The primary objective in range management on 48 million acres of Indian-owned but federally controlled range land is the social and economic advancement and security of the Indians.

The major and most pressing task is the rehabilitation of depleted ranges. For all Indian lands an estimated reduction in stocking averaging 26 percent is required to reach grazing capacity (fig. 21), and a still higher reduction is necessary on the half of the Indian grazing land in the Southwest where the depletion is worst.

This is a difficult situation, for unless depletion is stopped the Indians face ruin through the loss of one of their most important resources, but drastic livestock reductions will create another difficult problem. Removal of white-owned livestock, more equitable distribution of grazing privileges among the Indians, the purchase of additional range, the initiation of work projects, and the development of supplemental industries are possible shock absorbers.
the influence of national-forest management; and finally, good business and range management. Such factors as these are responsible for roughly the 44 million acres or 12 percent of privately owned range that is in good or fairly good condition.

INDIAN LANDS

More than 48 million acres of grazing land chiefly within western reservations fall into the Indian land category (fig. 17). The present condition of this range varies from reasonably satisfactory in Oregon, Washington, a portion of Idaho, and the northern Great Plains, to serious depletion on most of the area in the Southwest.

Indian lands as a whole have been depleted 51 percent, and during the last 30 years the trend on three-fourths of the area has been downward, while improvement has been confined to 10 percent.

What lifts the Indian lands into the exceptional classification, however, is the extension of a definite program of management over all range lands in 1930 with the delegation of grazing supervision to the Forestry Branch in the Bureau of Indian Affairs. On the northwestern reservations, where earlier progress had been made, the program was readily put into effect.Elsewhere the major provisions of the program have been applied to the grazing of white-owned livestock. Progress has been slow, however, on ranges used by the Indians themselves, especially in the Southwest. It is hoped that through persistent effort and extension work the overstocking can be reduced. The recent Wheeler-Howard Act provides among other things for the stabilization of land status and authorizes consolidation for management purposes. All in all, while difficult problems remain unsolved, the stage has been set for satisfactory range conservation on Indian land.

<table>
<thead>
<tr>
<th>OWNERSHIP</th>
<th>RANGE AREAS IN REASONABLY GOOD CONDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td></td>
</tr>
<tr>
<td>National Forests</td>
<td></td>
</tr>
<tr>
<td>Public Domain,</td>
<td></td>
</tr>
<tr>
<td>Grazing Dist's,</td>
<td></td>
</tr>
<tr>
<td>Indian Lands</td>
<td></td>
</tr>
<tr>
<td>State and County</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td></td>
</tr>
</tbody>
</table>

![Figure 18.—Percentage of range ownerships in reasonably good condition.](image)
justments in land use on outside agricultural land as well as a resur-
vey of national-forest policies. Additional research is the foundation
to the solution of many of the problems.

INDIAN LANDS

Range lands within Indian reservations occupy a unique place in
the consideration of the national-range situation. This is so, not on
account of the considerable area or commercial importance, but be-
cause these lands belonging to the Indians constitute a definite re-
sponsibility of the Federal Government for management and ad-
ministration.

The legal status of each Indian reservation or individual tract of
Indian land now rests firmly on the provisions of an Indian treaty,
and Executive order, or Federal patent, definitely recognizing or es-
establishing indisputable Indian title to the property and in most in-
stances restricting passage of this title. The Indians are wards of
the Federal Government and this guardianship extends to the sup-
ervision and administration of the Indian lands.

The uses to which the Indian range has been devoted, the steps
taken in its administration, the present ownership status, and even
the extent and physical condition of the resources are intricately
involved with the ever-changing degree of interest in Indian affairs;
and are reflections of the efforts of the Federal Government to direct
the use of the land resources of the Indian toward fostering his social
and economic development. The multiplicity of aims and social
theories involved has resulted in a rather complicated pattern of
achievement.

In 1849 the Bureau of Indian Affairs was transferred from the
War Department into civil control as a bureau of the Department
of the Interior. Since then the functions of the Bureau of Indian
Affairs have been developed to a high degree of beneficent paternal-
ism. In addition to providing services as an aid to the health, edu-
cation, employment, and other personal needs of the Indians, prog-
ressive steps have been taken in the management and development of
the reservation properties, including activities directed toward the
conservative management of the Indian range lands (83).

INDIAN RANGE RESOURCES

Over 80 percent of the total land in Indian ownership is within
the range livestock-producing regions of the West. Plant types and
forage characteristics of these broad regions have been fully dis-
cussed in an earlier part of this report, and are not reviewed here
except to mention that the forage on the various Indian reservations
is basically the same as that which occurs generally throughout the
territory of which they are a part. Several plant types suitable to
the range of both sheep and cattle are found on each major reserva-
tion regardless of location. The distribution of Indian land
valued for forage production by States and grazing types recognized
by the Indian Service, as compiled from 1984 statistics, are presented
in table 52. Of the 43,200,000 acres given a range-land classification,
slightly over 3 million is listed as barren or waste, leaving a balance
of over 40,000,000 acres for use by livestock.

On nearly all of the land use is made of the 43,200,000 acres were
grazed by cattle during the time the range stock owners paid gifts
on the remainder, to the Indian-owned livestock.

The relative proportion of the total livestock reported is

<table>
<thead>
<tr>
<th>State</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>22,318.5</td>
</tr>
<tr>
<td>California</td>
<td>872.2</td>
</tr>
<tr>
<td>Colorado</td>
<td>233.3</td>
</tr>
<tr>
<td>Idaho</td>
<td>424.4</td>
</tr>
<tr>
<td>Montana</td>
<td>5,882.1</td>
</tr>
<tr>
<td>Nevada</td>
<td>300.5</td>
</tr>
<tr>
<td>New Mexico</td>
<td>1,011.0</td>
</tr>
<tr>
<td>North Dakota</td>
<td>944.6</td>
</tr>
<tr>
<td>Oregon</td>
<td>1,536.4</td>
</tr>
<tr>
<td>South Dakota</td>
<td>3,730.4</td>
</tr>
<tr>
<td>Utah</td>
<td>401.1</td>
</tr>
<tr>
<td>Washington</td>
<td>2,110.2</td>
</tr>
<tr>
<td>Wyoming</td>
<td>820.4</td>
</tr>
<tr>
<td>All States</td>
<td>143,223.6</td>
</tr>
</tbody>
</table>

1 The total area of range land in this report, is 43,200,000 acres.

The Indian-owned stock grazed on the Indian-owned range lands.
The larger reservation areas are ready demand for Indian-owned
stock grazing to more range lands and are needed for Indian-owned
stock.

<table>
<thead>
<tr>
<th>Owner</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

The Indian-owned stock grazed on the Indian-owned range lands.
The larger reservation areas are ready demand for Indian-owned
stock grazing to more range lands and are needed for Indian-owned
stock.
CONSERVATION THE EXCEPTION

On nearly all of the 47 reservations summarized in table 52, full use is made of the annual forage crop. In 1934 approximately 10 million acres were under temporary lease or permit to whites, pending the time the range is needed for Indian livestock. Indian livestock owners paid grazing fees on an additional 1.7 million acres and on the remainder, comprising nearly three-fourths of the total, Indian-owned livestock were grazed on a free use basis.

The relative proportions of white and Indian ownership and the total livestock reported using the range in 1934, are shown in table 53.

### Table 52.—Areas of Indian reservations of range importance by types and States

<table>
<thead>
<tr>
<th>State</th>
<th>All range land</th>
<th>Open land</th>
<th>Sage and browse type</th>
<th>Coniferous timberland</th>
<th>Woodland</th>
<th>Aspen</th>
<th>Waste and barren</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
</tr>
<tr>
<td>Arizona</td>
<td>22,518,055</td>
<td>9,520,391</td>
<td>4,860,534</td>
<td>2,230,441</td>
<td>3,706,118</td>
<td>3,740</td>
<td>1,957,321</td>
</tr>
<tr>
<td>California</td>
<td>372,183</td>
<td>21,232</td>
<td>125,540</td>
<td>23,000</td>
<td>23,054</td>
<td>199,418</td>
<td>134,295</td>
</tr>
<tr>
<td>Colorado</td>
<td>355,032</td>
<td>44,000</td>
<td>38,000</td>
<td>418,185</td>
<td>12,814</td>
<td>12,332</td>
<td></td>
</tr>
<tr>
<td>Idaho</td>
<td>424,484</td>
<td>10,000</td>
<td>370,234</td>
<td>204,532</td>
<td>384,840</td>
<td>103,300</td>
<td>270,100</td>
</tr>
<tr>
<td>Montana</td>
<td>3,522,193</td>
<td>3,355</td>
<td>3,355</td>
<td>3,355</td>
<td>1,000</td>
<td>367,769</td>
<td></td>
</tr>
<tr>
<td>Nevada</td>
<td>384,507</td>
<td>112,973</td>
<td>112,973</td>
<td>112,973</td>
<td>1,004</td>
<td>1,004</td>
<td>1,004</td>
</tr>
<tr>
<td>New Mexico</td>
<td>3,541,003</td>
<td>1,666,707</td>
<td>618,942</td>
<td>243,207</td>
<td>618,942</td>
<td>2,000</td>
<td>253,769</td>
</tr>
<tr>
<td>North Dakota</td>
<td>594,628</td>
<td>554,814</td>
<td>26,800</td>
<td>1,004</td>
<td>2,500</td>
<td>11,000</td>
<td>11,000</td>
</tr>
<tr>
<td>Oregon</td>
<td>1,550,723</td>
<td>30,754</td>
<td>204,026</td>
<td>204,026</td>
<td>5,660</td>
<td>27,140</td>
<td></td>
</tr>
<tr>
<td>South Dakota</td>
<td>5,730,422</td>
<td>3,514,794</td>
<td>50,463</td>
<td>50,463</td>
<td>2,500</td>
<td>126,805</td>
<td></td>
</tr>
<tr>
<td>Utah</td>
<td>401,108</td>
<td>113,179</td>
<td>175,219</td>
<td>28,900</td>
<td>66,800</td>
<td>2,500</td>
<td>17,930</td>
</tr>
<tr>
<td>Washington</td>
<td>2,110,219</td>
<td>342,287</td>
<td>537,377</td>
<td>1,268,217</td>
<td>537,377</td>
<td>2,500</td>
<td>2,500</td>
</tr>
<tr>
<td>Wyoming</td>
<td>559,440</td>
<td>193,526</td>
<td>270,205</td>
<td>126,000</td>
<td>500</td>
<td>350,299</td>
<td></td>
</tr>
<tr>
<td><strong>All States</strong></td>
<td><strong>48,922,608</strong></td>
<td><strong>30,463,118</strong></td>
<td><strong>8,143,410</strong></td>
<td><strong>6,658,700</strong></td>
<td><strong>4,775,209</strong></td>
<td><strong>117,220</strong></td>
<td><strong>3,147,995</strong></td>
</tr>
</tbody>
</table>

1 The total area of range available to domestic livestock on Indian lands in the West, as shown elsewhere in this report, is 48,921,600 acres inclusive of small areas of waste range within the larger bodies of range land. The acreage shown in this table is exclusive of public domain Indian allotments, small fenced tracts within reservations, or other areas within Indian ownership which have not been classified as to type ranges. In the few instances where a reservation extends into two States it is listed here and in following tables with the State in which the Indian agency is situated.

### Table 53.—Indian and white-owned livestock on ranges, 1934

<table>
<thead>
<tr>
<th>Ownership</th>
<th>Cattle</th>
<th>Horses</th>
<th>Sheep</th>
<th>Goats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>Number</td>
<td>Number</td>
</tr>
<tr>
<td>Indian</td>
<td>229,545</td>
<td>124,868</td>
<td>901,785</td>
<td>215,886</td>
</tr>
<tr>
<td>White</td>
<td>227,460</td>
<td>24,945</td>
<td>671,553</td>
<td>215,886</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>456,003</td>
<td>150,813</td>
<td>1,573,338</td>
<td>215,886</td>
</tr>
</tbody>
</table>

The Indian-owned livestock make use of the reservation range for the yearlong period except when it is covered with snow. In some localities, particularly on the northern reservations, supplementary feeding is practiced; but by far the larger percentage of the Indian stock graze yearlong on the reservation ranges. The white-owned stock generally is grazed under permits specifying the season of use, which varies from a few months of intensive summer grazing to more moderate use over a longer period, depending on the nature and location of the range. The Indian ranges on the larger reservations are quite important sources of feed, and there is ready demand for use by white-owned livestock of the forage not needed for Indian livestock.
The present condition of the ranges varies widely in different regions. The Indian range lands in Oregon and Washington, except for some minor localized injury due to faulty distribution of stock, are in good condition. On the northern Great Plains reservations, where the native sod of buffalo grass has been undisturbed and the area used solely for grazing, the ranges are also generally in fair to good condition. Some futile attempts at dry farming have destroyed the native vegetation, but it is estimated that somewhat less than 100,000 acres of plowed Indian land in the Plains States should be returned to grass.

In the Southwest the situation is serious. Approximately one-half of the total range lands in the Navajo, Hopi, and Papago country, particularly, is seriously overstocked and presents a severely overgrazed condition. Erosion by both wind and water has removed and is still removing the fertile topsoil on hundreds of thousands of acres. The condition of these ranges, in spite of the first steps toward corrective measures which have been taken, is steadily growing worse. The fine texture of the soil and the absence of sod-forming vegetation, together with irregular torrential showers, cause a heavy run-off which results in serious damage (90). Drastic action toward livestock reduction and range rehabilitation will be necessary on millions of acres before the Indian range lands of this region are again capable of making their full contribution to the welfare of the Indian owners or the Nation as a whole (161).

A survey of western ranges made in 1935 indicates that the Indian lands on the whole have been depleted approximately 51 percent of virgin condition, and about 4 percent of the total usable range area is extremely depleted, 54 percent is severely depleted, 36 percent is materially depleted, and 6 percent of the range is only moderately depleted. It is believed that in virgin condition these Indian ranges had a grazing capacity at the rate of 4.2 acres for each animal-unit month. The present carrying capacity is approximately 8.2 acres per animal-unit month, although the ranges are now stocked at the rate of about 6.0 acres per animal-unit month. Over the past 30 years the trend in condition has been downward on 75 percent of the Indian ranges, and there has been improvement on about 10 percent. During approximately the past 5 years the trend has been downward on 63 percent, and there has been improvement on about 4 percent of the total range area.

ADMINISTRATION OF INDIAN RANGE

The record prior to the organization of the forestry unit in the Bureau of Indian Affairs in 1910 does not indicate that any considerable attention or systematic effort was given to the supervision of Indian range lands, even though in 1891 the leasing of Indian lands for grazing purposes was authorized by law. Indeterminate numbers of livestock made seasonal or yearlong use of the range, largely on a trespass basis, and the various efforts toward interesting the Indians themselves in the livestock industry met with varying degrees of success.

For 6 to 8 years after 1910 some attention was given to the range situation in the Southwest by the forestry unit of the Indian Service. A system of range allotments was set up, and over to the various reservations, little real progress in range management prior to 1920, as foresters, which, however, into grazing units, a plan which, in the Southwest, is the result of the progress made in the management of the range lands. The importance of range conservation on Indian lands was recognized.

A definite and systematic program of range utilization and regulation was developed by the funds available, advisor by the Secretary of the Interior approved by the Secretary. In this form, they are as follows:

1. The preservation of the game and entire state.
2. The permanent welfare of the Indian livestock industry.
3. The protection of the Western ranges from unfair competition by the domestic range operators.
4. The conservation of the range through the development of agriculture, and, secondarily through livestock.

On the forested reservations, the work accomplished has been to strengthen the existing livestock industry and but little modification has been required. On other reservations, there was considerable cooperation with the Indian owners (161) and improvement of this more promising area.

Much more encouraging results have been reported by white operators than have been reported in the Southwest, although much has been removed from the range lands. The problem of range management is steadily being met and sustained-yield type management has been instituted for gradually reducing the load on the range. The problem of the administration has many ramifications, but the trend toward sustained-yield type management seems assured.
A system of range allocation was inaugurated, and fees were collected for grazing privileges. This work was subsequently turned over to the various reservation superintendents, and thereafter but little real progress in range control was made. Some years later, but prior to 1920, as forestry organizations were developed on the reservations of the Northwest, the responsibility for the supervision of grazing activities was gradually assumed on the more important forested reservations of this region. Range lands were organized into grazing units, a permit system with a definite control of the number of stock and season of use was adopted, and an orderly program of management was placed in effect (154, pp. 607-632). As a result of the progress made in range administration on the reservations of the Northwest and of the growing recognition of the importance of range conservation, the supervision of all grazing activities on Indian lands was delegated to the forestry branch in 1930.

A definite and systematic program of range management for application on all reservations was initiated, directed toward the conservation and regulated use of range resources. To the extent allowed by the funds available, a technically trained personnel has been developed for range administration. The objectives were definitely stated in the grazing survey report previously cited, and were approved by the Secretary of the Interior June 4, 1931. In abbreviated form, they are as follows:

1. The preservation of land, water, forest, and forage in a safe and entire state.
2. The permanent welfare of the livestock industry generally and the Indian livestock industry in particular.
3. The protection of the interests of the whole Indian people against unfair competition by the more aggressive individuals.
4. The conservative utilization of all forage resources, primarily through the development of the livestock industry among Indians, and secondarily through the regulated sale of grazing privileges.

On the forested reservations of the Northwest these regulations served to strengthen the plan of administration already in operation, and but little modification of range-management practices was required. On other reservations used largely by white-owned stock there was considerable opposition, both on the part of the Indians as landlords (161) and the livestock operators as lessees, to the inauguration of this more positive system of range management.

Much more encouraging progress has been made on the ranges used by white operators than on ranges used by the Indians themselves. In the Southwest, although many thousands of sheep and goats have been removed from the Navajo ranges and constant effort for further improvement is steadily being made, progress toward sustained-yield management has been relatively slow. An extension program directed toward improving their knowledge and understanding of range management has been instituted among the Navajos as a part of the plan for gradually reducing the number of stock on the overgrazed ranges. The problem of the administration of Indian range lands, with its many ramifications, has by no means been solved, but definite steps toward sustained-yield management have been taken, and further progress seems assured.
SPECIAL HANDICAPS IN ADMINISTRATION

LAND STATUS

The governmental policies which have been applied with respect to Indian lands have resulted in a highly involved land status on some of the reservations today which has greatly complicated management of the range resources. From colonial days until recently the friends of the Indians, without exception, tried to lead, persuade, or force them into the settled domestic mode of living which the white man had developed and which has proved so satisfactory to him. A permanent home instead of a nomadic life, a family group instead of a tribal band, domestic livestock instead of wild game, and individual instead of communal ownership of land, were considered to be necessary for the proper development of the Indian.

In carrying out these principles the Indians were encouraged to make selections of land on their reservations and these selections were then conveyed to them as allotments. When the Indians of a reservation had each been allotted land for homemaking and tribal reserves of timber and grazing grounds had been made, the surplus lands were in many instances opened to homestead entry or disposed of in other ways with the proceeds of disposal credited to the tribal funds.

Many variations of this land program were applied on the numerous reservations in the Northern States, and as a result much land unsuited to individual development has been passed into private ownership. In the Southwest, owing to the stronger communal traits of the Indian people and the more obvious unsuitability of the reservation land for use in small tracts, this land-disposal program was not so generally applied.

As a result of the various land transactions within the boundaries of many reservations there are five distinct classifications of land ownership:

1. Ceded and alienated.—Lands to which the Indian title has been completely extinguished by Executive order, Federal purchase or comparable governmental action.

2. Alienated allotments.—Lands in homestead size tracts to which patent in fee simple has been issued to individual Indians and which may still remain in Indian ownership or may have been disposed of to whites. Such lands are subject to taxation and sale and are in every sense private property.

3. Ceded but unentered.—Lands ceded by the tribe to the Federal Government for disposal by the General Land Office. Indian title will not be extinguished until homestead entry is approved and proceeds paid into the tribal fund.

4. Trust allotments.—Lands in homestead size tracts to which patents have been issued to individual Indians with restrictions as to alienation or encumbrance.

5. Tribal.—The undivided community-owned lands of the tribe.

The extent of holdings under the various status classes in 1931 were as follows:

Ceded and alienated

Alienated allotments

Total

Ceded but unentered

Trust allotments

Tribal lands

Total

Grand total

This highly involved and for purposes of effective administration handled in large consolidated units, presents some trying problems of Indian affairs.

INDIAN AFFAIRS

In addition to the intrinsically hard problems, there are several other problems peculiar to the administration deriving from the premise that it is a "Government," and that the Indian needs latitude in the handling of his affairs. Under this policy, Indians have not only achieved high status in the economy and almost worthless poor ranges. The desire to extend the sheep and cattle to develop the industry has resulted in the poor distribution, and other evils.

The importance of Indian allotments has been a fact of administration. The right to the highest possible current income from their responsibility of Indian allotments has extended for years toward the use of the range. The care of the units and the application of the grazing regulations are in improving this.

It is too early in the history of the American Indian (May 18, 1934)—the most notably of our Indian affairs—to make a complete list of the actual Indian range lands. It is important in connection with the

The explanatory title for Indian lands is:

To conserve and develop the natural resources, including the right to form business associations, and to improve their physical conditions; to make available for Indians; to grant certain lands for educational and vocational education for Indians.

*This acreage includes all the Indian range lands.
Ceded and alienated........................................ 10,773,263
Alienated allotments....................................... 3,897,012

Total.................................................................. 14,672,275
Ceded but unentered.......................................... 1,812,205
Trust allotments............................................... 13,539,641
Tribal lands.................................................... 30,061,979

Total.................................................................. 45,403,825
Grand total...................................................... 60,076,100

This highly involved and decentralized ownership of land, which for purposes of effective and efficient range management should be handled in large consolidated blocks, constitutes one of the most trying problems of Indian range administration.

INDIAN RIGHTS AND PRIVILEGES

In addition to the intricately involved land status, there are several other problems peculiar to the administration of Indian lands, all deriving from the premise that "the least government is the best government" and that the Indians are entitled to a wide discretionary latitude in the handling of their own property. Because of this policy, Indians have not been prevented from grazing semiwild and almost worthless ponies yearlong on seriously depleted spring ranges. The desire to encourage the Indians in the ownership of sheep and cattle to develop economic independence and habits of industry has resulted in the minimum of restrictions on overgrazing, poor distribution, and other bad range practices.

The importance of income from the grazing use of individual allotments has been a further serious source of difficulty in range administration. The right of each individual Indian to obtain the highest possible current income from his property and the implied responsibility of Indian Service employees to support this procedure tended for years toward inadequate control of stocking and over-use of the range. The consolidation of Indian allotments into range units and the application of the permit system, accomplished under the grazing regulations of June 4, 1931, have been of major importance in improving this situation.

WHEELER-HOWARD ACT

It is too early in the operation of the Wheeler-Howard Act (June 18, 1934)—the most notable recent legislation with respect to Indian affairs—to make a conclusive appraisal of its ultimate effect on Indian range lands. However, certain of its features are extremely important in connection with range-land management.

The explanatory title of the act indicated its scope:

To conserve and develop Indian lands and resources; to extend to Indians the right to form business and other organizations; to establish a credit system for Indians; to grant certain rights of home rule to Indians; to provide for vocational education for Indians; and for other purposes.

This acreage includes all Indian lands in the United States and therefore does not agree with the total acreage in the western range area.
The first four sections of the act deal with land status and ownership and are directed toward restricting the further alienation of Indian land to the irreducible minimum consistent with proper inheritance procedure. This will operate toward the stabilization of the ownership of Indian land in its present status and, together with the authorization for consolidation and acquisition contained elsewhere in the act, should have a helpful influence in range conservation.

Section 6, in which range management is specifically mentioned, reads as follows:

The Secretary of the Interior is directed to make rules and regulations for the operation and management of Indian forestry units on the principle of sustained-yield management, to restrict the number of livestock grazed on Indian range units to the estimated carrying capacity of such ranges, and to promulgate such other rules and regulations as may be necessary to protect the range from deterioration, to prevent soil erosion, to assure full utilization of the range, and like purposes.

This section makes the protection of Indian range lands and the application of sustained-yield management a definite mandatory responsibility of the administrative organization, but, since in each case of serious overgrazing on Indian lands the stock is owned by the Indians themselves, a much more complex procedure is involved than the mere modification or cancelation of a grazing permit. In fact, it would seem to involve a modification of life habits and customs and the substitution of some other means of procuring a livelihood for a large percentage of the Indian population in the Southwest. Social and economic development must go hand in hand with the application of the conservation features of the Wheeler-Howard Act. If so, in the ultimate application of these conservation features, the Indians themselves as well as the Indian ranges will be greatly benefited.

PROBLEMS

The variation from time to time in the social aims and objectives of Indian guardianship by the Federal Government, the peculiar desires and habits of the Indian himself, the complicated pattern of land status within the reservations, and the failure for a long time on the part of administrative agencies to recognize that conservation and sustained yield of the range resources are fundamental to the future social and economic development of the Indian have resulted in a variegated pattern of accomplishment in conservation of the Indian-range resources. There has been severe depletion of the range forage, especially in the Southwest. On the forested reservations of the Northwest where the forestry unit of the Indian Service assumed responsibility for the supervision of grazing activities prior to 1920, the ranges are in reasonably good condition. Finally in 1930 the supervision of all grazing activities on Indian lands was delegated to the forestry unit and a positive program of range conservation was started. The many problems have by no means been solved but sustained-yield management has now been initiated and further progress seems assured.

Among the more important problems still to be dealt with are: Further reduction in numbers of livestock on many of the reserva-

Approximately 12 million acres of public domain remain. Practically all of it in the "over" remnant of the Mother lode, except for 65 million acres leased under the Grazing Act, and orderly use of the 33 million acres also were on June 1, 1931, Federal land in which the Indians, shale, coal, and mineral tenure, far as grazing is concerned, unreserved public lands, approximately 60,572 acres in the unreserved part of the Federal lands. The 55 grazing districts are approximately 66 percent of the watershed values, necessary to wildlife conservation regulation has led to better grazing.

Although the need of range resources has been recognized, action have been and nothing was done until the Act was passed, but agreements that greatly benefit one of the Nation.

<table>
<thead>
<tr>
<th>Plant type</th>
<th>Usable range area of Federal reservation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tall grass</td>
<td></td>
</tr>
<tr>
<td>Short grass</td>
<td></td>
</tr>
<tr>
<td>Pacific bunchgrass</td>
<td></td>
</tr>
<tr>
<td>Semidesert grass</td>
<td></td>
</tr>
<tr>
<td>Sagebrush-grass</td>
<td></td>
</tr>
<tr>
<td>Southern desert shrub</td>
<td></td>
</tr>
<tr>
<td>Salt-desert shrub</td>
<td></td>
</tr>
<tr>
<td>Pinion-juniper</td>
<td></td>
</tr>
<tr>
<td>Woodland-chaparral</td>
<td></td>
</tr>
<tr>
<td>Open forests</td>
<td></td>
</tr>
</tbody>
</table>

Total or average:
ownership pattern in some regions, and by private holdings of key areas in others.

To carry out such an essential measure as placing the remaining half of the public domain under administration and to insure permanence will require the modification of existing legislation.

To carry out other essential measures—such as an equitable distribution of grazing privileges; the reduction of stocking, which now exceeds grazing capacity by 43 percent (fig. 21), to insure coordinated use of all the range resources; to avoid the establishment of prescriptive rights; and to avoid a conflict between Federal and State authority—will require exceptionally favorable interpretation of the Grazing Act in the public interest, and probably also its modification.

In addition to the reduction of stocking, essentials in the field of technical management include putting sound systems of range management into effect, making adjustments in seasonal use, artificial restoration on at least 18 million acres, the control of erosion on many millions of acres, surveys, preparation and putting management plans into effect for the entire area, and a large improvement program designed to aid technical management.

The measures proposed should increase the present grazing capacity of the grazing district-public domain range by 76 percent in 50 years. Or putting it in another way, 50 years' effort will be necessary to build the range up to the point where it can carry safely the livestock now being grazed.

Some provision should be made for the administration and management of the 21.6 million acres of available range on other reservations and withdrawals, preferably by the Secretary of Agriculture with the concurrence of the Secretary of primary jurisdiction.

Definite provision is necessary also to prevent further alienation of Federal lands unsuitable for private ownership. One prerequisite for transfer should be classification by the Department of Agriculture, which should appraise not only the suitability of the land for private ownership but also the size of the unit required.

**INDIAN LANDS**

The primary objective in range management on 48 million acres of Indian owned but federally controlled range land is the social and economic advancement and security of the Indians.

The major and most pressing task is the rehabilitation of depleted ranges. For all Indian lands an estimated reduction in stocking averaging 26 percent is required to reach grazing capacity (fig. 21), and a still higher reduction is necessary on the half of the Indian grazing land in the Southwest where the depletion is worst.

This is a difficult situation, for unless depletion is stopped the Indians face ruin through the loss of one of their most important resources, but drastic livestock reductions will create another difficult problem. Removal of white-owned livestock, more equitable distribution of grazing privileges among the Indians, the purchase of additional range, the initiation of work projects, and the development of supplemental industries are possible shock absorbers.
Reductions in stocking must be made. Improvements in range management, removal of worthless horses, rodent control, special erosion control, and artificial revegetation.

The consummation of the program proposed will, it is estimated, permit the grazing of about 13 percent more livestock 50 years hence than are now grazed.

**STATE AND COUNTY LANDS**

State and county range lands, aggregating some 66 million acres, fall into two general classes.

The first is the remnant of Federal grants to States designed to produce revenue for schools and other institutions. In the main these lands have been leased without control to obtain maximum current revenue and as a result have been depleted by 49 percent, and 88 percent of the total area is still on the downgrade.

The difficulty of the problem that the States face in these lands should not be minimized. The policy so far followed will ultimately defeat the purpose of the grants unless ways and means are developed to restore and conserve the resources which give the lands their value. In some instances already the ranges have been depreciated so far that they can no longer be leased. While constitutional and other limitations have been a factor, the very fact that these lands have not already been sold is an indication that a substantial part is submarginal for private ownership and should be retained by the public.

The other horn of the dilemma is that the State institutions are dependent in varying degree upon the receipts, and the range cannot be restored and administered without expenditures which may equal the receipts. The soundest course in the long run will probably be to restore and maintain the resource, making what other provision may be necessary for the institutions.

The second class is made up of private lands which have reverted to the States or counties through tax delinquency. That the total area is large is certain, but its exact extent is unknown. Much tax-delinquent land is still in a twilight zone between private and public ownership. Without doubt submarginality for private ownership is a primary cause. Depletion is also a primary cause because it has reduced the productive capacity of the lands and hence the returns from them. The combined depression and drought has hit hardest the poor and depleted lands and uneconomic units.

To meet the increasingly serious problem created by this "new public domain" a revolutionary change in policy in most if not all States is required. Only those lands above the marginal line on which the private owner has a chance for success, and those without high public values, should be returned to private ownership. Those below and those with high public values should be retained under public control. A differentiation can be worked out by such means as classification or zoning. On tax-reverted lands the problems of restoration and management are identical with those on institutional lands.

Except for possible minor modifications the principles which should govern management and administration are the same as those for Federal lands. A primary consideration will necessarily have