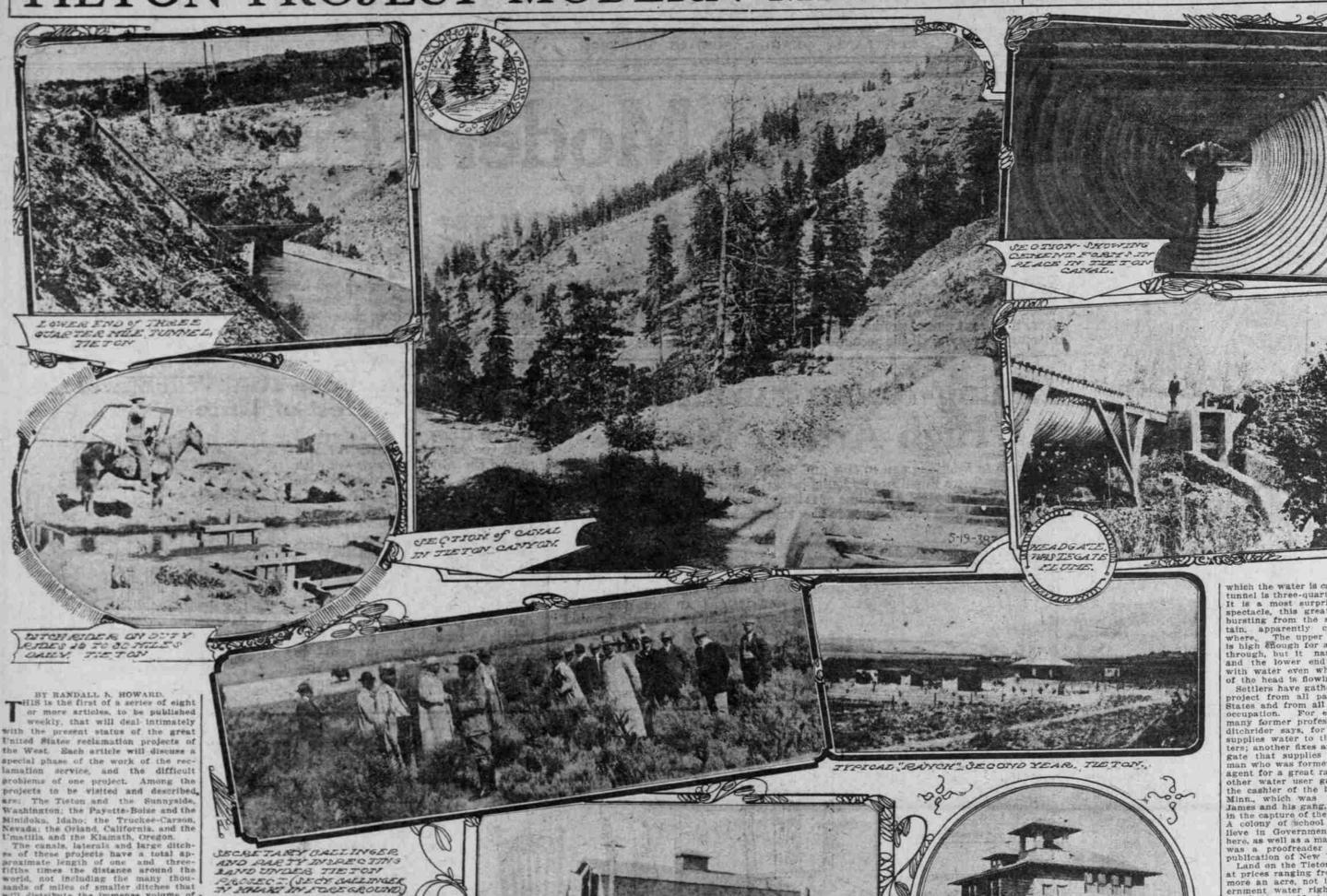
TIETON PROJECT MODERN MIRACLE

Wonder Wrought by Water on Near-Desert Lands Is Seen on Government Reclamation Work in South Central Washington.



with the present status of the great United States reclamation projects of the West. Sach article will discuss special phase of the work of the rec amation service, and the difficult problems of one project. Among the projects to be visited and described Washington; the Payette-Boise and the

will distribute the immense volume of formerly wasted water that is being conserved by the reclamation service. Counting a fantily or four to every ten support a population of more than half million people.

Law Approved by Roosevelt.

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The reciamation set, was made a law by the signature of President Roosevelt June 17, 1962. The substance of the act in that all moneys received from the sale and disposal of public lands in Arizons. California, Colorado, folaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Okiahoma, Oregon, South Dakota, Utah, Washington and Wyoming, beginning with the fiscal year ended June 39, 1961, including the surplus of fees and commissions in excess of allowances to registers and receivers, and excepting 5 per cent of these amounts, which is set aside for educational and other purposes, be appropriated as a special fund in the Treasury, to be known as the "reclaimation fund," to be used in the examination and survey for and the construction and maintenance of irrigation works for the storage, diversion and development of waters for the reclamation of arid and semi-arid lands in the said states and territories.

A birdseye view of the various projects provided for by the act of Con-gress follows:

gress follows:

Tieton Project—Area, \$5,000 acres;
altitude, about 2100 feet; canals and
laterals, 296 miles in length; farm unit.
40 acres; location, Central Washington;
opened November 7, 1810; products,
hops, alfalfa, fruit, vegetables; preciptation, eight inches; soil, deep volcanio

ash and gravel.
Umatilla Project—Area, first unit,
20,440 acres; altitude, average 470 feet; construction charge, \$60 per acre; ca-nals and laterals, 150 miles in length; dame, storage, length of, 2500 feet, farm units, 10 to 40 acres; location. theastern Oregon; maintenance, an-Northeastern Oregon; maintenance, annual fee per acre, \$1.20; opened, first unit. December 27, 1907; products, hay, fruit. Vegetables, poultry, dairying; average annual rainfall, eight inches; soil, sandy loam and volcanic ash; water supply, Umatilla River.

Sunnyside Project — Area, 100,000 acres; altitude, about 1900 feet; canals and laterals, 410 miles in length; con-

and laterals, 410 miles in length; con struction cost, \$52 per acre; farm units, 48 to \$6 acres; location, Central Wash-ington; opened November 18, 1968; preeipitation, eight inches; products, al-falfa, fruit, vegetables, melons, hops; soil, deep volcanic ash and gravel.

Work Shown in Operation.

One of the most daring of the irri-gation plans of the United States Reclamation Service is the Tieton proj-ect of South Central Washington. Here may be seen the practical working out of many Government reclamation the-

The work of the Heclamation Service appeals strongly to popular interest, and some of its engineering acted, and some bare here appearation. complishments have been spectacular in the extreme. Water is such a common substance that the average man takes as little thought of it as he does AND DARTY DISPECTING PROJECT (SECY CALLINGER IN POWER OUND)

ere in a tangle; litigation was threat e Recigmation Act had scarcely one law before the settlers in Yakima Vailey appealed to the Gov-erament officials for help.

The investigation of this the largest

of the National projects began in 1963 and so complicated were the water rights on the streams and the lakes of the Yakima basin that the agreements, which alone committed the Government to proceed, were not signed until 1905.

Land Values Rise.

So little faith did the investing pubtrict included in the Tieton unit of the district included in the Tieton unit of the Takima project, that 10 years ago the railroad lands in this section were sold as low as 50 cents an acre-land that has recently been resold at prices ranging from \$75 to \$200 and more an acre. It should be noted, too, that this price does not include the water-right charge of \$95 an acre which is the cost to the Government of reclaiming the

Contrast this former condition, also, with the singular struggle on the part of homeseekers to flie homestead rights of homeseekers to file homestead rights on the project. The total area of land included in the Tieton unit is 24,500 acres. Of this amount, about 2000 acres was public land. Early during the present year it was officially announced that on April 6, 1911, 12 homesteads would be open to entry finder the terms of the Reclamation Act which demands five years residence on the land, and the payment of the waterright in 10 could installments. Three

the land, and the payment of the water right in 10 equal installments. Three weeks before the date on which filings could be made, would-be homesteaders began to line up at the district land office at North-Yakima.

At the head of the human line that did not break for more than 20 nights and 20 days, was a high school lad. It is said that the young man was offered \$1200 for his place in the line, and that this offer was later increased to \$1800. \$1200 for his place in the line, and that this offer was later increased to \$1800, but he did not yield. One of the residents of the section told me that he "would have been willing to stand in line all Summer for \$1800"—but the young man was working for a bigger reward, for when his five-years' residence is completed and his water payments made, he will be owner of a farm that has a present value of between \$4000 and \$5000.

Access Made Easy.

The Tieton project is one of the best to study the practical working out of the water theories of the Reclamation Service. The reclaimed area is west toward the Cascade Mountains from North Yakima, and the surface elevation is 1200 to 2100 feet. One may approach either on a branch steam railway or on an electric line. The offi-cial center of the project is the crest of a rolling ridge from which one may look in all directions over newly-re-claimed land.

In reciamation parlance, the Govern-ment headquarters and the neat little village of offices, dwelling and stables is merely "Camp Four." Down at the western man need be reminded that is merely "Camp Four." Down at the service man need be reminded that this most common of all substances warehouse, which is filled with maching many the very term "reclamation" implies a transformation from dead aridity to the final completion of the iast may be seen among civilized men. The Tieton project offers examples out of the spectacular and of the miracle-working power of water. The miracle-working power of water is constantly driven over the different tion Act was approved sine years ago. In fast, irrigation began in the Taki-ma Valley as early as 1887. But constantly driven over the different man Valley as early as 1887. But constantly driven over the different man Valley as early as 1887. But constantly driven over the different man valley as early as 1887. But constantly driven over the different man for the man dead to men the man the buggy teams and the employes of the Service is also given a belonging to the office of the supering the dead of the mother analogy between the Reclamation and engineering supplies for the final completion of the institute and engineering supplies for the final completion of the institute and the Forestry Service. In the Forestry Service, the Reclamation will be the Reclamation of the Reclamation from the Final trois and the station service they have the Reclamation of the final trois service and the Forestry Service. In the Forestry Service, the the Reclamation of the service and the Forestry Service. In the Forestry Service they have the Reclamation of the final trois the final trois carried by wooden flumes to the project of the Service and the Forestry Service. In the Forestry Service, and the Forestry Service, and the Forestry Service the substance of the Individual to the Project there has been rewater Users' Instru

a day in the task of inspection and furled during office hours. The office is low and heat and crowded with the various departments of the work. The Chief Engineer and the Superintendent of irrigation, the officials who have the greatest responsibility, are, like all other reclamation officials I have met, approachable and earnest and enmet, approachable and earnest and su-thusiastic in their work. Office hours do not measure their work, and the building is usually occupied from early morning until late in the evening.

Talk Is All of Water.

Water is the one topic at head-quarters, and the water-talk streams begin to flow as early as 6:30 in the morning, for between that hour and 7 o'clock is the regular period for the seven patrolinen scattered over the project to report by telephone to the Superintendent of Irrigation. By 7 o'clock the patrolinen will have received suggestions and orders for meeting the various water-supply problems of the day. Chiefly, they will make notes concerning those irrigationists who want the water turned off or turned on, and concerning any breaks or dangerous places in the many miles of ditch that they must watch.

The personality and the work of the water patrolman on the reclamation

The personality and the work of the water patrolman on the reclamation project resemble, in some degree, that of the ranger in the National forests. Each must be intensely interested in his work in order to do it well, and both must view their respective subjects of water and forests broadly and transferred by The patrolman's chief jects of water and forests broadly and impersonally. The patrolman's chief equipment is his hardy posty, his showel, and his practical knowledge of the control and the use of water. He must traverse and watch his ditches during every one of the 153 rays of the regular water season on the Tieton project, beginning not later than May 1, each Spring. The patrolman will ride an average of 15 to 25 miles a day, noting the head of 25 miles a day, noting the head of water in the main ditches, and regulating the flow in the laterals and the sub-laterals that deliver the water to the user. The ditch rider comes into contact with the irrigationists on the project, and is in a position to give many practical suggestions—for nine out of ten of the settlers on the Government reclamation projects of the West are entirely new at the irriga-

tion game.
On the Tieton project is seen still another analogy between the Reclama-

water user and the local Water Users' Association, are summarized and explained; also, the duties and the responsibilities of the employes of the Reclamation Service are stated, so that each irrigationist may read and know just what he may and may not expect from Uncle Sam's man who measures and watches the portion of water that is vital to crops, the life-giving element which measures the difference between a seared, dusty strip of desert and an oasis that will support a person or every two agrees.

COVERNICIVE STAGES AT INSAGRUAR TERS. THE TON.

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son on every two acres.

At the end of each day the observa-tions of the ditch patrolman are re-duced to writing, and the reports sent duced to writing, and the reports sent to headquarters. These reports, and the requests of the water users that are transmitted by telephone, are turned over to the clerk who carefully tabulates them. And the resulting daily water balance sheet would dobtless be classed as the most valuable record of

the office—as important as the ticker tape in Wall street or the condensed budget of the great corporation.

The water balance sheet tells the whole tale of the working of the reclamation system. It indicates just how much water is used, and how much is much water is used, and how much is wasted by seepage and through breaks in the ditches; whether enough water is leaving the upper diversion dam or the headgate of the storage reservoir to supply the known needs of the irri-gationists, or whether the lower water upers must endure a day's water famusers must endure a day's water fam-ine; it tells which of the farmers are playing the "water hog" by applying for and using more than their legitimate share for that particular period of the irrigation season, or whether they have learned the wise lesson of water economy and are in no danger of drowning out their crops which need water, but will be as surely injured by too much water as by too

Water Used Tabulated.

The chief trouble of the water clerk at the main office is to make his water summary balance. A definite amount of water is reported by telephone to have entered the head of the main canal or canals. Portions of this are diverted and rediverted at specific points and in accurately measured quantities. Some of it flows in open sandy and rocky-sided ditches; some in newly patented steel flumes; some in concrete canals along dangerous sidehills; some through rock-paved open ditches; some is dropped into hidden concrete or tarred-wood syphons, invisible until it has crossed to the opposite side of the deep valley; and some of it is carried by wooden flumes to the highest point on the final irrigation until

COMPUNITY SCHOOL, THE TON

CONNECTO

substance and that many a preacher-like man, who never knowingly did a wrong, thinks nothing of stealing water whenever he feels that he will not be caught. It is possible, also, not be caught. It is possible, also when there is a water discrepancy, that the ditch rider is not doing his full duty and has not accurately read some of the many small weir gauges that he must report on each day.

Loss Results in Beginning.

During the first year of the use of the open irrigation ditch, a large seepage loss may be expected. Along on section of a main Tieton project canal, for example, tue water loss last year for example, the water loss hast year was abnormally large. The loss was checked up from each end, but the exact point could not be located. After a time the observant reclamation men discovered, at the bottom of a hill several miles away, a new cold-water spring. But this only confirmed suspicions and did not solve the problem. After a time, however, several fissures were discovered in the rock sides and bottom of the ditch, and the openings were filled with concrete. The spring

disappeared.
The most-written-about features of The most-written-about features of the Tieton project are the engineering wonders. Irrigation has been practiced on land within the boundaries of the project for more than 20 years, but the former low-selling price of unirrigated land proves that there was little thought that it would ever be reclaimed. The land is rolling, with high hills on either side, and the streams that have their headwaters in the Casecade Mountains to the west have worn deep canyons. The enthe Casecade Mountains to the west have worn deep canyons. The engineering problems were most difficult. The main canal of the project diverts water from the Upper Tieton River, but in order to pay back the water taken from the Naches River, of which the Tieton is a chief tributary, it was necessary for the Reclamation Service to provide a storage reservoir.

The storage reservoir site was found at Bumping Lake, far up toward the summit of the Cascade Mountains, and in a primitively wild spot where a bear

in a primitively wild spot where a bear may frequently be seen within gun-shot. Indeed one of the freighters who recently made the Bumping Lake trip reports having seen four bears at one time. Construction difficulties one time. Construction difficulties were not confined to work on the large dam, where all materials must be hauled for long distances over difficult roads. Twelve miles of the main canal is excavated along the steep sides of a canyon, more than 600 feet above the river and the level of the valley at the lower end. This canal is formed by a large half-oval concrete flume, which winds scrpent-like along the precipitous side of the mountain.

Flume Built Strongly.

This flume was constructed in short units and these heavy forms were hauled up the hillside by means of tramlines and serial cables.

too, that when a two-ton boulder recently shot 200 feet down the precipice onto it, the body of the canal was not damaged.

One of the most interesting features of this part of the project is the more ley will be described more in detail than two miles of tunnel through in another article.

which the water is carried. The lower which the water is carried. The lower tunnel is three-quariers of a mile long. It is a most surprising and a novel spectacle, this great spring of water bursting from the side of the mountain, apparently coming from nowhere. The upper end of the tunnel is high enough for a tall man to walk through, but it narrows funnel-like and the lower end is entirely filled with water even when only one-third with water even when only one-third of the head is flowing.

with water even when only one-third of the head is flowing.

Settlers have gathered on the Tieton project from all parts of the United States and from all kinds of previous occupation. For example, there are many former professional people. One ditchrider says, for instance, that he supplies water to three former ministers; another fixes and locks the head-gate that supplies the ranch of the man who was formerly general freight agent for a great rallway system. Another water user gained notoriety as the cashler of the bank in Northfield, Minn., which was raided by Jesse James and his gang, the raid resulting in the capture of the Younger brothers. A colony of school teachers who believe in Government reclamation are here, as well as a man who for 25 years was a proofreader on an influential publication of New York City.

Land on the Tieton project is selling at prices ranging from \$75 to \$250 and more an acre, not including the Government water right of \$92 an acre, which is payable in ten equal installments without interest. It should be explained that the Government was petitioned to carry the water to the highest point of each 40-acre unit of land, and the cost of the construction of

point of each 40-acre unit of land and the cost of the construction of these sub-laterals has been included in the total water right charge. It has been roughly estimated that this extra work done for the settler has added about \$13 per acre to the water

added about \$13 per acre to the water right charge.

Alfalfa is one of the big crops on the project, the yield being five to eight tons to the acre. The section is also thought to be exceptionally favorable for the production of Winter apples. Other fruits, all kinds of berries, hope, grains and root crops grow prolifically. The fertility of the Tieton section is insured by the fact that this area is a part of the great Yakima Valley, sections of which are among Valley, sections of which are among the richest and most highly developed portions of the entire West, which val-

EUROPE LEADS AMERICA IN CONSERVING TIMBER

Experts Say Taxation Should Be Removed From Our Virgin Forest Lands; Avert Fire Menace Among Growing Trees.

Kansas City, and William E. forward would be taken. Barnes, of St. Louis, have just "In Austria a landowne Conservation Commission and chairman of the executive committee of the Conservation Congress. Mr. Barnes is secretary of the Missouri Forestry Com-

mission and editor of the Lumberman. The tour, which was semi-official, embraced a considerable portion of Europe. Captain White and Mr. Barnes brought letters of introduction to forestry experts and Ambassadors, Ministers and Consuls, from Philander C. Knox, the Secretary of State; James Wilson, Secretary of Agriculture; H. S. Graves, Chief Forester of the United States: Gifford Pinchot, formerly Chief Forester, and H. S. Hadley, Governor

of Missouri. England, Belgium, Austria, Hungary and Switzerland were visited before France was reached. Unfortunately the time at their disposal was so limited that Captain White and Mr. Barnes were forced to make a very hurried study of conditions in France. However, they found the systems here similar to those in other Continental countries. On their return to the United States they will submit reports to the Governor of Missouri and the Conservation Congress.

Some Recommendations.

learn from Europe regarding the con-servation of natural resources," said Captain White to a Herald correspond-Captain White to a Herald correspond-ent at the Hotel Regina. "We shall recommend the adoption of methods of forests against fire. In Washington, ent at the Hotel Regina, "We shall tits and these heavy forms were used up the hillside by means of in successful operation here for many timlines and aerial cables. Barring cident, this flume is practically everying. So strong is it constructed.

PAPTAIN JOHN B. WRIGHT, of | and with its abolishment a long step

"In Austria a landowner is relieved left Paris for America, after pase- of taxation for 20 years provided he several days here in a study grows trees on his property. The tax of the systems of management of is imposed only when he starts cutting French forests, says the Paris edition and begins to receive a return on his of the New York Herald. Captain investment, and even then it is only White is a member of the United States | nominal. In Switzerland forests, whatever their age, are always exempt from taxation.

"We need relief and encouragement of this character in the United States. Our contention is that, when only one crop of timber is produced in a generation, it is unfair and unwise to levy # tax annually, for 30 or 40 years, on timber lands. We believe timber should be treated like corn or wheat or any other crop-that it should be free from taxation until it is cut."

"The subject of forestry preservation should be removed entirely from the sphere of politics," said Mr. Barnes. "The United States should handle it as business proposition, as is done in France, Germany and most of the other European countries. In Germany the first demand made upon the forests is for firewood. The nation has found that it is cheaper to import timber for telegraph and telephone posts from Russia than to chop down its own trees by wholesale.

Zurich Owns Sawmills.

"The Siwald forest, in Switzerland, has been cultivated for more than a thousand years. The city of Zurich owns it and operates a sawmill. The municipality's profit, over and above the expenses of maintenance and re-

"The United States has much to carn from Europe regarding the conservation of natural resources," said moving the taxation from virgin forest