulletin 391.

Cut into pieces weighing about 5 pounds each; cover with water, preferably hot, in order to seal it and retain the juices, and allow to boil from two to three hours, according to the quality of the beef.

16. Beef, braised (for 60 men). Ingredients used: 22 pounds beef; 1 pound onions; 2 pounds fat, or butter; ½ pound flour.

Dice the beef into 1-inch cubes; place the fat in a bake pan and allow to get hot; then put the beef in, together with the onions; put on the top of range or in a quick oven and stir frequently for about 20 minutes. Sift the dry flour in and allow to cook for about five minutes; add sufficient beef stock to nearly cover the meat and stir frequently. Season with salt and pepper, and allow to cook until well done.

17. Beef fritters (for 60 men). Ingredients used: 10 pounds cooked meat; 5 pounds bread; 2 pounds onions.

Soak the bread and remove the water by squeezing with the hands; grind the meat fine and add to the bread; mince the onions, and mix all together; salt and pepper to taste; mold into cakes of about 3 ounces each; roll in flour and fry in deep grease until brown. Serve hot with tomato sauce or gravy.

18. Tomato sauce (for 60 men). Ingredients used: 6 cans tomatoes; 1 pound onions, chopped; ½ ounce cinnamon; ¼ ounce cloves; 2 ounces salt; 2 ounces sugar; ½ pound butter; ½ pound flour.

Cook all the ingredients except the flour and butter, adding 2 quarts of water. Boil slowly for one and one-half hours. Remove from the range and run through a fine colander or sieve. Replace on the range and put the batter into a frying pan. When it becomes hot add the flour, stir until smooth, and add to the sauce. Excellent for fish, meats, etc.

19. Beef hash (for 60 men). Ingredients used: 15 pounds potatoes; 2 pounds onions; 15 pounds meat scraps, etc.; 6 quarts beef stock.

Chop the whole fine and add the beef stock until the mixture is of the consistency of ordinary mush. Place about 3 inches deep in a well-greased pan; smooth the top evenly with the hand and grease slightly; bake in a medium oven for one and one-half hours.

Scraps of beef or pork, or a mixture of both, or corned beef may be used for making hash.

In hot weather, or when the ingredients have been held over for some time, the hash should be spread not more than 2 inches deep in a pan and first placed in a quick oven until the hash is thoroughly heated through—say 20 minutes. Then the temperature may be reduced until the cooking is done.

20. Beef, pot roast (for 60 men). Ingredients used: 22 pounds beef; 2 pounds onions; ½ pint vinegar.

Cut the beef into pieces weighing about 5 pounds each; place in a large Dutch oven or camp kettle, with cover, season well, add onions and vinegar, and place in a hot oven for about 20 minutes; then reduce the temperature and cook slowly until well done. The meat should be turned three or four times while cooking. When done, remove from the kettle and slice; make a thick gravy in the same pot, place the meat on the platters, and pour the gravy over it.

Left-overs from this recipe may be used in hash, potpies, etc.

21. Beef potpie (for 60 men). 20 pounds beef; — gallons stock.

Cut the beef into small pieces, fry slightly in a small amount of grease, and add sufficient stock, or water, to cover the meat. Allow to simmer until the meat will nearly fall apart, then season with salt, pepper, and onions. Thicken slightly with flour batter, and place in a dish or pan at least 2 inches deep, with a crust or biscuits spread over it. Place in the oven and brown in the same manner as ordinary pies.

22. Potato and beef pie (for 60 men). Ingredients used: 20 pounds potatoes, boiled and mashed; 12 pounds beef, diced; 3 pounds onions, browned.

Season the mashed potato with pepper and salt, put a layer of potatoes about half an inch thick into a vegetable dish, roll the beef in flour, season with salt and pepper, and fry brown in a little fat; brown the onions and mix with the beef; add a little beef stock and cook for about 15 minutes; place a thin layer of chopped onions inside of the layer of potatoes in the vegetable dish; fill up with the mixture of meat. Place a layer of mashed potatoes on the top and round off nicely. Grease well, and bake until nicely browned. Serve hot in the dish in which baked.

23. Beef hearts stewed (for 60 men). Ingredients used: 18 pounds beef hearts; 1½ quarts tomatoes; 1 pound onions, fried; 1 pound flour; 3 gallons beef stock.

Make a gravy of the flour and beef stock and put on the range; meanwhile split the hearts in two and wash them thoroughly, and when the gravy comes to a boil put them in. Cook in the oven or on top of the range until done. Slice and serve on a platter with the gravy poured over them. Season with cloves, allspice, bay leaves, a little garlic, pepper and salt, while cooking.

24. Liver and bacon in gravy (for 60 men). Ingredients used: 15 pounds liver; 8 pounds bacon; 6 pounds onions, browned; 2 pounds flour; 4 gallons stock.

Slice the bacon thin and wash in boiling hot water, not allowing it to remain in the water more than five minutes; fry quickly until medium well done. Roll the slices of liver in flour, and fry in the fat after frying the bacon; add the liver and bacon to the stock, and bring to a boil; thicken slightly with a flour batter, adding salt and onions to taste. Serve hot.

25. Codfish, salt, boiled (for 60 men). Ingredients used: 20 pounds salt codfish.

Break the fish into pieces weighing about 2 ounces each; allow to boil for 15 minutes to remove the salt; change the water and boil until done, ordinarily about 30 minutes. Serve hot with cream sauce.

26. Cream sauce for codfish (for 60 men). Ingredients used: 1 pound fat; four 12-ounce cans evaporated milk; ½ pound onions, minced; ½ pound pickles, minced (if convenient).

Thicken 1 gallon of boiling water with a flour batter, and season well with pepper and salt; let come to a boil and add the fat, milk, onion, and pickles; whip well and spread over the fish on the platter.

27. Codfish cakes (for 60 men). Ingredients used: 10 pounds salt codfish; 10 pounds potatoes; 12 eggs.

If whole cod is used, soak, boil, remove the bones, and pass through a meat chopper; mix with the potatoes and eggs, season to taste with pepper and salt, and mold into cakes weighing about 3 ounces each. Roll in cracker crumbs or flour and fry in deep fat. They may be served with tomato gravy.

28. Potatoes, mashed (for 60 men). Ingredients used: 22 pounds potatoes.

Peel, wash in cold water, and boil until thoroughly done. Strain, salt, and mash well. Instead of the milk and butter often used in this preparation, carefully strained beef stock and fat may be used. Whip well with a basting spoon for about five minutes and serve hot.

29. Potatoes, Lyonnaise (for 60 men). Ingredients used: 22 pounds potatoes; 2 pounds onions.

Wash the potatoes and boil them until they may be easily pierced with a fork; peel and slice crosswise; wash and slice the onions; fry brown and add to the potatoes. Season with pepper and salt, adding sufficient fat to moisten, and spread about 2 inches deep in the bottom of a well-greased pan. Bake about 30 minutes in a quick oven.

30. Macaroni and cheese (for 60 men). Ingredients used: 6 pounds macaroni; 2 pounds cheese, diced.

Add the macaroni to 4 gallons of boiling water, salted to taste; allow to boil about 20 minutes, but not until it becomes flabby, and strain the water off; spread about one-third of the macaroni in the bottom of a well-greased bake pan; then one-third of the diced cheese on the macaroni; continue the alternate layers until all is in the bake pan. Bake in the oven about 30 minutes and serve hot.

31. Rice boiled (for 60 men). Ingredients used: 5 pounds rice; 3 gallons water.

When the water comes to a boil add the rice. When the rice may be mashed with the fingers pour into a colander and drain well, after which each grain should be whole and separate.

32. Rice, fried (for 60 men). Ingredients used: 5 pounds rice; 2 pounds fat; 1 pound onions, diced.

Boil the rice as in the preceding recipe; place the fat in a bake pan; set on the range and let come to a smoking temperature; add the onions and let them brown slightly; add the rice and stir continually with a cake turner to prevent burning and to mix the grease with it thoroughly. Rice may be cooked in a hot oven and must be stirred every few minutes. About 15 or 20 minutes are required to fry it.

33. Stewed dried fruit—prunes, apples, peaches, apricots, etc.—(for 60 men). Ingredients used: 5 pounds dried fruit.

After washing the dried fruit place it in a receptacle with about three times its bulk of water, and set on a part of a range where it will keep hot but not boil. After two hours, remove and season to taste with sugar, cinnamon, cloves, or nutmeg, and a little vinegar.

34. Pudding, bread (for 60 men). Ingredients used: 12 pounds bread crusts; 2 pounds dried fruit; 2 pounds sugar; 1 ounce cinnamon; 2 cans evaporated milk; 6 eggs.

Soak the bread in cold water and squeeze out well with the hands; season well with sugar and cinnamon; mix well, and spread about 1 inch in pans; over this spread about 1 inch of stewed fruit; then another layer of the bread, and over the top spread sugar and cinnamon; bake about forty minutes in a medium hot oven. Serve hot or cold with cream and sauce. This makes an excellent dish and gives an opportunity to use all the scraps of bread on hand.

SELECTION OF THE COOKS.

Cooks and waiters chosen from the convict force prepare and serve the food at all camps. Little difficulty is experienced in finding good cooks in almost any group of fifty or more prisoners, and as the men assigned to the kitchen work generally are under less restraint than those working on the roads they accept their duties cheerfully. The larger camps require intelligent men who are reasonably skillful in their work, and for this reason the selection is often made at the penitentiary, the men then being assigned to the camps for the express purpose of cooking. In certain States such men are examined by the prison physicians, who are careful to see that they are not suffering from infectious diseases which would render them dangerous as cooks, and while a bacteriological examination is never made, in order to rule out the possibility of their being disease carriers the prison physicians usually obtain their medical histories and occasionally administer anti-typhoid vaccine. Such careful selection of cooks results in very satisfactory conditions at the camps. The food is well cooked and decently served, the kitchens and messrooms and the cooking and eating utensils, are kept clean and in good condition, and a general feeling of pride and satisfaction prevails. The plainest foods, when properly cooked and decently served in clean surroundings, are valued much more highly than more elaborate articles of food prepared and served in a sloppy manner.

Unfortunately the same care in the selection of the cooks is not used at all camps, and in many cases convicts are sent to the road camps with no physical examinations whatsoever. From this miscellaneous assortment of men, the superintendent of the camp must select his cook and kitchen force, and it is almost inevitable that, at times, he should choose diseased individuals who prove a menace to the health of the entire camp.

Competent physicians always should examine all persons engaged in cooking and handling the food, and particular attention should be directed to the possibility of their being typhoid carriers or sufferers from tuberculosis. Both of these diseases may be transmitted readily in the food, and many cases are on record which show the terrible consequences which may follow the employment of such persons about the food. Individuals who apparently have recovered entirely from a recent attack of typhoid fever, and others who have the disease in a very mild form, may show no physical signs of illness and yet harbor the disease germs in their bodies and be a dangerous source of food contamination. A recent outbreak of 93 cases of typhoid fever was traced to food contaminated during preparation by a woman who had quite recovered from an attack of typhoid fever. It is known that certain persons may harbor the germs in their bodies for years after the disease is over, and this condition can be detected only by proper medical examination.

Personal cleanliness is a matter of the greatest importance in the case of those who come in contact with the food, but this is a somewhat variable condition in convict camps, and depends largely upon the officers in charge of the camp. In many camps the cooks and others employed about the kitchen and dining room are reasonably clean, and water, soap and towels are in evidence, with signs of being used, but at other camps the men and their surroundings are disgustingly dirty and it is useless to inquire when and where they wash.

It should be the duty of every officer in charge of a camp to instruct cooks, helpers, and waiters as to cleanliness of their persons and clothing, and to see that adequate facilities are provided for their cleanliness. The necessity for washing the hands after visiting the toilet is not understood in all cases and should be strongly emphasized.

It would be well if every camp kitchen could have the sign found in some well-managed food factories: "When you leave the room for any purpose, wash your hands before you return to work."

A bath should be taken daily, especially in warm weather.

Cooks, helpers, and waiters should not be permitted to wear their ordinary clothing when at work in the kitchen and dining room. It is a common custom to use the yardmen as waiters during meal

hours. These men, after being employed at various tasks of cleaning about the camp, come directly into contact with the food while wearing clothing soiled by all sorts of camp wastes. Large white aprons could be provided at a very slight cost and would aid materially in maintaining the cleanliness of the kitchen force, and in preventing contamination of the food.

It happens not infrequently at the smaller camps that there is no prisoner with a knowledge of cooking, and under such conditions an ignorant, untrained man may be pressed into service. This results usually in a monotonous run of badly cooked food with all its attendant waste and dissatisfaction, and the convicts, badly fed and poorly nourished, fall ready victims to disease and can be worked only at an economic loss.

STOVES AND COOKING EQUIPMENT.

Good stoves are furnished at many camps and the food is prepared in much the same way as in the ordinary household kitchen. Not infrequently, however, the cooking of beans, peas, and vegetables is done in a large iron kettle suspended over an open fire out of doors, and the kitchen stove is thus left free for frying meat and baking. At one camp visited the cooking was done on a sort of wooden tray, about 4 feet square, supported on stakes driven into the ground. The tray was filled with earth which formed a bed upon which the fire was made. This improvised cooking apparatus, shown in Plate XIV, figure 1, was constructed in the open air, and together with the necessary pots and pans, comprised the camp kitchen. It should be stated, however, that a wooden shelter was to be built at some future date to protect the cook from the sun and rain and to provide a shelter for the cooking utensils.

METHOD OF STORING AND PRESERVING FOOD SUPPLIES.

A storeroom for the keeping of food supplies is provided at all camps, and is located either under the same roof as the kitchen and dining room or in a separate building or tent. Whatever its location, it is usually so arranged that it may be kept securely locked. The key is kept by one of the camp officials, and access to the food supplies by the convict cook or other inmates is permitted only when absolutely necessary. As a rule the foodstuffs are kept in well-covered barrels and boxes and appear to be in good condition. The quantities purchased are generally used within a month, and it is probable that waste due to improper storage is very slight.

Though it is highly important that storerooms be kept clean, it is also essential that they be as dry as possible, and for this reason soap and water should be used sparingly. Dishes of unslaked lime

placed within the room are useful in absorbing moisture and insuring a dry atmosphere; while fresh air, sunshine, and whitewash are important aids to cleanliness.

Flour is best kept in warm, dry, well-lighted rooms, carefully protected from dust. Cornmeal does nor keep as well as flour and should be bought in quantities which can be used without long storage. Breakfast cereals, when bought in bulk, should be kept in tight receptacles in a cool, dry place. Rice, macaroni, and other dry foodstuffs of similar character, and also raisins, currants, and evaporated and dried fruits are best kept in covered cans or jars. Sugar may be well kept in tin boxes, but salt should be stored in wooden receptacles. Glass preserve jars are convenient for small quantities of almost any kind of food.

At camps in which perishable foodstuffs are a part of the daily fare, ice boxes or refrigerators should be provided if the location is such that ice can be obtained. In this connection it should be remembered that, as freezing does not kill all disease germs, ice is not always free from dangerous contamination, and no food should be brought into direct contact with it unless its purity is above suspicion. If the food is to be kept in good condition the interior of the ice box should be wiped each day with a dry cloth, and once a week all ice and food should be removed so that the sides, shelves, and drain may be thoroughly scalded. The cleansing of the drain is exceedingly important for if it is allowed to become clogged the water is not carried off fast enough and little pools are formed in which bacteria may breed in great numbers. Under these conditions food will keep only a very short time.

Since in many of the southern camps the use of ice is impracticable, the food must be of such character as to require no ice for its preservation. Under these conditions screened cupboards may be used for the preservation of cooked foods during short periods. In these receptacles the food is protected from flies, but warm food furnishes an excellent medium for the growth of bacteria, and ordinarily should be kept only from one meal to the next.

In some of the Western States where the climate is very dry, meats may be suspended from hooks in small screened inclosures open to the sun and air on every side (see Pl. XIV, fig. 2). Under these conditions the surfaces of the meat rapidly dry and harden and the interior will remain in a state of good preservation for a considerable length of time.

At one of the camps visited, the contrivance for keeping food cool was based on the principle that water in evaporating draws heat from surrounding objects. A wooden box about 2 feet square and 4 feet high was placed on end and fitted with shelves for the food. The top end of the box was covered with several layers of burlap,

and a burlap curtain was suspended over the one open side. An old dish pan, in the bottom of which a few small holes had been punched, was placed on top of the box and in this way the burlap on the top and side was supplied with just enough water to keep it saturated. Food was kept in this box at a temperature considerably lower than that of the outside air.

FOOD POISONING.

Food poisoning may be caused by foods which have been kept too long before being eaten, or which have not been properly cooled and stored. The poison results from certain bacteria of one or more kinds accidentally present in the food, which are not killed by the heat of cooking or which are conveyed to the food (by dirty hands, for instance) after it is cooked. The contamination usually is such that it can not be detected by the sense of taste. While food poisoning has been known to occur in many different kinds of food, those most commonly mentioned are soft cooked vegetables—especially if put away warm—soups, meat pies and similar dishes, milk, fish, meat, baked beans and ice cream.

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FIG. 1.—A PRIMITIVE COOKING ARRANGEMENT.

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FIG. 2.—SCREENED ENCLOSURE FOR KEEPING MEATS.

APPENDIX.

A DIGEST OF STATE LAWS RELATING TO THE USE OF CONVICT LABOR FOR ROAD WORK.

By L. E. Boykin, *Assistant in Road Economic Investigations, Division of Road Economics.*

In the last few years there has been a notable increase in the number of States which permit the use of prison labor in highway work or in the preparation of road materials. During the year 1915 26 of the 44 State legislatures which were in session enacted new legislation bearing on the subject. At the present time all but two States have laws authorizing such use. There follows a brief digest of such general laws as were in force in the several States January 1, 1916. Numerous special laws also exist in many States, but they have only a local or special application, and no attempt has been made to include their provisions in this digest.

Alabama.

State.—An amendment to the constitution was voted, August, 1907, authorizing the legislature to appropriate part or all of the net proceeds from the State convict fund to the construction, repair, and maintenance of public roads. In pursuance of the authority thus conferred the legislature, by act of April 5, 1911, appropriated from said State convict fund the sum of $154,000 annually to be apportioned, after making the deduction allowed by law for the salaries and expenses of the State highway commission, equally among the several counties of the State.

Counties.—The convicts of any county or municipality may be worked upon the public roads, bridges, or ferries of the county, or in quarries, gravel pits, or any plant used for the production of road materials, under the direction of the court of county commissioners or board of revenue; or said convicts may be hired to or from another county or from the State. No female convict shall be so worked, but may cook and prepare meals for road crews. (Acts 1915, No. 505.)

Courts of county commissioners, boards of revenue, or other like governing bodies of the several counties, may work county and State convicts on the public roads and bridges of their respective counties; and they may hire their county convicts to, hire from, or exchange with, other counties, under such terms as may be mutually agreed upon for the purpose of building and maintaining the public roads. Said governing bodies of the several counties may contract with the State convict department for State convicts to be used for a like purpose, under such regulations as may be prescribed by the said State convict department. They may also purchase necessary cells, tents, equipment, and clothing, hire sufficient guards, and provide proper medical treatment. Said governing bodies may pay all expenses incident to employing such convicts out of any funds available for road and bridge work in their respective counties. (Acts 1915, No. 580.)

Arizona.

State.—The State board of control may cause persons sentenced to imprisonment in the State prison to work upon the construction, repair, or maintenance of State roads, highways, and bridges in the several counties, on request of the county supervisors thereof, and in conformity to the directions and specifications of the State engineer. When the board of control shall decide so to work such convicts, the secretary of said board shall notify the superintendent of the State prison to furnish such number of men as the board may direct and cause them to be removed to the place or places where such work is to be done. All implements, tools, machinery, supplies of every kind, all animals necessary for the prosecution of such work, and suitable shelter for men and animals shall be purchased and provided by said board of control. The State engineer may establish and maintain camps or enclosures for the men so employed and, with the approval of the board of control, make and provide suitable methods of enforcing rules and regulations for governing the men while so employed. When the

work on which such prisoners are employed is completed, or for any other reason deemed sufficient by said board of control, the State engineer shall cause such prisoners to be returned to the State prison or to other place of employment, together with all equipment, supplies, machinery, tools, and implements. The cost of transporting convicts so employed, and necessary guards, to and from the State prison, or from one place to another, together with all other expenses necessarily incurred in or about the employment of such convicts and the carrying on of any such work shall be payable as follows: That portion equaling the maintenance cost at the State prison for the number of prisoners employed shall be paid from the prison maintenance fund and the remainder from the State road-tax fund. All claims therefor shall be in such written form as may be prescribed by the State board of control, approved in writing by the State engineer, and audited by the State auditor. Payments shall be by warrants drawn on the State treasurer and countersigned by the governor. Counties availing themselves of this act shall not, during the same fiscal year, be entitled to any portion of the State road-tax fund, except such as would be a proper engineering charge. (R. S., 193, secs., 5141–5148; Laws 1913, third sp. sess., as amended; Laws 1915, ch. 35.)

Counties.—The keepers of the jails of the several counties, when any person shall be sentenced to hard labor therein, and any mode of labor shall be provided, shall keep such prisoners constantly employed. Such labor may be performed inside or outside the walls of such jails, and, on discharge of the prisoner, shall be reported to the board of supervisors. Any such prisoner who shall be so employed when sentenced to pay a fine, and imprisoned in default of such payment, shall be allowed the sum of $1 for each day he shall so work, which shall be credited on such fine (R. S., 1913; secs. 1482, 1486.)

Arkansas.

State.—The superintendent of the penitentiary may, in his judgment, order the roads leading to and in the neighborhood of the several camps now or hereafter occupied by the inmates of such penitentiary, worked and repaired by the labor of such convicts, provided that no such convict shall be required so to work for a greater number of days than now allowed by law for regular road hands. (Kirby's Digest, 1904; sec. 5873).

The department of State lands, highways, and improvements shall employ as many State convicts on the public roads as may not be otherwise employed by the penitentiary authorities. Convicts so worked shall be under the care and management of wardens and other officers named by the penitentiary authorities, but said department shall determine the work to be done, and the time, place, and manner of doing it. Salaries of wardens and cost of clothing of such convicts while so employed shall be paid by the State, and the cost of feeding and housing them shall be paid by the county or improvement district where they may be worked. When practicable, the said department of lands, highways, and improvements may engage State or county convicts available in preparing road materials at quarries or elsewhere, and the expenses of such work shall be charged to the State or to the county or district receiving such materials. (Act 302, 1913, as amended by Act 338, 1915.)

Counties.—If the county court or judge thereof shall be unable to make a satisfactory contract for the working of the convicts of the county, said court or judge thereof may order the prisoners on the roads, bridges, levees, or other public improvements of the county, under such rules and regulations as such court or judge may prescribe. Said court or judge shall appoint a superintendent to have charge of said prisoners, and he may employ such guards or adopt such means to prevent escape as may be necessary. The county court, at its annual meeting for making appropriations, shall make necessary appropriations to carry out the purposes of this act, but not more than $10,000 shall be appropriated for any one year. While prisoners are so worked in charge of said superintendent, the sheriff shall feed them and receive regular fees allowed therefor. If any prisoner shall escape, he shall be compelled to work out all costs of his recapture. Commissioners of public roads may supersede such superintendent. (Kirby's Digest, 1904; secs. 1101–1108, 7237–7238.)

Counties of judicial circuit.—The county judges of counties composing any judicial circuit or of any contiguous portion of any judicial circuit may meet and, by unanimous vote, adopt the provisions of this act, whereupon they shall organize by electing a chairman and a secretary from among their number and shall, when so organized, constitute the county convict board for said counties. Said board shall purchase a road-making outfit and necessary equipment for properly caring for the convicts of said counties while worked on the roads therein, an equal portion of the cost thereof to be paid by each of said counties. Each county may furnish such road equipment as it may possess and such board may deem suitable, and be allowed therefor its reason-

able market value. Said board shall employ a road foreman who shall have charge of said outfit and equipment and work the convicts of such counties on the public roads thereof. Said board shall meet annually to elect officers and transact other business, and at such other times as may be necessary, and may adopt rules and regulations for the management and discipline of said convicts, including such punishment as may be deemed right and proper for violations thereof. Said board may appoint a road engineer, if it shall deem advisable, the cost thereof to be borne equally by the counties. The road foreman shall work said convicts an equal length of time in each county each year, and shall notify the county judge of each county at least 30 days in advance when he will be in his county, and submit an estimate of supplies that will be needed for said convict gang while at work therein, and the said county judge shall furnish such supplies. The convicts shall be worked on the roads designated by the county judge. The county court shall pay the salary of the foreman and any other paid employees with said convicts while working in that county. Persons imprisoned for nonpayment of a fine and costs may be so worked until same are paid and shall be allowed on same for each day they shall so work 75 cents. Prisoners from cities and towns may also be worked, and prisoners may be hired from other counties. If any prisoner shall escape, or attempt to escape, the time for which he was liable to work shall be doubled. No convict shall be worked over 10 hours per day, and when discharged shall be given $1 in money and, if he has worked six months, a $10 suit of clothes. White convicts shall not be required to sleep or eat with negroes, and females shall not be worked on roads. Felony convicts sentenced to penitentiary for five years may be so worked. Persons held in default of bail, may, at their election, be so worked and shall receive 75 cents per day for labor so performed, to be credited on fine and costs if convicted. Work may be discontinued by said board by a majority vote at any annual meeting. (Acts 1913, No. 306.)

Convict road district.—At the July term of the county court each year the county judges in any two or more contiguous counties may enter into an agreement for the formation of a road and convict district. There may be worked on the roads of such district all prisoners convicted of misdemeanor in justice's courts and whose fines are not paid, and prisoners convicted in the circuit court for misdemeanor or felony. The county courts shall provide for the care and maintenance of all prisoners while working in their respective counties, including guards, wardens, clothing, medical attention, equipment, supplies, stockades, camps, etc., and may pay for same out of any money appropriated for roads and bridges. Prisoners shall not be worked more than 10 hours per day, and such labor shall be valued at 75 cents per day. Males and females and whites and blacks shall be kept separate. Any convict whose conduct is exemplary and services good for six months shall be entitled to a commutation of one month; for one year, two months; for two years, five months; for three years, six months; and for four years, the prisoner sentenced for five years shall be discharged. Prisoners serving two years or more shall on discharge be furnished by the sheriff with $2.50 in money and $12.50 worth of clothing. The county judge, the county clerk, and the sheriff of each county shall constitute a board to prescribe and enforce rules governing work, care, location, and punishment of such convicts. Persons held in default of bail may, at their election, be worked as other convicts and credited with 75 cents each day they shall work. (Acts 1909, No. 207.)

Road improvement district.—Provision may be made in any highway charter (for road improvement district) for working male convicts of any county on the roads thereof. Every charter providing for so working convicts shall also provide for the appointment of overseers, guards, physicians, and other necessary officers and employees. The cost of feeding, clothing, housing, and superintending such convicts shall be charged to the particular district or county where they are worked in proportion to the time they may be used therein. (Acts 1913, No. 302.)

California.

State.—State prison authorities may use State prisoners in preparing road and bridge-building materials. (Acts 1901, ch. CXII, being S. 1588 of Penal Code, and Acts of 1911, ch. 56.)

The department of engineering may employ State convicts in the construction and maintenance of the State highway system provided for by the "State Highway Act," approved March 22, 1909, and in the construction and maintenance of any other State roads. Upon requisition of said department, the State board of prison directors shall send to the designated place, and at the appointed time, the number of convicts desired. Said department of engineering shall designate and supervise all road work done, but said board of prison directors shall retain full jurisdiction over the discipline and control of such convicts. The expense of transportation, guarding,

commissariat, camps, and all other expense incident to such work shall be paid from the respective funds provided for such State road work. Convicts shall not do any work which requires the employment of skilled labor. The said board of prison directors shall adopt a special rule applicable to such convicts, whereby additional good-time allowance may be granted for good conduct and efficient service, but not to exceed one day for each two calendar days that the convict is absent from the prison. (Acts 1915, ch. 124.)

Counties.—Any person convicted of abandonment and nonsupport of a wife, child, or children and sentenced to imprisonment in the county jail may, at direction of the court, be compelled to work on the public roads, or any other public works, in the county. Where such work is performed, the board of supervisors shall order paid to the wife, or the guardian or custodian of such child or children, at the end of each calendar month, not to exceed $1.50 for each day's work so performed. (Acts 1911, ch. 379.)

The boards of supervisors, in their respective counties, may provide that prisoners confined in the county jail on conviction of misdemeanor, shall, under direction of some suitable person to be appointed by the sheriff, work upon the public roads, streets, alleys, highways, or in such other places as may be deemed advisable for the benefit of the county. (Acts 1911, ch. 746.)

Colorado.

State.—Convicts of the State penitentiary engaged in work outside the walls thereof, and known as "trusty prisoners," who shall comply with the prison rules and perform their work in a creditable manner may, upon the warden's approval, be granted such good time in addition to that allowed by law as the Board of Penitentiary Commissioners may order, not to exceed 10 days in any one calendar month. (Acts 1909, ch. 153.)

Upon the written request of the board of county commissioners of any county, the warden of the State penitentiary shall detail such convicts as in his judgment shall seem proper, not exceeding the number requested, to work upon such public roads of such county, or streets or alleys of any city or incorporated town therein, as shall be designated in said request. Such county shall pay all additional expense of guarding such convicts and shall furnish tools and materials while working on the roads therein; and such expenses shall be met by such city or incorporated town when such work is done on the streets or alleys thereof. (R. S. 1908; sec., 4879.)

The legislature has established the "Santa Fe Trail" highway to extend from a designated point on the northern boundary of New Mexico through Trinidad, Denver, and Fort Collins to a designated point on the northern boundary of Colorado. The construction and maintenance of said road and extensions thereof shall be under control of the Board of Commissioners of the State Penitentiary and the warden of said penitentiary, who shall use therefor the labor of the penitentiary convicts. Supervision of the work shall be under such competent persons as may be selected by said board of penitentiary commissioners. Convicts shall not be worked over eight hours per day. Said board of penitentiary commissioners may adopt rules and regulations providing for granting additional good-time allowance to short-term men and better food for life prisoners, conditioned on good behavior and efficient work. (R. S., 1908; secs., 5855–5859.)

At various times appropriations have been made by the legislature to purchase tools, equipment, supplies, etc., and to pay for extra guards, in building certain specified roads with the labor of State convicts. (Acts 1909, chs. 55, 92, 95; Acts 1911, chs. 54, 56.)

An appropriation was made and authority conferred for working paroled prisoners from the State reformatory, under direction of the State reformatory commissioners and the warden of the Colorado State Reformatory, on the highway following the Arkansas River from Pueblo to Leadville. Such prisoners receive a salary of not to exceed $1 per day and board for each day they shall so work. Necessary road equipment was to be provided from the appropriation made. If a prisoner shall be returned to the reformatory for misconduct he shall forfeit any unpaid balance due on his salary. (Acts 1909, ch. 112.)

Counties.—Persons serving a sentence in any county jail who shall faithfully perform the duties assigned during the term of imprisonment shall be entitled to a deduction from such sentence of two days in each month. Any such prisoner who shall escape, or attempt to escape, shall forfeit all accrued deductions to which he may be entitled. Upon written request of the board of county commissioners, the sheriff shall detail such male prisoners as he may deem proper, not exceeding the number requested, to work on such roads of the county, or such streets and alleys of any city

or incorporated town, as may be designated in such request. The county shall pay all additional expenses of guarding such prisoners while so working and furnish necessary tools and materials, but where work is done within the limits of a city or incorporated town such city or town shall pay such additional expenses. Prisoners shall not be used to build a bridge or like structure which requires skilled labor. Prisoners doing work outside the walls of the jail who shall render faithful service and obey the rules prescribed by the sheriff shall be allowed such good time, in addition to that otherwise granted, as the sheriff may order, not to exceed 10 days in one calendar month. (Acts 1911, ch. 184.)

The keepers of said prisons (meaning, no doubt, sheriffs and county jailers) may, with the consent of the county commissioners, cause such convicts under their charge as are capable of hard labor to be employed on any public avenue, street, highway, or other public works, quarries, or mines, in the county in which such prisoners are confined, or in any of the adjoining counties, upon such terms as may be mutually agreed upon. (R. S. 1908, sec. 2022.)

The sheriff of each county shall feed prisoners kept in confinement by him with good and sufficient food; and the county commissioners shall, at expense of the county, supply all things necessary in the performance of said duty. (Acts 1915, ch. 111.)

Connecticut.

Counties.—The county commissioners of any county may, with consent of the sheriff, cause prisoners serving terms in the jail or workhouse thereof to labor upon any bridge, or public highway or property adjacent thereto. (Acts 1915, ch. 180.)

Delaware.

Sussex County.—The levy court may employ persons convicted and imprisoned in the county jail, or other places of detention, upon the public roads of the county, or upon the farm of the trustees of the poor, and said court may fix the compensation of such prisoners for all labor so performed, if it shall be deemed wise to pay for such labor. Such compensation may be paid to the dependent members of the families of prisoners. (Acts 1915, ch. 76.)

Kent and Sussex Counties.—Male persons convicted of crimes punishable by imprisonment at hard labor may, in the discretion of the court, be sentenced to labor on the public roads for not to exceed 8 hours a day and for not more than 3 months in any instance. The levy court may employ necessary guards and others, and may also employ a "superintendent of convict gangs," who shall have the same power as a deputy sheriff. If necessary, suitable camps shall be provided by the sheriff with proper provision for feeding the convicts. The cost of maintaining such camps shall be paid by the levy court. Prisoners who become refractory and refuse to work may be placed in solitary confinement and fed on bread and water. (Acts 1913, chs. 272, 273.)

New Castle County.—By act of 1893 the levy court was authorized to secure, by purchase or condemnation, a stone quarry to be worked by convicts sentenced to the workhouse at hard labor. Eight hours constitute a day's work at said workhouse. Prisoners refusing to work, or failing to perform their work satisfactorily, may be placed in solitary confinement by the superintendent of the workhouse and be fed on bread and water. Such work and the care and custody of the prisoners shall be under the management and direction of the superintendent of the workhouse. Supplies for feeding the prisoners shall be purchased by contract let after due advertisement. The levy court shall provide necessary guards and other employees. Commissioners of the jail and workhouse may make rules for the government and operation of the workhouse and all persons connected therewith. Said workhouse shall be properly equipped for breaking stone suitable for road-building purposes, to be divided among the several hundreds of the county making application therefor and upon payment of the transportation charges thereon. Provision is made for disposing of the surplus stone produced. (Acts 1893, ch. 670.)

The levy court may make an agreement with the board of trustees of the New Castle County Workhouse for employing prisoners confined therein in building or repairing any of the public highways of the county. (Acts 1913, ch. 271.)

Florida.

State.—The State prison physician shall examine and grade all State convicts into three grades or classes, to wit: Grade or class one, all able-bodied male negro convicts; grade or class two, women and infirm convicts; grade or class three, all negro convicts who have served ten years or longer and all white male convicts and all negro male convicts not included in classes one and two. Convicts included in

grades one and three may be worked on the public roads of counties on application therefor by the county boards of commissioners to the board of commissioners of State institutions. The counties shall, at their expense, guard, feed, clothe, maintain, and give medical attention to all convicts so employed. Convicts so employed shall at all times be under the supervision of the board of commissioners of State institutions, and shall comply with all rules and regulations prescribed by said board and the commissioner of agriculture. All grade one convicts so used shall be paid for at the rate of $10 per month, and grade three prisoners at the rate of $1 per month. Convicts shall not be worked more than 10 hours a day. (Acts 1916, ch. 6915.)

The commissioner of agriculture shall keep a record of the conduct of each prisoner, and, when no charge of misconduct has been sustained against him, the following deductions from his sentence shall be made by the board of commissioners of State institutions: Two days per month off for first year of sentence; 3 days for second year; 4 days for third year; 5 days for fourth year; 6 days for fifth year; 7 days for sixth year; 8 days for seventh year; 9 days for eighth year; 10 days for ninth year; and 15 days per month off for the tenth year and all succeeding years. Accrued commutation shall be forfeited for mutinous conduct or for escape or attempted escape. (Acts 1915, ch. 6917.)

Counties.—Boards of county commissioners may employ all persons in the jails of their respective counties, under sentence for crime, at labor upon the streets of incorporated cities and towns, or upon roads, bridges, and public works of the county; or the said boards may, in their discretion, lease such convicts to be kept and worked either within the county or in any other county in the State. No female, or physically disabled convict, shall be so worked. Said convicts shall be kept and worked under such rules and regulations as may be prescribed by the commissioner of agriculture, with the approval of the board of commissioners of State institutions. The supervisors of State convicts shall inspect and supervise all county convict camps. (Acts 1909, ch. 5963; Acts 1913, ch. 6537.)

Persons confined in the county jail under sentence of a court may be worked on the roads of the county. If the number of convicts in any county at any time be less than five, the county commissioners may arrange with the county commissioners of any other county for an exchange of prisoners. The cost of guarding and maintaining such prisoners shall be paid by the county in which they are worked. Ten hours shall constitute a day's labor for all such convicts. Every such convict shall be entitled to receive, together with subsistence, a credit at the rate of 30 cents per diem on account of fines and costs. (G. S. 1906, secs. 4110, 4111, 4113.)

The sheriff shall be allowed the following fees for feeding prisoners: For feeding 10 prisoners, or less, 50 cents per day each; and over 10 prisoners, 40 cents per day each. (Acts 1915, ch. 6898.)

GEORGIA.

State.—Every crime declared to be a misdemeanor is punishable in the discretion of the judge by a fine of not to exceed $1,000; imprisonment not to exceed six months; work in the chain gang on the public roads or on such other public works as the county or State authorities may employ the chain gang not to exceed 12 months. All male felony convicts, except such as are now required by law to be kept at the State farm, may be employed by the authorities of the several counties and municipalities upon the public roads, bridges, or other public works thereof. On or before the 10th day of February annually, the prison commission shall communicate with the county authorities of the State and ascertain those counties desiring to use convict labor upon their public roads, and said county authorities shall advise the prison commission, in writing, whether they desire so to use such labor and the number desired. The convicts shall be apportioned among the counties according to population. Convicts may be awarded to counties other than the one in which the conviction was had. One county may, upon the approval of the prison commission, deliver its quota of convicts to another county, to be used on the roads and bridges thereof, the counties so receiving such convicts to have the right to compensate the county from which the convicts came, with work upon its roads, or by the exchange of an equal number of convicts. The prison commission may, when in funds, purchase road machinery, appliances, and teams, and equip and organize road-working forces, the same to be used for the construction and repair of roads and bridges in counties not using their convicts under the preceding provisions, when requested by the authorities thereof so to do, the work to be done as nearly as practicable in proportion to the convicts which would have been assigned to such county in case it had worked its convicts, but as many convicts in addition to said proportion may be worked as any county is willing to pay the expense of, and as the commission may have at its disposal. The county in which convicts are worked shall pay the expenses thereof,

including maintenance of equipment and all material required for the work done in the county. If all convicts are not disposed of under the preceding provisions, the prison commission is hereby authorized to place convicts in counties desiring to use them in excess of their quota. If after the counties have been provided with convicts there shall still remain any convicts not otherwise disposed of, then the privilege conferred upon counties herein shall be extended to municipalities, which may hire convicts from the prison commission at the price of $100 per capita per annum.

Any county may purchase or rent, and maintain a farm and cultivate same with convict labor in connection with working its convicts on its public roads and bridges, all products and supplies arising therefrom to be used for the support of the convicts, for the improvement of its public roads and bridges, and in support of county institutions. All convicts and all convict camps shall be under the direct supervision of the prison commission, which shall prescribe rules and regulations for governing the same, subject to the approval of the governor, and shall require the observance and maintenance of sanitary rules and appliances. The net proceeds from the disposition of convicts to municipalities or otherwise shall be used at its option by the prison commission in working convicts upon the public roads or works of counties not electing to utilize their allotment of convicts; and in case said commission shall elect not to work the roads in any one or more of said counties, then the pro rata of said funds for said counties shall be paid into their respective treasuries to be used for road purposes only. The prison commission may purchase or lease for five years one or more tracts of land conveniently located for working the convicts thereon; and the State farm shall be used as far as possible for making supplies of all kinds for maintaining the convicts, either in farm products or manufacturing articles for the use of the convicts and State sanitarium and other State institutions. If the prison commission has on hand convicts not provided for under the foregoing sections of this act, they may be placed upon said farms to work. Not to exceed four supervisors may be employed by said prison commission, to visit the various counties, to inspect the convicts and their work, and to perform such other duties as may be required of them. If practicable, civil engineers shall be selected for these positions. The commission shall also appoint such wardens and guards as may be necessary. (Ex. sess. 1908, act No. 4.)

Counties.—The authorities of any two or more counties having charge of the county public works may act jointly and cooperate in establishing, improving, and maintaining a system of intercounty public roads, and may jointly create a chain gang from the convicts of such counties sentenced for misdemeanors or felonies. Such chain gang shall be put to work on such system of roads under such rules and regulations as said authorities may prescribe. The cost of such work shall be paid by the counties in such proportions as the authorities thereof shall determine. (Political Code of 1911, Title VI, secs. 428–431.)

The commissioners of roads and revenues, or the ordinary, as the case may be, shall repair the public roads as follows: By chain gang organized from misdemeanor convicts of the county, or of any other county from which such convicts may be obtained without cost; by free labor and those who do not pay the commutation tax; or by contract; or by a combination of such methods. Such authorities may purchase and provide any machinery, tools, stockades, and other such equipment necessary in handling and working the chain gang. (Political Code of 1911, secs. 697–698.)

Idaho.

State.—Subject to such rules and regulations as may be adopted by the State board of prison commissioners, the State highway commission may make requisition upon the warden of the State penitentiary for such number of the convicts confined therein as in his judgment are physically able to work upon any of the highways to be constructed by said State highway commission. Such convicts shall be worked under the general direction and supervision of the State highway commission, subject to such rules, regulations, and safeguards as may be prescribed by said board of prison commissioners. The State highway commission shall cause to be paid out of the State highway fund $5 per month to each convict so worked, and also the expense of transporting, guarding, and subsistence of each convict while away from the State penitentary, less the estimated average cost to the State of his subsistence had he remained at the penitentiary. (Acts 1913, ch. 179, as amended, acts 1915, ch. 64.)

Counties.—The county commissioners of the several counties may employ inmates of the county jail on public roads or other county work under such regulations as they may prescribe. A person serving a sentence in the county jail who has a good record and performs the tasks assigned him in an orderly manner, shall, on recommendation of the sheriff and prosecuting attorney, be allowed five days off of each month of his sentence, by the probate judge. (Acts 1915, chs. 77 and 130.)

Illinois.

State.—The board of prison industries shall, upon requisition of the State highway commission, employ prisoners in the penal and reformatory institutions of the State in the manufacture of tile and culvert pipe, road machinery, tools, and appliances, and in the preparation of road and ballasting materials. All such materials so manufactured shall be placed upon railroad cars to be forwarded to proper destination. Application for such materials may be made to the State highway commission by county or township road officials, as the case may be, in such quantities as may be needed for the construction or repair of their roads, obligating themselves to use such materials according to rules and regulations formulated and approved by the State highway commission. The State highway commission may negotiate with railroad lines for rates of transportation on all such material, machinery, and tools, and may contract with such railroads to pay for same in ballasting material. (Acts 1905, ch. 108, as amended in 1907.)

The commissioners of the Northern Illinois Penitentiary, commissioners of the Southern Illinois Penitentiary, and the board of managers of the Pontiac Reformatory may employ convicts sentenced for terms not exceeding five years, or who have not more than five years to serve to complete their sentence, in working on the public roads or in preparing road materials outside the walls of such institutions. Upon written request of the county or township road officials, as the case may be, said penitentiary commissioners and the board of managers of said reformatory shall detail such convicts as in their judgment shall seem proper, not exceeding the number requested, to be worked under such terms and conditions as the said penitentiary commissioners and board of managers may prescribe. Such local road officials shall pay all additional expenses for guarding such convicts while so worked in their respective townships, road districts, or counties. (Acts 1913, S. B., 539.)

Indiana.

State.—The board of trustees of the Indiana Reformatory, and the board of control of the Indiana State Prison, may work the inmates thereof, or any number of such inmates, upon the public highways of the State, whenever there is no labor at which they may be employed within the walls of such institutions. Said boards may adopt rules and regulations for the care, control, and safety of such inmates while so employed, and may enter into an agreement with the board of commissioners of any county, or the township trustee of any township, to work such inmates upon the highways of such county or township, and such agreement shall provide the compensation such county or township shall pay said boards for the labor of such inmates. In order to carry out such agreements, said boards may purchase necessary tools, apparatus, appliances, and movable places of confinement for such inmates and employ a superintendent to have charge of such work. Said board of county commissioners, or township trustees, as the case may be, may purchase all materials necessary to perform such work. Said boards may enter into similar agreements with any commission or board that hereafter may be authorized by law to improve the public highways of the State. (Acts 1913, ch. 83.)

Counties.—All able-bodied male prisoners sentenced to any county jail or workhouse, either for punishment or for nonpayment of fines or costs, may be put at hard labor on the public roads or highways, or upon any other public work, under such rules and regulations as the board of county commissioners may prescribe. The cost of guarding such prisoners while so employed shall be paid from the county treasury. (Burn's Anno. Stats., 1908.)

Iowa.

State.—The board of control of State institutions, with the advice of the warden of any penal institution of the State, may permit any able-bodied male prisoners to work upon the highways or any other public works of the State, but no prisoner shall be so worked whose health might thereby be impaired, or whose character is such that he would probably be unruly or attempt to escape. No prisoner who is opposed to so working shall be required to do so. Prisoners so employed shall at all times be under the charge and jurisdiction of the warden of the institution to which sentenced, and said warden shall designate guards, officers, or agents, to direct and supervise such prisoners. The State highway commission shall supervise the work performed on the highways, but may cooperate with boards of supervisors and local officials in the performance of same. Said board of control and warden shall prescribe the conditions and manner of keeping and caring for such prisoners. County boards of supervisors, or other local road officials, desiring to use prisoners upon the highways in their

respective jurisdictions, may apply therefor to the State highway commission, specifying the number desired, character of work, and the amount that will be paid for such labor. If said commission shall approve the application, it shall be submitted to the board of control and warden, who shall arrange the details of the contract with such board of supervisors or other local road officials. The compensation agreed upon for such labor may be paid from any fund available for road and bridge work, and said board of control may allow a part of such compensation, over and above the cost of maintenance, to such prisoners as shall perform such labor and send a portion thereof to those dependent upon them. Prisoners shall not work in clothing which will make them look ridiculous or unduly conspicuous. (35 G. A., ch. 134.)

Counties.—Able-bodied male persons over 16 and under 50 years of age, imprisoned in any jail, may be required to labor during the whole or a part of the term of imprisonment, at the discretion of the court imposing sentence. Such work may be on the streets, on the public roads, or at such other places in the county as the person having charge of the prisoners may direct, not exceeding eight hours per day. When imprisonment is for violation of State statute, the sheriff shall superintend the work and furnish tools and materials, if necessary, at expense of the county, and the county shall be entitled to the benefit of such labor. If such imprisonment is for violation of any ordinance, by-law, or other regulation of a city or town, the marshal shall superintend the labor and furnish tools and materials, if necessary, at expense of such city or town entitled to the benefit of the labor of such convicts. (Code 1873; secs. 4736–4739; 21 G. A., ch. 153.)

Kansas.

State.—The warden of the State penitentiary shall employ the surplus convict labor in extending and repairing the State and county roads, and upon other work exclusively for the benefit of the State. (Acts 1907, ch. 20; Acts 1915, ch. 58.)

Upon written request of the board of commissioners of any county or of the mayor or councilmen or the commissioners of any city or town, the warden of the Kansas State Penitentiary may, in his discretion, detail convicts to work upon such roads, streets, or alleys as may be designated in said request; provided that such county, city, or town, respectively, shall pay all additional expenses of guarding said convicts while so employed and furnish necessary materials and tools, and shall also pay to said warden the sum of $1 per day for each convict so furnished, which sum, after deducting the cost of maintenance and retention, shall be paid to those dependent on such convict, if any, otherwise it shall be paid to such convict on his discharge. Said convicts shall not be used in building any bridge or like structure which requires skilled labor. Convicts may be granted as additional good time allowance one day out of each three so employed, conditioned upon good behavior. (Acts 1913, ch. 219.)

Counties.—The board of county commissioners of any county may properly shackle and work, under such rules and regulations as said board may prescribe, male prisoners committed to jail for nonpayment of fines and costs. Said board may establish a county stoneyard and work such prisoners at breaking stone for road and street purposes. Stone so crushed may be sold or disposed of on such terms as said board may deem advisable, or, if it can not be sold, it may be used in improving some designated road or street. The proceeds from the sale of such stone shall be used to pay for stone delivered at the stoneyard and the remainder applied to payment of the fine and costs against the person breaking the same. Such prisoner may, if he shall so desire, under certain requirements, agree to do a certain amount of work on some highway in full satisfaction of such fine and costs and may be released from jail for that purpose. Prisoners shall be allowed $1 for each day's labor performed in good faith, or a specified sum per cubic yard for breaking stone. (G. S. 1909, ch. 97, art. 18, secs. 6937–6943.)

Kentucky.

State.—The State may employ outside the walls of the penitentiary persons confined therein for felony in the construction, reconstructing, and maintaining public roads and bridges or in preparing road materials, or in aid of road and bridge work by the counties. (Amendment to the constitution adopted in 1914.)

Counties.—Persons sentenced to hard labor for nonpayment of fine and costs or as punishment for offense committed, shall be placed in the county workhouse, or at work upon some public work or road of the county, or upon the public works of any city or town in the county. The place and manner of working such prisoners shall be determined by the county judge, and he shall give preference to work on roads. When prisoners are worked on the county roads, the cost of feeding, lodging, and guarding shall be paid out of the road funds of the county; and when they are employed on the public works of any city or town, all such expenses shall be paid by such city

or town. The county judge may appoint a manager and guards for each crew of prisoners, but no crew shall consist of less than three prisoners and not more than one man shall be paid to manage and guard less than 10 persons. The county court may prescribe rules and regulations for governing prisoners and those in charge of them. Any prisoner who may escape shall be fined from $20 to $100, or imprisoned for 10 to 15 days, either or both. All prisoners placed at hard labor shall be permitted to satisfy their fines and costs at the rate of $1 per day. (Acts 1914, ch. 89.)

Louisiana.

State.—Whenever in the opinion of the State highway engineer, convicts can be profitably worked upon the public roads, he shall apply to the board of control of the State penitentiary who shall furnish such convicts in case they are available. The labor performed by the convicts shall be furnished free of charge, provided that the cost of maintenance and operation shall be borne by the parish, municipality, or road district having the work performed and paid out of the fund available for said work. The board of control of the State penitentiary shall retain control and supervision over said convicts in the same manner and to the same extent as if they were upon State farms or in the penitentiary walls. (Act No. 49, Sec. 16.)

Parishes.—In all convictions of crime punishable by imprisonment at hard labor, but not necessarily so, the judge may sentence the person so convicted to work on the public works, roads, or streets of the parish or city in which the crime was committed; provided, that when a fine is imposed as part of the penalty in such cases, the judge may, for nonpayment of such fine and costs, enforce payment thereof by sentence of additional labor at the rate of $1 per day. Police juries may prescribe rules and regulations for the discipline and working of such convicts, but no convict shall be required to wear a ball and chain or other symbol of degredation, nor shall they be required to work more than 10 hours per day. (Acts 1878, No. 38.)

Able-bodied males, over 18 and under 50 years of age, sentenced to imprisonment in the parish jail for crime or for nonpayment of a fine, shall be worked upon the public roads or other public works, or shall be leased to some one person for the purpose of working them within the parish. Convicts shall not be so held and worked for fines and costs for more than two years, and for good conduct and efficient service they shall be entitled to a deduction of one-sixth from their term of imprisonment. The police jury may prescribe rules and regulations for the government and control of such prisoners. Any convict who shall escape, or attempt to escape, shall have his sentence increased by 10 per cent of the unexpired term and sufficient additional time to cover the costs incident thereto. The wages of convicts shall vary from $2 to $16 per month while so worked. The police jury may employ necessary gaurds. (Acts 1908, No. 204.)

Maine.

Counties.—In counties not having established county workhouses, the county commissioners, at county expense, shall provide some suitable place, materials, and implements for breaking stone suitable for road-building purposes, and shall cause certain prisoners to be worked thereat. Said county commissioners may prescribe needful rules and regulations for the government and control of such prisoners and the prosecution of such work. (R. S. 1903, ch. 80.)

Upon written application of the county commissioners, or the municipal officers of any town, the board of prison and jail inspectors may require that any male prisoner under sentence in jail shall be worked on the public ways or in preparing road materials, under such regulations as said board of inspectors may prescribe. (Acts of 1905, ch. 126.)

Maryland.

State.—The State roads commission may establish a stone-crushing plant or plants, and may rent, purchase, or condemn stone quarries, or other materials, to produce road materials available most economically for water or other transportation, and do all things necessary and proper in connection with purchasing, producing, accumulating, and distributing such materials. For the purpose of building, constructing, and maintaining any State roads and bridges, or for working in any stone quarry operated by the State roads commission, said commission may make requisition on the director of the Maryland house of correction for as many inmates thereof as may be necessary for said purposes, and said directors shall furnish such inmates with such guards and keepers as can be spared from duty at said house of correction. Additional guards and keepers shall be furnished by said commission, if necessary. Said commission, in conjunction with aforesaid board of directors, shall provide for the maintenance and safe-keeping of said inmates while so employed. (Ann. Code of 1911, act 91, secs. 51–61.)

Massachusetts.

State.—The board of prison commissioners may cause the prisoners in any jail or house of correction to be employed within the precincts thereof in preparing road material, but no machine except such as is operated by hand or foot power shall be used in connection therewith. The Massachusetts Highway Commission shall give to said prison commissioners such information as will enable them to direct such employment properly. Materials so prepared may be sold to the county commissioners or to city and town officers who have care of public roads. All materials not so sold shall be purchased by the Massachusetts Highway Commission for use on State highways; but the prison commissioners may cause any of said prisoners to be employed on material furnished by said highway commission which shall then pay for the labor of preparation. (Rev. Laws 1902, ch. 225, secs. 59–61.)

Prisoners removed to the temporary industrial camp for prisoners shall be governed and employed under regulations made by the prison commissioners. The Massachusetts Highway Commission and the Board of Agriculture, at request of the prison commissioners, shall furnish such information as will enable them to prosecute to best advantage the work of reclaiming and improving waste land and preparing road materials by hand labor. (Acts 1904, ch. 243.)

The superintendent of the prison camp and hospital at Rutland, with approval of the board of prison commissioners, may employ prisoners confined in the camp section thereof in the preparation of road material by the use of such machinery as said board may consider necessary. Receipts from the sale of products and materials resulting from the labor of such prisoners shall be paid into the State treasury monthly, and so much thereof as may be necessary used to pay the cost of providing machinery, equipment, and other things, including supervision, required in such operations. (Acts 1915, ch. 260.)

Counties.—The county commissioners of any county may make arrangements with the Massachusetts Highway Commission, or with officials of a city or town, to work prisoners from a jail or house of correction on any highway, or unimproved land, or with a private owner to improve waste or unused land. Prisoners so worked shall be in custody of the sheriff. For the labor of any prisoners so employed the county shall be paid such sums as may be agreed upon. (Acts 1913, ch. 633, as amended; Acts 1914, ch. 180, and 1915, ch. 177.)

Michigan.

State.—Upon written request of the proper county, township, or district road officials, the boards of control of the State penal and reformatory institutions may detail such able-bodied convicts as to them shall seem proper, not exceeding the number requested, to work upon such highways as shall be designated in said requests. Such requests shall be accompanied by a bid price per day for such labor, and allotments shall be to the highest bidder, but the price paid for such work shall be not less than 50 cents per day. Such county, township, or district shall pay the cost of transportation from and to the institution from which such convicts are obtained, and shall provide or pay for the lodging and food and furnish necessary tools and materials. The expense of guarding, if guarding be necessary, shall be paid by the State. Such convicts may be used in preparing road materials at quarries, but they shall not be worked in building any bridge which requires skilled labor. Good-time allowance may be granted such convicts for good conduct. (P. A. 1911, No. 181.)

Counties.—The board of supervisors of any county may order that any or all able-bodied persons over 18 years of age under sentence of imprisonment in the county jail shall be required to work upon the public highways, or in preparing road materials, or at any other work for the benefit of the county. The commissioners of highways of any township, and the authorities of any city, village, or county institution, may apply for the labor of such convicts. Such prisoners shall be under the control and custody of the sheriff while so worked, and the work performed shall be under the direction of the proper authorities of such township, city, village, or institution who shall furnish necessary tools and materials. The sheriff shall feed such prisoners the same as if they were confined in the county jail. (Acts 1915, No. 132.)

Minnesota.

State.—The State board of control shall purchase necessary machinery and appliances, in addition to that now belonging to the State at the Minnesota State Reformatory, and cause the spalls and waste rock on the grounds of said reformatory to be suitably crushed for road-building purposes. Such crushed stone, in excess of the needs of the reformatory, shall be delivered f. o. b. at the quarries to the State highway

commission, as it shall apply therefor, to be used in the construction and repair of public roads. (Acts 1909, ch. 229.)

Counties.—Able-bodied male prisoners, over 16 and under 50 years of age, confined in any county jail or village lockup, may be required to labor in the jail or jail yard, upon public roads or streets, or elsewhere in the county, not more than 10 hours per day. The court passing judgment shall specify whether imprisonment shall be at hard labor. Persons awaiting trial may be allowed, upon request, to so labor. When a sentence is for violation of a State law, the county shall pay a reasonable compensation to each prisoner, and such labor shall be performed under the direction of the county board, and superintended by the sheriff, who shall furnish necessary materials and tools; and in case imprisonment is for violation of any ordinance, by-law, or police regulation of a city or village, such compensation shall be paid by and the work done under the direction of the governing authorities thereof, who shall furnish necessary tools and materials. The earnings of prisoners may be paid to those dependent upon them. In case of imprisonment for nonpayment of fine and costs, $1.50 shall be credited thereon for each day's labor. For refusing to labor or obey orders relating thereto prisoners may be kept in solitary confinement on bread and water, but not for more than 10 days at a time nor for more than 90 days in all. The sheriff shall receive from the county fees for the board and washing of prisoners as follows: For an average number of 5 prisoners 57 cents per day each; for more than 5 and not more than 10, 50 cents per day each; and for 15 or more, 43 cents. (Rev. Laws 1905, secs. 5468–5472.)

Mississippi.

State.—The superintendent of the State penitentiary may work and keep in passable condition the public roads leading into the convict farms for a distance of 5 miles out, but not to exceed two such roads from any one farm, and said superintendent shall be amenable to the board of supervisors for the faithful performance of said work, in like manner as regular road overseers. (Acts 1910, ch. 167.)

Counties.—If a person be sentenced to imprisonment in the county jail, he may be disposed of by the board of supervisors as follows: He may be worked on a county farm, kept in jail, or worked on the public roads or on other work of a public character; but never under a contractor. Any prisoner so working who shall render efficient service and comply with all rules and regulations may have deducted from his fine and the term of imprisonment one-fourth thereof. The board of supervisors may prescribe and enforce regulations for working, guarding, keeping, clothing, and feeding such convicts, while so worked. Convicts are classified as follows: First class, male and female, over 18 and under 55 years old; second class, all others, male and female. The wages of convicts working on roads, public works, or farms, shall be fixed by the board of supervisors, within the following limits: First class, $8 to $20 per month; second class, $5 to $15 per month. Municipal authorities shall have similar power with reference to municipal prisoners. The board of supervisors may agree with the like board in any contiguous county, or counties, to own a farm in common upon which to work prisoners, or to work with prison labor the highways of the counties so agreeing, and similar arrangement may be made by said board with any municipality. In no case shall male and female or white and colored convicts be allowed to sleep in the same apartment, and as far as practicable they must be worked separately. Women must not be required to work on public roads, works, bridges, or streets. (Acts 1908, ch. 109, and House bill 352.)

Municipalities.—Municipalities are authorized to aid in working and keeping in repair public roads leading thereto, as far therefrom as the authorities thereof may deem proper, and may work their convicts for that purpose by contract entered into with the contractor of such roads, or with the board of supervisors. (Acts 1910, ch. 168.)

Missouri.

State.—The warden and inspectors of the penitentiary may, in their discretion, enter into contracts for the employment of not to exceed three hundred convicts of the State penitentiary upon the public roads and highways of the State, at such times and places and under such terms as they may deem proper. (Acts 1911, Senate bill 23, sec. 2.)

Counties.—The county court may order the sheriff or marshal to cause jail prisoners to work on the public roads or at breaking rock for road-building purposes; and when there are ten or more able-bodied male prisoners confined in the jail of any county, it shall be mandatory on said court to order them so worked. Said court may employ necessary guards. The road overseers or road commissioners of any road district or township wherein work is done shall direct such work, if so ordered by the county

court. A lot of ground on which to work such prisoners at crushing rock may be purchased or rented, and the rock so crushed may be sold by the sheriff to any incorporated town or city, or, by order of the county court, it may be turned over to any road overseer for use on the public roads. A person imprisoned for nonpayment of a fine shall be credited $1 on such fine for each day he shall so work. (Rev. Stat. 1909, secs. 3732–3733, 4915–4916.)

MONTANA.

Counties.—Persons convicted of crime and sentenced to the county jail may be required by the board of county commissioners to work on the public roads under such rules and regulations as said board may prescribe. The sheriff may employ guards and shall provide necessary clothing, food, and bedding for all prisoners committed to jail and shall be allowed such fees therefor as said board may determine. Boards of county commissioners may do work on State roads with convict labor. (R. C. 1907, secs. 9772–9776; Acts 1913, ch. 78.)

NEBRASKA.

State.—The board of commissioners of State institutions shall provide labor for the prisoners; and no prisoner shall be hired out to contract, except as herein provided. Any county, city, or village, through its proper officers, may contract with the warden, subject to approval of said board, for prison labor to be used in building or repairing roads or streets, or on other public works, at a wage to be agreed upon; and such county, city, or village shall make satisfactory provision for boarding, lodging, safekeeping, and guarding all such prisoners. As a matter of discipline, the warden may make deductions from the earnings of convicts for violation of a rule or for any misconduct. One-half the amount credited to each convict shall constitute a fund for the relief of those dependent upon him, and shall be paid to such dependent persons on order of the board of commissioners of State institutions. Said board may grant to prisoners employed outside the prison inclosure and to those making satisfactory progress in the prison school a deduction of time from their sentences, in addition to that otherwise granted by law, conditioned on good behavior and obedience to rules, but such deductions shall not exceed one month from each year of the sentence. (R. S. 1913, secs. 7317–7318, 7320–7322, 7324, as amended; Acts 1915, ch. 137, and ch. 240, 1915.)

Counties.—The county board of each county having a population of over 2,000 and under 100,000 and the mayor and council or legislative body of any city having a population of over 5,000 and less than 100,000 shall provide for the employment of prisoners sentenced to the county jail or committed to jail for nonpayment of any fine. (Acts 1915, ch. 70.)

NEVADA.

State.—When any prisoner shall be discharged from the State prison, either by expiration of sentence or pardon, the warden shall furnish him $25 in cash, to be paid out of the State prison fund. (R. L. 1912, sec. 7596.)

The board of State-prison commissioners shall detail for work on the public highways of the State such male convicts in the State prison as it may deem suitable for such detail, excepting prisoners under death sentence; provided that such detail shall be voluntary on the part of the convict. Convicts so detailed shall be under the general direction of the warden and guards appointed by him and subject to such rules and regulations as said board shall establish. Prisoners shall not be required to wear stripes, and for infractions of the rules the maximum punishment shall be a return to confinement in the penitentiary and forfeiture of credits. For good behavior and faithful work, convicts so detailed shall be allowed 10 days' time off their sentences for each month of work in addition to the time off otherwise allowed by law; and in addition thereto each convict shall be allowed 10 cents for each day's labor, which may be paid those dependent upon him for support or allowed to accumulate and be paid to him on his discharge. Said board of prison commissioners, on recommendation of the State engineer or the county surveyor, shall determine upon what roads such convicts shall be worked and shall pass upon the plans and specifications of said engineer or county surveyor in respect thereto. The State engineer shall have general supervision and direction of the road work done. Counties shall, at their own expense, construct bridges or other structures requiring skilled labor, but no convict shall be employed thereon. Counties may be required to contribute in part to the expense of maintenance of convicts. All expenditures necessary in carrying out the foregoing, including tools, implements, horses, wagons, tents, bedding, clothing, tobacco, medicine, and commissary materials and supplies shall be paid from the general

road fund, except that part payment for clothing and commissary supplies, not exceeding 50 cents per day per convict, shall be paid from any appropriation made for support and maintenance of the State prison. (R. L. 1912, secs. 7598–7602, and Acts 1913, ch. 288.)

Every convict not guilty of infraction of the rules and regulations, and who shall faithfully perform the duties assigned him, shall be allowed from his term of sentence a deduction of two months for each of the first two years; four months for each of the second two years; and five months for each remaining year. (R. L. 1912, sec. 7585.)

Counties.—The board of county commissioners of the several counties may, by proper order, establish a branch county jail in any town in the county and provide that persons charged with or convicted of a misdemeanor in such town or other town or townships mentioned in such order shall be imprisoned in such branch jail instead of the county jail at the county seat. Said board in any county where such branch jail is established may direct the jailor in charge of same to work the prisoners therein confined on the streets of such town or on the public roads of the district or township wherein such jail is located. (R. L. 1912, secs. 7514–7616.)

The board of county commissioners in each county, the mayor and board of aldermen of each incorporated city, and the board of trustees of each incorporated town, may make all necessary arrangements for working any prisoners committed to any jails in such county, city, or town upon the roads, streets, or public works thereof, for at least six hours per day. The sheriff of the county, the chief of police of a city, and the marshal of a town, respectively, shall have charge of such prisoners. Any prisoner who shall be disobedient or disorderly may be confined in a dark and solitary cell. Prisoners who shall be obedient and faithful shall have five days per month deducted from the term of sentence. (R. L. 1912, secs. 7617–7622.)

New Jersey.

State.—The State commissioner of public roads may make application to the prison labor commission for any number of prisoners confined in the State penal institutions to labor on the public roads. Said prison labor commission, in conjunction with the governing body of the institution from which such prisoners are to be detailed, shall determine the number to be assigned, the cost of transportation and maintenance, the compensation for labor, and may enter into an agreement with said commissioner of public roads for payment of said cost of transportation and maintenance, or any portion thereof. The governing body of the institution from which such prisoners are to be detailed shall fix all rules of discipline and shall detail necessary guards for the control and safe-keeping of the inmates so detailed. All such work shall be performed under the supervision of the State commissioner of public roads, who may lawfully expend any moneys available for construction, repair, and maintenance of roads to meet the cost, or any portion of such cost, of housing, feeding, and guarding such prisoners while at work, or for purchase of tools, machinery, supplies, and road-building materials needed. (Acts 1912, ch. 223, as amended; Acts 1913, ch. 290.)

"State prison" shall be taken to include the present existing prison in the city of Trenton, and any and all State farms, camps, quarries, or grounds where convicts sentenced to the State prison may be kept, housed, or employed. Its management shall be vested in a board of inspectors consisting of six members appointed by the governor, with the advice and consent of the senate, for terms of six years. The said board of inspectors shall have exclusive management of the State prison, and shall have power to make rules and regulations for the government and control thereof. All expenditures shall be from appropriations made therefor, and earnings shall be turned into the State treasury. A keeper of the State prison shall be appointed by the governor, on advice and consent of the senate, for a five-year term, and he shall be the executive officer thereof and shall appoint all employees, including deputies, guards, and physicians. Nothing herein shall prevent the board of inspectors from entering into an agreement with the State commissioner of public roads, or other department of the State government, for the employment of prisoners on public work. (Acts 1914, ch. 271, as amended; Acts 1915, ch. 390.)

Appropriations are made annually to meet transportation expenses of prisoners and guards to and from farms and camps. (Acts 1915, chs. 403 and 405.)

Counties.—The board of chosen freeholders of any county may cause prisoners under sentence, or committed for nonpayment of fine and costs, or in default of bond for nonsupport of family, in the county jail or other county penal institution, except females and those incapable of manual labor, or so many of them as may be required, to work on the public roads of such county, and also upon the grounds of any county institution, and said board may pay the warden of such penal institutions such sum, not exceeding 50 cents per day for each day of eight hours' work performed by such

prisoners, as shall be fixed by the board or the committee having charge of such institution. The amount so paid, less costs, if any, shall be held by the warden for the benefit of such prisoner on his discharge, or may be by said warden paid, on written order of the committing magistrate, to the dependent wife, minor child or children, or aged, infirm, or dependent parents, if any there be, of such prisoners; provided, that any moneys expended under the provisions hereof shall be paid from the appropriation in such county for the maintenance of its roads and highways. (Acts 1912, ch. 223, and 1915, ch. 119.)

NEW MEXICO.

State.—The act creating the State highway commission provides that convict labor shall be used in the work to be done thereunder, and that the board of penitentiary commissioners shall, upon demand of the State highway commission, furnish such number of convicts as shall be available for such work, together with necessary guards. The expense of employing and transporting such guards, and of transporting and maintaining such prisoners while so employed, shall be paid by the State highway commission out of funds provided for said commission. (Acts 1909, ch. 42.)

NEW YORK.

State.—The superintendent of State prisons may employ, or cause to be employed, convicts confined in the State prison on the repair of State and county highways upon request of the State commission of highways, and also in the improvement or repair of any other highways. The expense of maintenance of such convicts while employed in repairing a State or county highway shall be paid by the State commission of highways, in the same manner as other expenses in repairing such highways. The agent and warden of each prison may make such rules as he may deem necessary for the proper care, custody, and control of such prisoners while so employed, subject to approval of the superintendent of State prisons. The agent and warden of each prison may designate, subject to the approval of said superintendent, the highways and portions thereof on which such labor shall be employed; and such portions so designated and approved, except portions of a State or county highway, shall be under his control during such work, and the State highway commission shall fix the grade and width and direct the manner in which the work shall be done. The superintendent of State prisons may purchase any machinery, tools, and materials necessary in such employment, except on a State or county highway. (Prison Law, sec. 179, as amended; Laws 1914, ch. 60.)

The board of supervisors of a county, or the town board of a town, in which any portion of a State or county highway is situated, may present proposals and be awarded a contract for the construction or improvement of such highway as provided in this article, for and on behalf of such county or town. When such contract is entered into, the board thereby undertaking to construct or improve a highway or section thereof, may, by resolution, direct the person or persons designated for carrying out the contract to apply to the superintendent of State prisons for convict labor in the construction of such highway. The resolution shall specify the maximum number of convicts to be applied for. Such designated person or persons shall make such request in writing, accompanied by a copy of the resolution, and said superintendent may detail the number of convicts so requested, or so many thereof as may be available, who shall be under the immediate charge and custody of the officers and guards detailed by said superintendent, except that the work shall be directed by the engineers and foremen of the State highway department. The expense of maintenance of such convicts shall be paid by the county or town entering into contract from funds due thereon. A county or town may purchase machinery or tools for the construction of a highway or section thereof, under any such contract, out of moneys to be paid thereon, (Sec. 131, highway law.)

County.—After satisfying himself that proper quarters can be secured, the town superintendent may, with consent of town board, request the supervisor of the town, under the provisions of section 93 of the county law, to procure prisoners serving sentence in the county jail, for general work on the public highways of the town. (Sec. 70, highway law.)

NORTH CAROLINA.

State.—Any county, township, or road district desiring to use convict labor on highways shall apply first to the geologic and economic survey to lay out and make plans for said work, or to approve plans already made, and said county, township, or road district shall then apply to the board of State prison directors for the number of convicts desired, this number in no case to be less than forty. Said board of directors, as soon as possible after receipt of the application and the approval of the council of

state, shall furnish the labor requested and proceed to improve the highway under the direction of the State geologic survey. No such county, township, or district may use at any time more than 100 convicts if an application from another county is pending and no convicts are available for it. Such counties, townships, or road districts shall pay to the State not less than $1 per day for each convict, shall furnish quarters to be approved by the board of prison directors, and shall furnish pure drinking water, firewood for camp use, and overseers to direct the work. All other expenses of every kind shall be borne by the board of prison directors. The State farm or penitentiary authorities or council of state shall at all times reserve a sufficient number of convicts to cultivate the State farm. (Acts 1913, ex. sess., ch. 37.)

Counties.—The board of commissioners of the several counties, or other proper county authorities, and the mayor and intendant of the several cities and towns of the State, may provide, under such rules and regulations as they may deem best, for the employment on the public streets, highways, or works, or other labor for corporations, of all persons confined in the jails in their respective counties, cities, and towns, upon conviction of any crime or misdemeanor, or for failure to enter into bond for keeping the peace, or for failure to pay all the costs which they are adjudged to pay. Said board of county commissioners may levy a special tax annually, as other taxes are levied, for the purpose of paying the expenses of said convicts, the building of stockades, etc., which expenses shall be paid by the counties taking advantage of this chapter. (Pell's Rev. of 1908, sec. 1318 and ch. 24.)

It is a misdemeanor to work females on streets or roads. (Pell's Rev. of 1908, ch. 81, sec. 3596.)

Every convict sentenced to work upon the public roads who shall perform faithfully the duties assigned him shall be entitled to a deduction of five days from each month of his sentence. Any convict escaping or attempting to escape shall forfeit any and all such deductions accrued up to the time of such escape or attempted escape. (Acts of 1913, ch. 167.)

North Dakota.

State.—The board of control of the penal and charitable institutions, and the warden of the State penitentiary, shall employ all prisoners sentenced to the State penitentiary in all necessary work in maintaining the institution, or in carrying on the work of the industries established thereat, or at other State institutions, or on the public highways of the State, and shall prescribe rules and regulations relating to the care, treatment, and management of such prisoners. Such prisoners shall be employed under proper supervisors or officers, and may be employed upon the public highways of any county when an agreement has been entered into by the State board of control and the board of commissioners of such county, upon the same conditions as the employment of prisoners at State institutions. The county shall pay all salaries and necessary expense of maintenance, including cost of transportation to and from the penitentiary, and furnish necessary tools and equipment required in carrying on said work. Prisoners so worked shall receive not less than 10 nor more than 25 cents per day for work actually performed, the maximum compensation to be determined by the State board of control. Prisoners so employed shall be placed on their honor not to attempt to escape. They shall wear plain, inconspicuous garb and shall not be required to work more than 10 hours per day. The earnings of each inmate of the penitentiary to whom money is paid shall be distributed by the warden monthly in the "temporary aid account," "the prisoners' general benefit fund," and the personal account of each prisoner and the "dependent relative" account of such prisoners as have relatives dependent upon them for support, all of which accounts shall be kept by the warden. Said warden, with the approval of the State board of control, shall establish rules and regulations relating to the conduct of prisoners and shall prescribe penalties for violations thereof. Upon recommendation of the warden, the board of control may allow extra good time to prisoners in addition to the good time otherwise allowed by law. In computing such extra good time it shall in no case exceed the good time now provided by law, and it shall be conditioned on good conduct and diligent work. (Acts 1915, ch. 191.)

Ohio.

State.—The boards of managers of the penitentiary and of the reformatory, so far as practicable, shall cause all prisoners serving sentences therein, physically capable, to be employed at hard labor not to exceed nine hours each day in the manufacture and production of supplies for such institutions, or for the State or political divisions thereof; or in the production of crushed stone, brick, tile, and culvert pipe. Such products as are used in the construction or repair of public roads shall be furnished

the political divisions of the State at cost. Convicts from the penitentiary shall not be worked with those from the reformatory. The board of county commissioners, or trustees of a township, may apply to said board of managers for road material, machinery, tools, or other appliances so manufactured and needed by them, obligating themselves to use the same according to rules and regulations approved by the State highway commissioner. (Page and Adams Anno. Ohio Gen. Code, 1912.)

State and counties.—Whenever the State highway commissioner shall desire to use any number of prisoners confined in the State penitentiary or reformatory to work upon the State highways, known as the inter-county or main market roads, or to employ such prisoners in preparing road-building materials, he shall make requisition upon the warden or superintendent of the institution in which such prisoners are confined, stating the number desired and the place where they are to be employed. The rules and regulations under which prisoners shall work shall be prescribed by the prison authorities, but the actual work done shall be under the control of the State highway commissioner or those acting under his authority. Said highway commissioner may use any money available for the construction, repair, and maintenance of roads, to pay the cost of transportation and discipline of such prisoners and to purchase tools, machinery, supplies, and road-building materials for use in connection with the work of such prisoners. The amount to be paid said prison authorities, if any, for the use of such prisoners, shall be agreed upon between them and the said State highway commissioner, but the amount so paid shall not exceed the cost of transportation, maintenance, and discipline plus the amount to be credited to such prisoner on account of his labor upon such highways. County commissioners may make requisition in like manner for prisoners to work on the county highways or to manufacture road materials, and receive such prisoners on the same conditions as the State highway commissioner. County commissioners may also make requisition upon the authorities in charge of any workhouse for any number of prisoners confined therein, or upon any jailer for any number of prisoners sentenced thereto, and same, as available, shall be furnished upon the same conditions as above prescribed for State prisoners. Prisoners sentenced for nonpayment of fines and all persons convicted of crime and sentenced to imprisonment in the State reformatory or penitentiary or the county jail or workhouse, or other penal institution, shall be subject to labor hereunder. Any city having a workhouse may use its prisoners on its streets or in preparing materials for use on such streets; and any magistrate in a city or village not having a workhouse may sentence prisoners convicted therein so to work. Persons confined in such penal institutions because unable to give bond may, at their request, work upon roads and streets, or in manufacturing materials, the same as persons convicted. The State highway commissioner, county commissioners, or proper city or village authorities may provide for the use of prison labor in connection with contracts let to private individuals for the construction, maintenance, and repair of roads and streets; but the discipline and legal custody of such prisoners shall remain in the respective institutions furnishing them. If any prisoner shall not perform his work satisfactorily, he shall be taken from the road force at the request of the proper authorities and another substituted. On or before September 1 each year, the State highway commissioner and the county commissioners shall report to the prison authorities an estimate of the amount and kind of road materials that will be needed the ensuing year, so that said prison authorities, if practicable, may arrange to manufacture same. The State highway commissioner shall include in his annual report a full statement of the amount, cost, etc., of the convict labor used; and he shall require such reports as he may deem necessary from county commissioners and other officials using prison labor. Prison authorities shall, before January 1 each year, advise the State highway commissioner and the county commissioners of the probable number of prisoners that will be available for work upon roads during the year. The guards, if any, shall, so far as possible, be selected from men who are competent to supervise the work under construction. Any prisoner attempting to escape shall lose any credits accrued to him on his prison term for good behavior, and the authorities having charge of the prison from which said prisoners are detailed may, by special regulation, provide for additional credit on the terms of such prisoners for good behavior. County commissioners may contract with the authorities in charge of any workhouse or penal institution of any other county or city for the use of convicts on the roads, or in the manufacture of road materials. The authorities of the various institutions having custody and control of such prisoners, and the various authorities of the State, counties, cities, and villages having charge of roads and streets, shall have full power and authority to do all things necessary to make the provisions hereof effective for the use of prison labor on the highways and streets, and the authorities having charge of said roads and streets shall have power to use any of the moneys provided therefor in any way necessary for that purpose. (Acts 1915, Senate bill No. 125, secs. 261–279.)

Counties.—Boards of county commissioners may purchase or lease beds of limestone or other road-building material after same is approved by the State highway commissioner as being suitable, or such boards may lease and operate a plant for manufacturing brick or other road materials and supplies. When such purchase or lease is made the said board shall make necessary arrangements to work the county convicts thereat, such convicts to include those persons whose punishment, in whole or in part, is imprisonment in jail or workhouse, and all persons, physically capable, who are confined for failure to pay a fine or costs in a criminal prosecution. All such prisoners shall be under control of the board of county commissioners, who may enact all needful rules and regulations for the successful working of such prisoners, employ a superintendent and necessary guards and attendants, and levy an annual tax, as other taxes are levied, for paying the expenses of such convicts and for carrying out the purposes hereof. (Page and Adams Anno. Ohio Gen. Code, 1912, secs. 2229–2239.)

Oklahoma.

State.—The State board of public affairs and the department of highways are required to make all necessary arrangements for working State convicts upon the public highways of the State under the following conditions: (*a*) The State shall furnish all tools and machinery and draft animals out of funds appropriated for that purpose; (*b*) the furnishing of tentage, housing, quarters, and equipment pertaining to the custody of the prisoners shall be paid from prison funds available for the maintenance of such prisoners. Food, clothing, guarding, sanitary appliances, and medical attention for convicts in road camps shall be provided by the State the same as if the convicts remained at the State prison. The county desiring convicts to work upon the State roads must bear the cost of transporting the men, animals, tools, and guards, and shall furnish food for animals, board for guards, fuel and supplies for power machinery and ordinary repairs to same, paying therefor out of the county road and bridge fund. Metal, cement, stone, or other road-building materials shall be furnished by the county unless it is planned to produce same with convict labor, which is hereby authorized. The State board of public affairs shall formulate rules and regulations for the government of State convicts while at work on roads, including good-time allowance for good behavior and efficient service. The corporation commission may make and enforce rates for transportation of persons and freight in connection with such convict labor. Said work shall be performed on such roads and of such kind and character as designated by the board of county commissioners of the county where located, and the county shall bear all cost of materials. Convicts so worked shall be divided into groups of not exceeding 100 men each and only one group may be worked in a county at a time and not for more than five months in any one county in any one year, nor shall any two groups be worked in any county until all counties making application therefor shall have received their proportion of work by said convicts. (Rev. Laws 1910, sec. 7601, and Acts 1915, ch. 173, art. 5.)

Counties.—The board of county commissioners may purchase such equipment as may be necessary for employing convicts or other labor upon the public roads and may pay for same from either the court or road and bridge fund. Said board may work any convicts confined in the county jail, either as punishment for crime or in lieu of payment of fine and costs, upon the public highways and may employ such guards and other assistants as may be required. When in the judgment of said board the expense of working convicts upon the highways is too great on account of the small number available, or for any other reason, it may provide necessary apparatus and work such convicts in crushing rock for use on the public highways of the county. Any person working upon the public roads in lieu of payment of fine and costs shall be allowed a credit of $1 per day thereon. The board of county commissioners may, by agreement with the city council, receive such prisoners of any city, but for the services of such city convicts shall only pay the cost of maintenance. Said board shall purchase supplies for feeding and maintaining county convicts while at work from the lowest and best bidder, and shall furnish wholesome food in sufficient quantity and variety, together with medical attention when required. (Rev. Laws 1910, secs. 7590–7596, and Acts 1913, ch. 112.)

Oregon.

State.—The superintendent of the Oregon State Penitentiary shall furnish and use such convicts as he may deem reasonably safe for that purpose to do the work necessary to repair and properly improve the roads leading to certain State institutions. A competent road builder may be employed to direct such work, and he may employ extra guards and purchase necessary machinery, tools, and materials. Each convict so worked shall receive a credit upon his sentence of two days for each day he shall

faithfully work; but if at any time he shall fail to so work he shall forfeit all or as many of said credits as said superintendent shall deem proper. (Lord's Oregon Laws, secs. 6436–6437.)

The State shall not contract with any private person, firm, or corporation for the labor of convicts of the State penitentiary. Upon written request of the county court of any county or of the superintendent of any State institution the governor may detail from the State penitentiary such convicts as in his judgment may seem proper for use on the public highways of such county. (Laws 1913, ch. 2.)

Fifty thousand dollars is appropriated to be used by the board of control of the State of Oregon to install and equip with necessary machinery such plants as in its discretion may seem wise. Said board may use such portion of the amount so appropriated as it may deem advisable in employing convicts from the Oregon State Penitentiary in road building in the State, and shall make all rules and regulations necessary for same. (Acts 1915, ch. 251.)

Counties.—Able-bodied convicts serving sentence in any city, town, or county jail or prison, as punishment for crime or in default of fine, may be placed by the county court under the control of any road supervisor, or other person appointed to take charge of such convicts, to be worked on the public roads of the county, or such other public work as said court may direct. The county court shall make rules and regulations in regard to the employment of such convicts and for allowance of compensation and credits in time for good behavior; provided that no credit in excess of 10 days per calendar month shall be allowed, and if imprisonment is for nonpayment of fine, such convict shall be made to labor at rate of $2 per day until such fine is paid. Any county court may transfer to the county court of any other county any of the convicts committed to its control, upon such terms and conditions as may be agreed upon by the county courts concerned. Any convict who shall refuse to work shall be fed bread and water until he shall signify his willingness to work. If any county shall have created a board of county commissioners, or other board or tribunal, to have charge of the management of the public roads of such county, it shall have the same power as the county court under this act. (Laws 1913, ch. 3.)

Pennsylvania.

State.—All persons sentenced to the Eastern or Western Penitentiary, or to the Pennsylvania Industrial Reformatory at Huntington, or to any other correctional institution hereafter established by the State, physically capable of such labor, may be employed eight hours per day at hard labor for the purpose of manufacturing and producing supplies or materials for said institutions, or for the State or any county thereof, or for the purpose of industrial training or instruction, or in the manufacture and production of crushed stone, brick, tile, culvert pipe, or other material suitable for use in road building. A prison labor commission is created, to be composed of a member of the board of prison inspectors of each of said institutions, respectively, which said commission shall determine the amount, kind and character of machinery to be erected in such institutions, the industries to be carried on therein, the number and character of inmates, and shall arrange for the sale of the materials produced to the State, or any county, or to any public State institution. For the purchase of material, equipment, and machinery, a special appropriation of $75,000 was made to the said prison labor commission, to be known as the manufacturing fund, and receipts from the sales of manufactured articles shall be credited to said fund. Each prisoner shall be credited with wages for the time he actually works, the rate of such wages to be regulated at the discretion of the prison labor commission, but it shall not be less than 10 nor more than 50 cents per day. Three-fourths of the amount so credited or the entire amount if the prisoner so desires, shall constitute a fund for the relief of any persons dependent on such prisoner. In case there are no dependents the sum shall be deposited to the credit of the prisoner. (Acts 1915, No. 289.)

Counties.—The warden of any jail may detail for work on the public highways such convicts as he may deem advisable, except prisoners under sentence of death. Written request for such convicts shall be made by the State highway commissioner for all State roads; by the county commissioners for all county roads; by the township commissioners or township supervisors, as the case may be, for township roads, and by the mayor or burgess for all municipal streets. Such detail, however, shall be voluntary on the part of the prisoners. Convicts while so working shall be under general direction of the warden, or overseers appointed by him, and subject to such rules and regulations as he shall prescribe. Such convicts shall not be required to wear stripes. For infractions of the rules and regulations the maximum punishment shall be the summary return of the prisoner to confinement in the jail and the loss of all deductions from sentence to which he may be entitled at the time. Each convict shall be allowed 25 cents for each day he labors, which sum shall accummulate as a fund to be paid him

on his discharge, in addition to the sum of money ordinarily given discharged convicts. On petition of any convict, the warden may pay such sum, or part thereof, in support of those dependent on such prisoner. Convicts shall for good conduct and faithful work be granted such good time in addition to that allowed by law as the governor may order, not to exceed 10 days in any calendar month. Convicts so employed shall not be used in building any bridge or other structure of like character, or do any work in connection therewith which requires the employment of skilled labor. (Acts 1915, No. 359.)

Every male prisoner in any jail or workhouse may be worked eight hours daily, but no steam, electricity, or other motive power shall be used in conducting such work. Such labor shall be classified, fixed, and established by a prison board, created for each county, and shall be performed in accordance with rules and reguulations prescribed by said board, and may be performed on the public highways. Preference shall be given to roads leading to county seats. Said prison boards are authorized to spend such sum of money, out of any money in the county treasury not otherwise appropriated, as may be required for the purchase of materials and tools adapted to the work, as per classification. The respective prison boards may employ such deputies and other officers as shall be necessary for the supervision, safe-keeping, and good conduct of such prisoners. Any prisoner who shall escape while so working shall be deemed to have committed a breach of prison, and shall be subject to the penalty provided therefor. (Acts June 18, 1897; Apr. 29, 1899; and Apr. 24, 1901.)

South Carolina.

General.—Any person serving a sentence of six months or more, life sentences excepted, either in the State penitentiary or any county jail, or upon the public works of any county, shall be entitled to have one-tenth of such sentence deducted for good behavior. (Acts 1914, No. 352.)

State.—The county supervisor from each county in the State may be allowed to use without charge, for the purpose of working the roads of the county, any of the convicts he may select of those sentenced from his county to the State penitentiary. Said convicts shall be under the absolute custody and control of the supervisor and whatever guards he may appoint. (Acts 1914, No. 366.)

The punishment for arson shall be death by hanging, but the jury may find a special verdict with recommendations to mercy, whereupon punishment may be reduced to a term of imprisonment in the county jail or at hard labor in the penitentiary or on the public highways, in the discretion of the court. (Acts 1915, No. 133.)

Where punishment of imprisonment is provided for crime, all able-bodied male convicts shall be sentenced, without regard to the length of sentence, to hard labor on the public works of the county in which convicted, if such county maintains a chain gang, and in the alternative to imprisonment in the county jail or the State penitentiary at hard labor. Races and sexes shall be kept separate. Should the supervisor or commissioner of any county find it impracticable or inconvenient to work any such convict, he may turn him over to the penitentiary authorities. (Acts 1914, No. 291.)

Counties.—All courts and municipal authorities having power to sentence convicts to imprisonment at hard labor shall sentence all able-bodied males to work upon the public works of the county or of the municipality. All such convicts shall be under the exclusive control of the county supervisor and by him formed into a county chain gang and required to work on the highways, bridges, ferries, and other public works of the county. Municipal convicts shall be so worked under proper municipal authorities. The county board of commissioners shall feed and provide suitable guards and appliances for safe-keeping said convicts, and shall provide all necessary tools and implements, all costs and expenses of which shall be paid out of the county road fund. Municipal authorities shall make like provision for municipal convicts. If in the judgment of the board of county commissioners the number of convicts available is insufficient to warrant the expense of maintaining a chain gang, the supervisor of such county may contract with the supervisor of any other county for hiring or exchanging such convicts. (Code of 1912, Vol. I, Title VI, secs. 956–962.)

The county commissioners shall not let to contract the repairing or building of any bridge which can be repaired or built by a chain-gang force. (Code of 1912, Vol. I, Title VI, secs. 1079–1081.)

South Dakota.

Counties.—Able-bodied male prisoners, over 18 and not more than 50 years of age, confined in any county jail, or any prison or lockup of any city or town, may be required to labor not more than eight hours per day upon the public roads or streets, or other public works. Persons awaiting trial may, at their request, be allowed to

perform such labor. Each prisoner so laboring may be paid a reasonable compensation by the county if imprisoned for violation of State law and by the city or town if for violation of an ordinance, by-law, or regulation. Such compensation, or such portion thereof as the court shall direct, may be paid to the wife or dependents of such convict. When imprisonment is for violation of a State law and the prisoner is confined in the county jail, such labor shall be performed under the direction of the county board and superintended by the sheriff, who shall furnish necessary tools and materials at expense of the county. The officer in charge of such prisoners may use all reasonable means to prevent escape and to enforce obedience. For refusal to labor or obey orders in reference thereto a prisoner may be kept in solitary confinement on bread and water, but not for more than 10 days for any one offense, nor more than 90 days in all. For each day's labor the prisoner shall be credited $2 on any judgment for fine. (Acts 1915, ch. 257.)

Tennessee.

State.—The Tennessee Board of Control shall make rules, regulations, and contracts for the employment of inmates of the Tennessee State penitentiary and the Brushy Mountain Penitentiary on the highways of the State and on railroads to be built, and in operating the State farms, and on any and all roads necessary and of value to the State's properties. On or before March 1, each year, said board shall ascertain the number of prisoners available to work on roads and shall notify the county judge or the chairman of the county court of each county who may apply for such convicts. Said board shall fix and select the camps and prepare equipment for the working of such convicts, and such convicts and all machinery used by them shall be under the absolute control of such officers as may be designated by said board, but the work shall be done on such roads as may be designated by the county authorities. Not less than 50 prisoners shall be furnished to a county and they may be worked from April 1 to December 1. The rate of compensation for such inmates shall be fixed by said board and the county authorities by agreement, but shall not be less than $1 per ten-hour day. Said board may pay all necessary costs of transportation of prisoners, guards, and equipment out of the prison fund; and shall provide comfortable and sanitary quarters. The rules and regulations of the penitentiaries and all laws applicable shall apply to the discipline of such camps. The board may, in its discretion, contract with a county for building highways with convict labor, such contract to be made only upon authority of the governor and approval of the State engineer. Said board may employ and designate such person or persons deemed necessary as camp and road superintendents and as guards. (Acts 1915, ch. 114.)

Counties.—All persons confined in county jails or workhouses, either under sentence for crime or for nonpayment of fine and costs, shall be available for work on the public highways. (Code of 1896, Part I, secs. 1642–1644.)

The judge or chairman of the county court, the clerk of the county court, and the sheriff of each county are constituted a board for their respective counties to enter into contracts with public road commissioners, or with other officers or road contractors having superintendence of public road work, for the employment on such roads of prisoners confined in the county jails for nonpayment of fine and costs. The sheriff shall appoint guards for such prisoners, and the county court shall furnish said guards with picks to go on each prisoner to prevent his escape. Said prisoners may be worked eight hours per day on any of the public roads of the county, and shall receive 75 cents for each day's work in addition to the 25 cents otherwise allowed by law, which shall be credited on such fine and costs. Prisoners of two or more counties may be combined by said boards and worked on roads of said counties. (Acts 1899, ch. 358.)

All county prisoners subject to labor shall be employed, as far as practicable, on the public highways, and may be let to contractors who will employ them on the public roads, eight hours per day. County authorities shall name guards. (Acts 1899, ch. 368, sec. 7.)

Texas.

Counties.—County convicts shall be put to work upon the public roads, bridges, or other public works of the county when their labor can not be utilized in the county workhouse, or on the farm. They shall labor not less than eight nor more than 10 hours per day. Convicts so worked shall be properly guarded. A prisoner may avoid manual labor in the workhouse or elsewhere by payment into the county treasury of $1 per day for each day he would have to work. (Rev. Civil Stats., 1911, title 104, Art. 6238, 6246–6248.)

The commissioners' court shall require all male county convicts, not otherwise employed, to labor on the public roads, under such regulations as it may prescribe,

and each convict so worked shall receive 50 cents, first on his fine and then on costs for each day he may labor. Said court shall at each term allow the court officers and witnesses such amount of their costs, not to exceed one-half, as have been so satisfied in full by labor, which shall be paid from the road and bridge fund. For faithful service and good behavior said court may grant a reasonable commutation of time for which a convict is committed, but not in any case more than one-tenth of the whole time. The commissioners' court may provide for necessary houses, prisons, clothing, bedding, food, medical attention, superintendents, and guards; and may prescribe such reasonable regulations and punishments as may be necessary to secure good work. (Rev. Civil Stats., 1911, title 119, secs. 6967, 6979.)

Utah.

State.—The prisoners in the county jail may be required to work upon county roads under regulations made by the county board of commissioners, and prisoners in the State prison may be required to work upon State roads, or in providing road materials. State convicts so worked shall be under the authority and control of the State Road Commission, the State Board of Corrections, and the warden of the Utah State Prison, but actual supervision of the work shall be under such competent persons as may be selected by the State Road Commission. Such convicts shall not be worked more than eight hours per day, and the State Road Commission may designate from time to time the roads on which such labor shall be performed. Said State Road Commission shall cause surveys to be made and plans and specifications to be prepared, and shall designate the materials to be used. Rights of way for State roads to be improved by such convict labor shall be secured by the county commissioners. Bridges and culverts necessary on such roads shall, as far as practicable, be built with convict labor, and according to plans approved by the State Road Commission. Any materials necessary to be purchased for such bridges and culverts shall be paid for by the State Road Commission out of that portion of the State Road Fund available to the county where such bridge or culvert is located. Funds are provided by the legislature to pay extra guards and foremen and for the purchase of tools, implements, blasting materials, supplies, and equipment necessary in prosecuting said work. (Laws 1911, ch. 76.)

Counties.—The board of county commissioners may provide for working misdemeanor prisoners confined in the county jail, upon the public grounds, roads, streets, alleys, or public buildings, when such prisoners are liable to labor. (Acts 1911, ch. 119.)

Vermont.

Counties.—All male prisoners under sentence in a county jail may be required by the sheriff to work not more than 10 hours each day within or without the walls of the jail. The labor to be performed shall be classified and fixed, from time to time, by the sheriff and shall be subject to such rules and regulations as he may prescribe, and said sheriff may require said prisoners to work on the public highways. Said sheriff may spend such sum as may be necessary for the purchase of materials and tools. The proceeds of such labor, if any, shall be applied in payment for such materials and tools, and one-half of any balance thereafter shall be turned over to the State treasurer and the remaining half shall be paid to the wife and minor children of said prisoner, if any there be, and if there are no such, then to him on his discharge. If a prisoner shall escape while employed without the jail walls he shall be guilty of prison breach and punishable accordingly. (Pub. Stats. 1906, secs. 6104–6107, as amended; acts 1915, Nos. 1 and 223.)

Sheriffs of the several counties may employ, or cause to be employed, able-bodied prisoners, confined in the county jails upon conviction for crime, in improving the public highways within a radius of 30 miles from such jail and outside of a city or incorporated village. Such sheriff, or keeper of each jail, may make such rules and regulations as he deems necessary for the care and safe-keeping of such prisoners, subject to approval of the attorney general and the governor. The State highway commissioner, subject to approval of the sheriff of each county, shall designate the highways upon which labor shall be performed; and such highways, or portions thereof, so designated shall be under the control of such State highway commissioner or his assistants during such work, but the care of the prisoners while so employed shall be under the sheriff or his deputies. Persons interfering with such prisoners while so employed are subject to arrest without warrant and to fine or imprisonment. (Acts 1912, No. 244.)

VIRGINIA.

State.—Persons convicted of crime and sentenced to the State penitentiary and persons convicted and confined in public jails, shall be delivered to the superintendent of the penitentiary and shall constitute the State convict road force. No prisoner under 16 years old shall be so worked, and it shall be discretionary with the court as to whether those over 16 and under 21 years old shall be worked. Persons convicted of violating city or town ordinances shall be primarily liable to work on the chain gang or public work within such city or town. The superintendent of the penitentiary shall be allowed for keeping and supporting such prisoners the fees allowed jailers for similar service, which are as follows: For each prisoner, per day, 40 cents; but where there are 3 and less than 10 prisoners, for each, 30 cents; and where there are more than 10 prisoners, for each, 25 cents; which fees shall be paid by the State for prisoners convicted of violations of State laws and by cities or towns for prisoners convicted of violation of the ordinances thereof. Rules and regulations in force at the penitentiary shall be applicable to the State convict road force, unless manifestly inconsistent, and unless the State highway commissioner shall deem it necessary to alter or amend them. If any jail prisoner shall escape and be recaptured, he may be sentenced to from 30 days to 6 months for such escape, and for sufficient additional time at 50 cents per day as will pay the cost of his recapture, such additional time not to exceed one year. The superintendent may discharge a prisoner wherever he may be in the State when his term shall expire, and shall furnish him transportation to the county or city from which he came and, if he need it, a suit of coarse clothing. Each prisoner so discharged may, in the discretion of the board of directors of the penitentiary, be allowed not exceeding $10. Said superintendent shall detail, or appoint with the approval of the State highway commissioner, guards for the convict road force. Persons competent to supervise the work under construction shall, as far as practicable, be detailed or appointed as guards. The said superintendent, with the approval of the State highway commissioner, may appoint an assistant to have charge of the said road force. A county which maintains and works a chain gang on its roads may retain its jail convicts in said chain gang. As far as practicable, and at the request of the State highway commissioner, trusties may be made of the convict road force. The superintendent shall provide suitable and movable quarters, wagons for transporting the convicts and camp fixtures, cooking utensils, beds, clothing, and food, in the same manner as for convicts in the penitentiary. The number of convicts desired for work in any county shall be sent to such county by the said superintendent on the requisition of the State highway commissioner. An engineer appointed by the State highway commissioner, and paid by the county having the benefit of his services, shall have charge and supervision of the work done by such convicts, and such work shall be done according to plans and specifications furnished by the said highway commissioner. Necessary medical attention shall be provided by the county in which a convict may be working. The cost of organizing, equipping, and working said convicts is provided for by the creation of the State convict road force fund, which consists of the fees allowed by law to jailers for supporting prisoners, and the sum of $145,000 appropriated therefor annually by the legislature. County authorities may arrange to improve any main traveled road by contract, and may secure the services of such number of convicts for work thereon as will amount to a contribution on the part of the State of not exceeding 40 per cent of the total contract price of such improvement, estimating such labor at $1 per day per convict. (Code of 1887, secs. 3532, 4147; Acts 1906, chs. 73, 74; Acts 1908, chs. 65, 84; Acts 1910, ch. 267; Acts 1912, ch. 58; and Acts 1914, ch. 199.)

Persons in jail and unable to arrange bail may, at their election and with approval of the Commonwealth's attorney, be worked in a chain gang or on the State convict road force. If such person be convicted when tried, he shall be credited with the time he shall so work on his sentence; or, if he be fined, he shall be credited with 50 cents on such fine for each day he shall have so worked; and if he be acquitted he shall be paid 50 cents for each day he shall have so labored. (Acts 1906, ch. 59.)

Counties.—In any county or city in which no chain gang has been organized the judge of the circuit court or of the corporation court of such city shall, upon application of the board of supervisors of any county in which a chain gang has been established order any person confined in the jail of his county or city and liable to work on chain gangs, to be delivered to such other county to be worked on its chain gang. The county receiving such prisoners shall keep and maintain them out of its road fund. (Code of 1904, title 16, ch. 43.)

The council of each city and town, and the board of supervisors of each county, or, if they do not act, the judge of the corporation court of such city or town, or of

the circuit court of such county, may establish a chain gang in such city, town, or county to work the roads and streets therein. Only male prisoners above the age of 16 shall be worked in such chain gangs. If any county has not a chain gang of its own, such prisoners may be hired to any county, city, or town which has one. Such city or town council or county board of supervisors or the circuit or the corporation court judge shall prescribe necessary rules and regulations for governing and working such convicts and shall provide clothing and maintenance expenses. Such rules and regulations may be enforced by corporal punishment. Prisoners escaping may have one month added to their sentence. Persons held to labor for nonpayment of fine or costs shall be credited on same 50 cents for each day they shall so labor, but no persons shall be required to so work for more than six months for failure to pay such fine or costs. Persons so working shall receive the same credit on their sentence for good behavior as convicts in the peritentiary. (Code of 1904, title 16, ch. 43, secs. 3932–3937; acts 1908, ch. 354.)

WASHINGTON.

State.—The State highway board may, in its discretion, cause any State road to be constructed, either under contract or by force account; and if by force account the work shall be done by convict labor to the extent that same may be available and advantageously used. When any money shall be appropriated for any State road or roads, and the State highway board shall have determined to construct such road or roads by convict labor and free labor, as aforesaid, said board may purchase necessary road machinery and pay for same from the appropriation made for different roads in proportion to the use that will be made of it on each road. Persons physically able so to work who are confined in the State penitentiary and not engaged in other work by the State board of control may be worked on roads, and said board of control shall monthly certify to the State highway commissioner the number of prisoners available. Work done shall be under supervision of the State highway commissioner, but the control and management of all such prisoners shall be under supervision of the State board of control. The expense of the care, maintenance, and transportation of all such prisoners shall be paid out of the funds authorized to be used for the particular road on which such work is done, provided that a part of such expense equaling 25 cents per day per person employed shall be paid out of the appropriation for the maintenance of the particular institution from which such persons are taken. (Rem.-Bal., secs. 5869–1–2, 8575–1–3; Laws 1913, chs. 114, 132.)

State quarries.—The board of geological survey shall cause to be made an investigation of the road materials of the State and their location; and after such investigation the State highway commissioner shall select four or more sites for locating rock quarries and crushing plants for supplying materials suitable for road building, which said sites shall be acquired for the State by the State board of control. Whenever such site and quarry is procured, the State highway commissioner may forthwith erect thereon such stockades and buildings and purchase and install such rock-crushing plants, machinery, appliances, and tools as may be necessary for the keeping and working of State convicts thereat, under charge of the superintendent of the penitentiary. All rock so crushed shall, upon request of State highway commissioner, be loaded upon cars or vessels and there delivered to said commissioner for use in the construction or maintenance of State or State-aid roads. The surplus not so required may be disposed of by the State highway commissioner to counties, cities, or towns in the order of application therefor; and if the demand from such counties, cities, and towns shall exceed the supply it shall be equitably apportioned among them. All materials used by the State highway commissioner shall be paid for out of the appropriation for the particular road on which used, and all such material furnished to him or to such counties, cities, or towns shall be at a price of not less than 10 per cent above the estimated cost f. o. b. at place of production. Any additional surplus may be otherwise sold for not less than the cost of production. A "quarries rotary fund" is created, to consist of all moneys received from the sale of products of the quarries and some other sources of revenue. Such fund shall be used for operating such quarries. A superintendent of quarries may be appointed by the State highway commissioner to have and exercise such powers and perform such duties in connection therewith as shall be from time to time prescribed. (Rem.-Bal., secs. 5907–5914, 6604–2–3; Laws 1909, pp. 39; sec. 1, 810–811, sec. 3, 814, sec. 7; Laws 1911, chs. 73, 114; Laws 1913, ch. 164.)

Counties.—The sheriff of each county shall employ all male persons sentenced to imprisonment in the county jail in such manner and at such places within the county as may be directed by the board of county commissioners. Such convicts who shall

refuse to perform such labor shall be kept in close confinement on bread and water. The sheriff may, to secure such convicts from escape, attach a ball and chain. Any person convicted of abandonment or neglect of family shall be compelled to work upon the public roads, or any other public work in the county, and the board of county commissioners shall allow and order paid out of the current fund to the wife or guardian or custodian of the child or children at the end of each calendar month for their support $1.50 for each day's work of such prisoner. (Rem.-Bal., secs. 2279, 3895, 5933-2; Laws 1909, ch. 249, sec. 27; Pierce's Code, 1912, p. 115, sec. 213, p. 135, sec. 53.)

West Virginia.

State.—Whenever any county court shall have decided to construct or improve a road in accordance with plans and specifications made by the chief road engineer, and shall have agreed in writing with the State road bureau respecting the location, construction, and material, then such county court may apply to the State board of control for convicts to work on such road, stating the number, not less than 10, desired and the length of time they are desired. If the number of prisoners available in the penitentiary will suffice to meet all applications pending, said board shall grant all such that are satisfactory. If the prisoners available are not sufficient to meet all applications, such applications shall be filled in the order of their receipt, but, so far as possible, equal service shall be given to all counties. The board of control, with the warden of the penitentiary, shall determine what prisoners may be assigned to such work, and a written contract shall be entered into between the board of control and the county court. (Acts 1913, ch. 41.)

The State prison road force shall be guarded, while working on the roads of the State, or making road materials, by guards detailed by the warden of the penitentiary, not to exceed two guards to every 20 convicts. At the request of the State road bureau, prisoners may, as far as practicable, be made trusties. The warden shall provide suitable movable quarters, necessary cooking utensils, beds, wagons for transporting convicts, camp fixtures, clothing, and food; provided, that the State road bureau may require any county to pay for food and quarters when working therein on a road chiefly of local importance. All work shall be under the direction and control of the chief road engineer. When a convict shall become sick he shall receive proper attention at expense of the county. Any county desiring convicts under this act shall agree to supply all necessary material, tools, and teams required by the plans and specifications of the chief road engineer. If a convict shall escape he shall receive the same punishment as is provided for escape from the penitentiary. (Acts 1913, ch. 41, secs. 19–25, 28.)

If the local road authorities of any county shall propose to improve any public road with the aid of the chief road engineer and the State convict road force, but shall prefer to have it done by contract, same may be done and convicts furnished at $1 per day in number not to exceed 40 per cent of the total contract price. Convicts so employed shall remain under the supervision and care of the penitentiary warden. (Acts 1913, ch. 141, sec. 27.)

Counties.—Any male person over the age of 16 convicted of an offense punishable by confinement in the county jail shall be sentenced by the court, in its discretion, to work on the public roads under the county road engineer or other official to be designated by the county court. (Acts 1913, ch. 42.)

All male persons over 16 years old, convicted before a justice of the peace of crime and sentenced to imprisonment in county jail or to pay a fine and costs, may be sentenced to hard labor on the public roads. Such convict who shall escape shall be given an additional sentence of not less than 60 days nor more than six months, plus the cost of arrest and trial. The sheriff, with approval of the county court, shall employ necessary guards, not exceeding one for each 10 convicts. Such prisoners who shall faithfully comply with rules and regulations shall be entitled to a deduction from sentence of five days per month. (Acts 1913, ch. 43.)

Persons charged with misdemeanor and awaiting trial in default of bail may, if they elect, be permitted to work on roads in like manner as convicts. Any such person who shall be convicted when tried shall be credited at $1 per day, with such work on his sentence or on fine and costs, and if acquitted he shall receive 50 cents per day for such labor. A deduction of five days per month shall be granted such persons for compliance with rules and regulations. (Acts 1913, ch. 44.)

Jailers shall receive 50 cents per day for keeping and supporting a person confined in the county jail. (Acts 1915, ch. 93.)

WISCONSIN.

State.—The State board of control may employ inmates of the State prison in improving such roads as said board and the State highway commission may determine and in such manner and under such terms as may be agreed upon. For each convict so employed said board shall set aside for such work performed such per diem as shall be deemed proper, said money to be paid either to such convict or to the dependent members of his family. Said board may purchase or lease necessary tools and machinery. (Acts 1913, ch. 717.)

Counties.—In counties having a population of less than 100,000 there may be provided by the county board convenient to the county jail a quantity of stone and appropriate implements for breaking same suitable for road purposes. All able-bodied male persons convicted and sentenced to imprisonment in the county jail shall be employed in breaking such stone not more than eight hours per day. County boards of supervisors may prescribe necessary rules and regulations to govern such work and for the maintenance of such stone and implements. (Wis. Stats. 1911, Title XXXIV, ch. 202.)

WYOMING.

State.—The construction, repair, and maintenance of the system of public highways established by chapter 44, acts of 1911, as amended by chapter 124, acts of 1913, shall be under the authority and control of the State commission on prison labor, who shall construct same and extensions thereto by the labor of convicts obtained from the State penitentiary. Supervision of such work shall be under a competent person selected by said commission, but said convicts shall not be worked more than eight hours any day. Said commission shall adopt rules and regulations providing for the granting of an additional good-time allowance in the case of prisoners serving short sentences and better food for prisoners serving life sentences, conditioned on good behavior and efficient work. The location, surveying, plans, and specifications and the selection of materials for such highways shall be under the direction of the State engineer, the expense for which, including salary of deputy engineer to be furnished by the State engineer, shall be paid by the board of county commissioners of the county or counties in which said work is done. Boards of county commissioners of the several counties through which said public highways pass shall secure the rights of way therefor, and shall build the necessary bridges over any and all rivers over which said highways pass, provided such bridges shall be built in accordance with the plans of the State engineer, and that, as far as practicable, bridges across small streams shall be constructed by said convict labor. Appropriations from the State treasury are made to purchase necessary tools, implements, supplies, and equipment in connection with employing prisoners on public highways, $5,000 being so appropriated for the two years ending March 31, 1917. (Acts 1911, ch. 44, as amended; acts 1915, ch. 162.)

Counties.—All persons sentenced to confinement at hard labor in any jail or prison of any county, city, town, village, or municipality may be employed upon any public work of improvement or upon the highways, streets, alleys, parks, or other public places located therein. (Comp. Stats., 1910, ch. 418, sec. 6401.)

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