Addresses at Annual Meeting 1941

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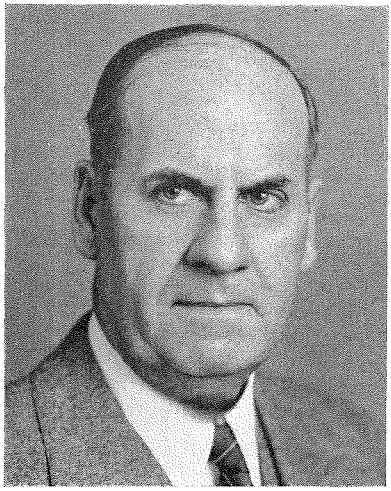
Photographs / Images: Paul E Boslaugh; schematic map of present and proposed irrigation development in and outside of the Platte River watershed; McConaughy Lake, Kingsley Dam, Lake Ogallala; the Platte at Grand Island, May 1942; one of the dredges that pumped the fill for Kingsley Dam; Johnson No. 1 Power Plant on the Supply Canal; irrigated cornfield on Art Soderholm Farm, Frank E Edgerton



PAUL E. BOSLAUGH

The Great North Platte Dam, Power and Irrigation Project

PAUL E. BOSLAUGH, HASTINGS

The subject to be discussed involves and is inseparably connected with a story of Nebraska — Nebraska pioneers, Nebraska prairies, and Nebraska agriculture. The story has been told many times, yet is new in the telling. It is a story of farmers and the soil they till — of hardy, brave, determined people who knew frequent disappointment, but never defeat. It is a story of that portion of Nebraska that is incorrectly but commonly called the Tri-County area, and a story of more than a quarter-century of struggle against terrific odds. It is a story of the causes for the creation, development and operation of *The Central Nebraska Public Power and Irrigation District,* better known as the Tri-County Project.

In the late '60s and early '70s, immigrants were leaving their homes in the eastern portion of the United States and in foreign lands to travel by sea schooner and prairie schooner to the broad expanses of the middle and far West. The deep fertile soil of this district very naturally attracted early settlers, and here these west-bound wanderers found a climate and soil that far exceeded their estimate and expectation. A luxurious growth of grass was everywhere to be seen, and the deep loess soil not infrequently extended below a depth of fifty feet, comparing favorably in richness and fertility with the best known soils. It was a dark silt loam, rich and productive, especially adapted to the raising of wheat, corn, alfalfa, potatoes and all similar crops; and in the early days, during the seasons of adequate precipitation, yields were two or three times greater than the production of average years. Added to the naturally rich formation of the soil, physically and chemically, was the fact that the average rainfall for a period of probably thousands of years had been more than

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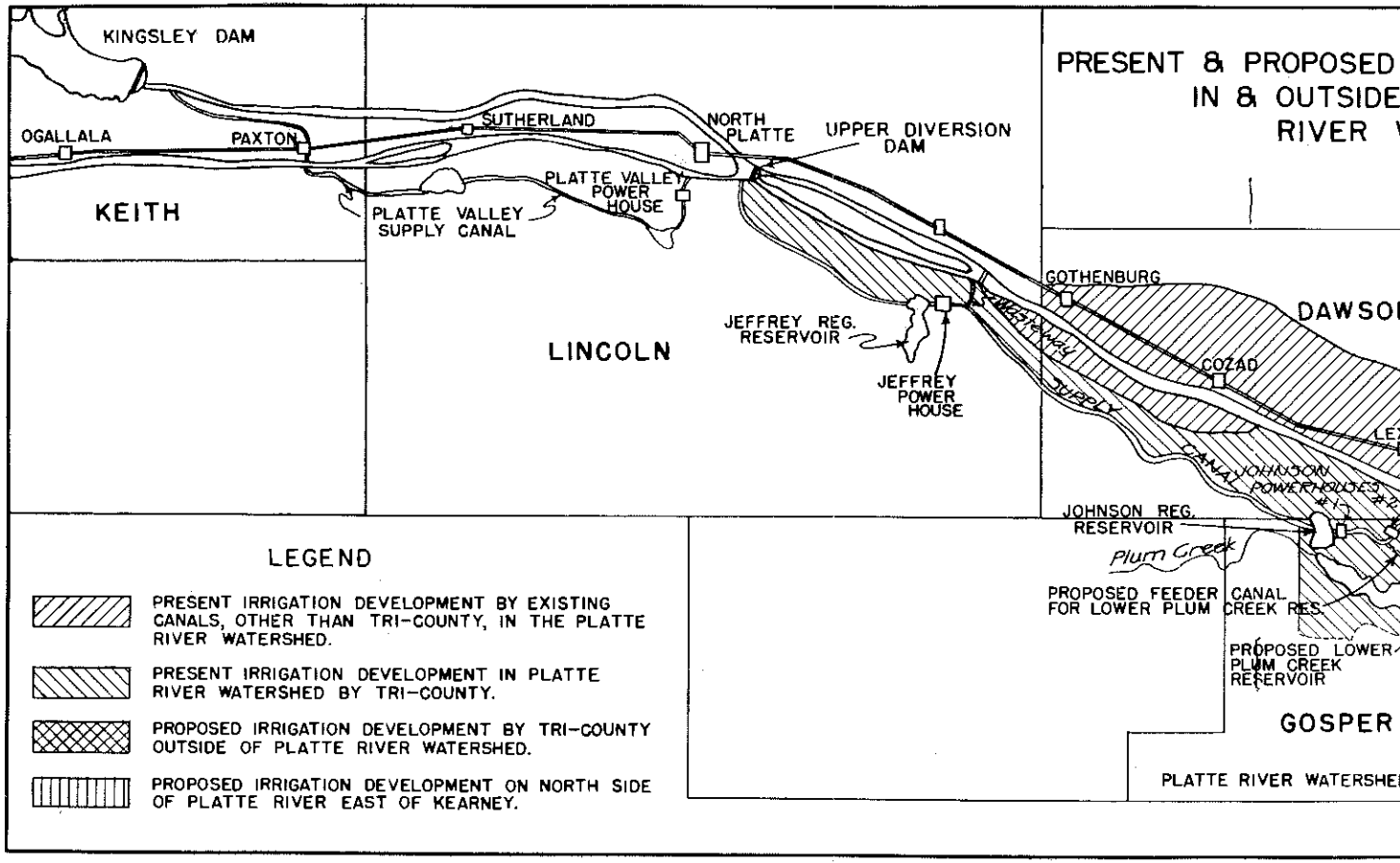
Address at Annual Meeting, State Historical Society, September 27, 1941.

was required for the growing of the native grass. Thus moisture had gradually percolated into the deep recesses of the soil formation, creating a perfect condition for the growing of crops. Temperature, humidity and winds were all favorable to crop production in this early day, and it was only natural that the district became rapidly settled, placed under cultivation and highly improved.

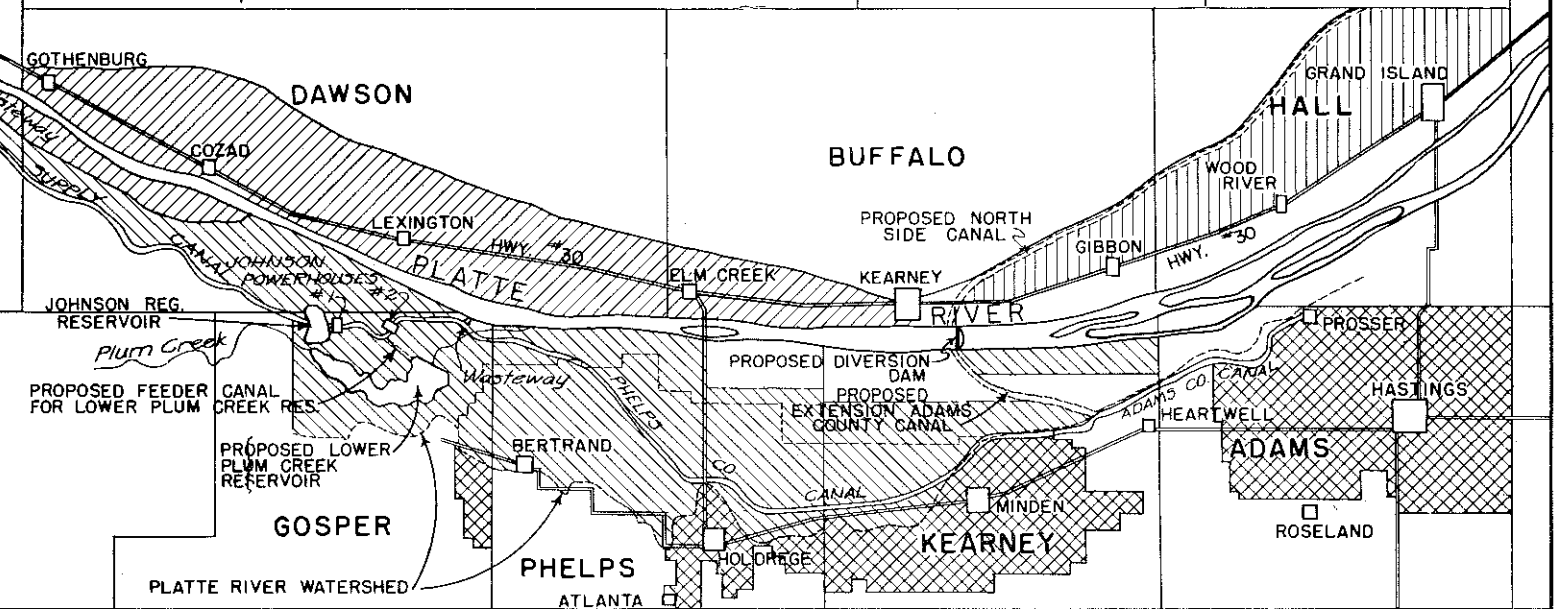
The settlers of this territory were then principally concerned with cattle-raising, but some crops were grown as early as 1865 to supply the demands of the army posts and to furnish supplies for the great bulk of overland traffic which was then migrating through this region. The first grain crops produced on a large scale resulted from the influx of settlers during the period from 1871 to 1876. Spring wheat was for a time the principal crop. Later, corn reached the ascendancy, and maintained it until, about 1890, this region was described as "just one vast cornfield." Winter wheat had its turn and was especially successful after the introduction of the Turkey Red variety from Russia. The pioneer farmers came from the east and from Denmark, Sweden and northern Europe, and were well qualified for the task of developing the frontier.

It was perhaps thirty years after this area was settled that some concern arose in reference to the agricultural future of the district. The early settlers very naturally made no close or complete study of the average annual rainfall. They did not perceive that, although the average annual rainfall had been enough to sustain the native grasses and to cause an accumulation of subsoil moisture, yet there was real danger ahead in growing those crops requiring more moisture than was available from the rains and snows that fell. These settlers had made many needed improvements; crops had been consistently good. They had prospered. Towns and cities had been established. The population. multiplied. And all this without any thought of the fight for survival that lay ahead.

In the meantime, during these years of *apparent prosperity*, there was a gradual change. Something was happening — something which under the circumstances was inevitable and tragic. The reason therefor could not be placed at any person's door. Certainly it was not the fault of those who tilled the soil. They had been tilling this rich virgin soil in the same manner that their


PRESENT & PROPOSED
IN & OUTSIDE
RIVER
KINGSLEY DAM
OGALLALA
PAXTON
SUTHERLAND
NORTH PLATTE
UPPER DIVERSION DAM
PLATTE VALLEY POWER HOUSE
PLATTE VALLEY SUPPLY CANAL
KEITH
LINCOLN
JEFFREY REG. RESERVOIR
JEFFREY POWER HOUSE
GOTHENBURG
COZAD
DAWSO
JOHNSON POWERHOUSES
JOHNSON REG. RESERVOIR
Plum Creek
PROPOSED FEEDER CANAL FOR LOWER PLUM CREEK RES.
PROPOSED LOWER PLUM CREEK RESERVOIR
GOSPER
PLATTE RIVER WATERSHE
LEGEND
PRESENT IRRIGATION DEVELOPMENT BY EXISTING CANALS, OTHER THAN TRI-COUNTY, IN THE PLATTE RIVER WATERSHED.
PRESENT IRRIGATION DEVELOPMENT IN PLATTE RIVER WATERSHED BY TRI-COUNTY.
PROPOSED IRRIGATION DEVELOPMENT BY TRI-COUNTY OUTSIDE OF PLATTE RIVER WATERSHED.
PROPOSED IRRIGATION DEVELOPMENT ON NORTH SIDE OF PLATTE RIVER EAST OF KEARNEY.

PRESENT & PROPOSED IRRIGATION DEVELOPMENT IN & OUTSIDE OF THE PLATTE RIVER WATERSHED



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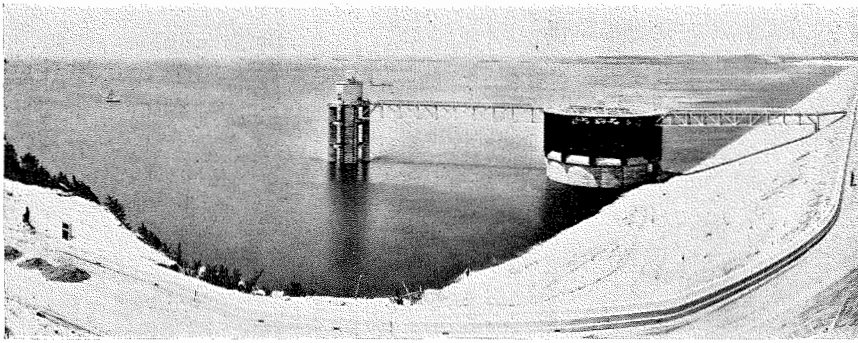
forbears had tilled soils before them. They had been putting in almost as much as they had been taking out — almost, but not quite. They had only the rich agricultural areas of such states as Iowa and Indiana for comparison, and because rainfall was sufficient in that territory, the Nebraska pioneer had no reason to think other than that this territory would be the same. But, granting that the settler was doing he best he knew, unknowingly he was robbing the soil of the one thing that there was then no provision to replace — subsoil moisture.

For generations before man came to the Great Plains country this moisture was being stored in the lower regions of the soil formation. The average annual rainfall had been more than sufficient to sustain the native grasses, and these in turn had supplied porous root structures which acted to prevent any run-off of the surface moisture, and allowed it to percolate deep into the soil. At the time moisture shortage became apparent, the soil fertility was decreasing because of a decrease of humus and nitrogen. Tilling the soil had destroyed the root structures on the surface of the ground and absorption was more difficult, giving rise to the enemy — erosion. The top soil, deprived of its root structure and porous formation, took on a dry, powdery condition which rendered it easy prey to the wind and the rain.

It should be said to the credit of the tillers of the soil that they made many attempts to prevent these undesirable conditions. They planted alfalfa and clover and other crops that should by rights have returned to the soil something of its virgin fertility. They also practiced rotation of the principal crops in an attempt to build up the reserve mineral content of the soil. But these restorative practices largely came to naught, defeated by their own cause, for of necessity they must have continued to take from the soil the precious moisture which had been accumulating for generations. It was a stalemate — or what in terms of the present war vocabulary is sometimes referred to as a bottleneck.

The result of this deterioration to the farmer and the farm population was natural and inevitable. The population peak for this area occurred during the period from 1900 until the census was taken in 1910. From that time through the census of 1940 the population figures run a down-hill slide that reached evacuation proportions during the last ten years. From 1930 to 1940



LAKE MCCONAUGHY GEORGE P

900,000 acre feet of water stored in this reservoir insures the prosperity of thousands of Nebraska farms. It would have been in the Gulf

in Kearney County, the total rural and urban population had a decrease of 16%, or 1,254 persons from a total of 8,094 shown in the 1930 census. More significant, however, than the total figures are the farm population figures. During this period in that county a total of 1,270 persons, or 23½% of the total rural population, left their farms. Of this total the cities gained sixteen inhabitants, or 0.6% of the total urban population — 2,692 recorded in 1930.

Phelps County showed a similar decrease during the ten-year period. It lost 885, or 18½%, from a total farm population of 4,816 in 1930.

Gosper County in turn lost about 1,720, or 17¼% of the total farm population of 3,613. These figures show only the decline in the last ten years of the period. The following figures are even more distressing:

Gosper County in 1910 had 2,214 farm inhabitants. By 1940, 1,321 of these, or 61½% of the 1910 total, had moved out of the county. In Phelps County the total farm population decline was 1,846 persons from the 1910 census of 5,777, or 32%. In Kearney County the figures are shocking. It lost from its productive farms 2,231 persons, that is 35%, or more than one-third of the farm population.

In other words, in a purely agricultural center, where a few

KINGSLEY DAM LAKE OGALLALA

of Mexico if Tri-County had not built this reservoir holding 315,000 acre feet of water to irrigate tableland outside the Platte Watershed.

years earlier prosperity, comfort and contentment were the rule, more than 2,000 persons (more than one-third of the entire population) had found it necessary to take their few personal belongings and leave their lands to seek a better future elsewhere. In almost every instance, this "elsewhere" was some place other than the State of Nebraska.

This loss was not to Kearney County alone. It was to the State of Nebraska. In that one county this mass evacuation caused 558 vacant, deserted farmsteads to remain as visible reminders of a prosperity that had ceased to exist, and as monuments to a fast-disappearing agriculture. They left what is to the more fortunate citizens of the state a most pitiful sight — paneless and boarded windows peering sightlessly from weather-scarred walls which once indicated desirable homes.

What was the reason for this unprecedented exodus? The answer in nearly every instance was crop failure, due to a lack of sufficient moisture.

The remedy for this deficiency was supplemental moisture, or that magic word "Irrigation." Water must be acquired and used upon these lands, or this rich, fertile soil would eventually be lost for any useful purpose. This is neither theory nor prophecy. This is what happened. During the years from 1932 to 1940, there was no substantial production in any part of this territory

where the land was not watered in addition to the natural precipitation.

A small group of experienced, forward-looking, determined men from Holdrege, Minden and Hastings reached this conclusion, announced their determination, and commenced a crusade to bring supplemental water to these lands. This was in 1913. In 1914 $10,000 was appropriated by the federal government, and the Reclamation Department made the initial survey. This study was incomplete and did not answer the question that was in the minds of this group of citizens who formed the nucleus of what was designed to become "The Central Nebraska Public Power and Irrigation District." The Department survey was followed by a period of indifference. War conditions brought two or three dollars for wheat; and, with increased rainfall and production return, many believed that irrigation would not be necessary or desirable. The recurrence of drought changed this attitude and after the war another survey was made, resulting in the report that irrigation of the proposed area was feasible. Then began an active campaign for survival.

The Platte River was of necessity the source of water for irrigation. Time will not permit a review of all of the struggle and effort made and the obstacles and disappointments encountered in reference to the proposed development from this time until immediately before construction work was commenced. This was a period of about twenty years. The approval of the application for The Central Nebraska Public Power and Irrigation District, and the first allotment to it by the Public Works Administration, was in September of 1935. Many wrongfully thought that the days of conflict, opposition and battle were passed, but opposition appeared seemingly from thin air to oppose and retard the progress of the gigantic task which lay ahead. In the spring of 1937 the fate of this entire development depended upon the decision of two Supreme Courts — the Supreme Court of Nebraska and the Supreme Court of the United States. Favorable decisions meant that construction of this enterprise would proceed and would eventually irrigate thousands of acres of rich agricultural lands unusually well adapted to irrigation; it meant also the production of a vast amount of cheap electric power

for industrial and agricultural uses. An unfavorable decision meant the defeat of this entire development and would consign thousands of persons living upon the soil to a desperate and losing fight against the encroaching desert, with lasting injury to the economic well-being of the entire state of Nebraska.

The drought of 1934 and 1936 meant for central and western Nebraska no mere temporary misfortune. It brought a crushing defeat for the struggle against diminishing fertility that had been under way for more than two decades. The soil moisture was gone. Nearly half of the nitrogen and humus in the soil had been exhausted. Land suffered severely from erosion. The hue and cry then went up that "Nebraska should worry!" Many other states had faced a similar depletion of agricultural resources without economic retrogression. But an important fact had not been taken into consideration by the persons who assumed this attitude. Nebraska was one of three states in the Union which were totally without material resources apart from the land. Nebraska had no coal. Oil had not then been discovered, and it had no other minerals in appreciable amount. Existent industry in the state was dependent upon agriculture, either for its market or as a source of raw materials. The fate of the tillers of the soil of Nebraska must inevitably be the fate of Nebraska.

Irrigation was the important and indispensable object. There was no thought or plan to include power in this program until a study was made of the problem of cost to the user who applies water for irrigation. It was then properly decided that the production of electrical power was essential if the cost of supplying water was to be kept within reach of the farmers. The soil experts estimated that twelve inches of irrigation water applied during the growing season would be sufficient to produce maximum crops, regardless of drought; that irrigation would make possible the growth of crops which would restore the fertility of the soil; that, given an adequate supply of water, the area concerned would support an agricultural population of from three to four times what had existed theretofore. But if twelve inches of water were to be purchased at a price based on the actual cost of bringing it to the farms, no farmer could afford to use it.

Because of this, the electric power plan was adopted to dimin-

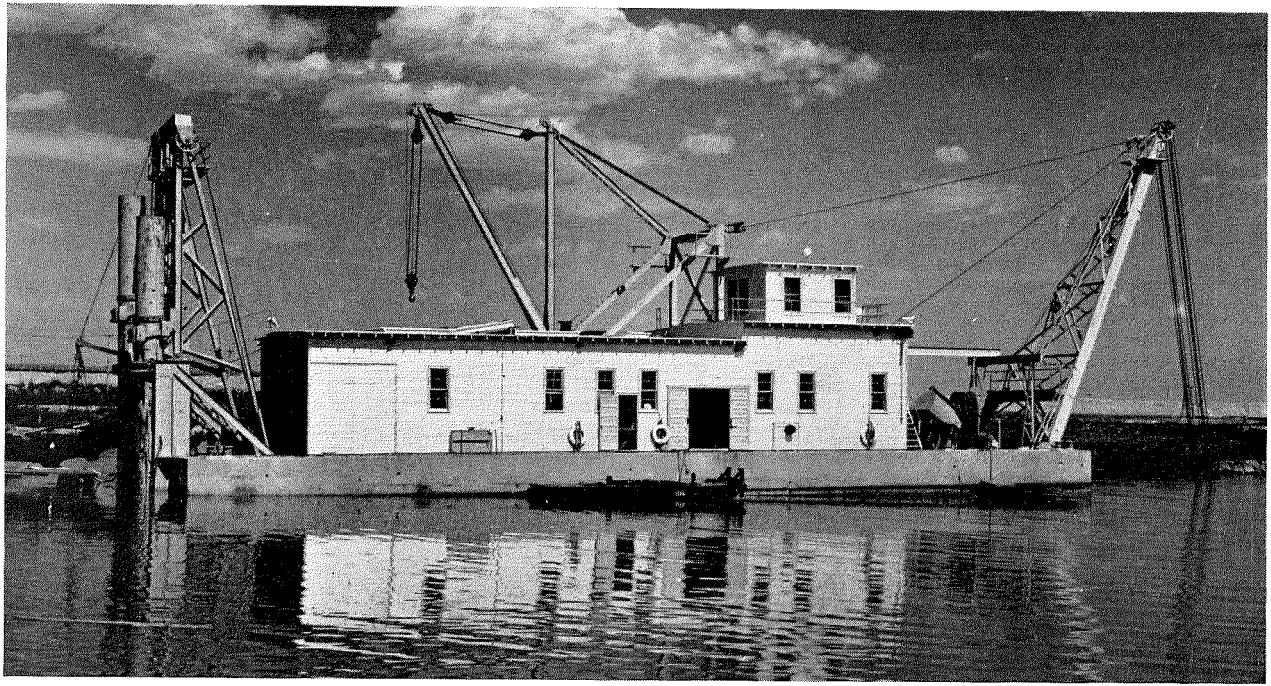
May, 1942 — The Platte at Grand Island. 15,000 acres of land could have been irrigated for a year with the water that went under the bridge the day this photo was taken.

ish the actual cost of supplemental water to the user, reducing it to a price that the farmer could afford to pay. A very important fact is one that has been frequently asserted and is now being established under actual operations: *No storage water is wasted for power purposes, by the Tri-County Project, even during the periods when irrigation water is not running or being used.*

Under this plan water does double duty. A supply canal has been constructed from the diversion works east of North Platte to Lexington, nearly parallel to the Platte River; three electric power houses are situated at strategic intervals where Nature supplied canyons or regulating reservoirs. Before the water reaches the main irrigation canals through which it is transported to the fields for irrigation, it must first pass through one or more of the power houses, and its otherwise unharnessed and unused force is transformed into electric energy. This electric energy is then sent through the transmission lines to publicly and privately owned distribution systems for utilization by the general public.

There is always a ready market for electricity. The present market available to these public power districts of Nebraska is nearly equal to their maximum power capacity. The river water, on its way to perform the indispensable service of irrigation, helps to pay for itself by turning generators and feeding electrical energy into transmission lines for distribution throughout the state. In this manner irrigation and electricity are made dependent one upon the other. The electric energy makes irrigation water available at a price the farmer can afford to pay, and the need for irrigation in turn causes the generation of a vast supply of electrical energy.

The Platte Valley Public Power and Irrigation District and the Loup River Public Power District were likewise financed by the Public Works Administration. The separate maintenance and operation of the three districts was believed to be difficult and not advisable, and that only by a joint operation of the power facilities of the districts could there be a completely successful operation and a maximum service. The districts in this regard have co-ordinated, and an electric network or a vast grid system has been set up and is operating, and is known as the Nebraska



One of the 5000 H. P. Dredges that pumped the fill — Kingsley Dam.

Public Power System. It has been in operation for many months. Each district operates for the good of all. When water is abundant in the Loup River system, generally the season is slack for Tri-County and Platte Valley, thus allowing them to store water behind the Kingsley Dam and in the other lakes and canyons. In turn, when the Platte Valley and Tri-County have a sufficient supply of water for their operations, they carry the load and relieve the Loup River generating plants at a time when they have a decrease in their supply of water.

Provision is made for keeping in constant communication with the entire organization of power plants and distribution systems by means of a despatcher's office in the headquarters building of The Central Nebraska Public Power and Irrigation District at Hastings. This office is in operation twenty-four hours a day, each day of the year. It keeps in constant communication with conditions and activities over the entire system, from Omaha and Lincoln on the east to North Platte and Ogallala on the west.

The completed picture is this: Irrigation made possible by the production of hydro-electric power; this power made possible by the need for irrigation; the three public power and irrigation districts co-ordinating their facilities for the good of the state which provided for their creation and operation. This co-ordination of districts and their facilities provides an abundance of electrical power for industries, present or future.

The total capacity of the hydro-power plants of the Tri-County district alone is 75,000 horsepower, and 233 million kilowatt hours annually of firm power.

Irrigation has been made available to about 250,000 acres of land by means of this project.

This has been accomplished by the public works of the District, consisting of the on-river dam across the North Platte River west of Keystone called the Kingsley Dam — the second largest earth dam in the world; the reservoir created by the dam, which has been named McConaughy Lake, with a capacity to create the largest body of water in the Great Plains states; an irrigation system constructed to serve four counties with canals and laterals of a total length of 565 miles; three hydro-power plants of a total capacity of 75,000 horsepower capable of generating firm power

of 233 million kwh annually, and transmission lines appropriate and sufficient to transfer the power throughout the state.

More detailed facts as to the works are as follows:

THE KINGSLEY DAM is 3 miles long, 162 feet high, 1,100 feet wide at base. It contains 26 million cubic yards of material. 73 acres of concrete riprap protect upstream face against ten-foot waves.

MCCONAUGHY LAKE is 23 miles long. Its capacity is two million acre feet; its maximum depth 142 feet; water-surface area 35,636 acres. Its shoreline extends 105 miles.

Three spillways at dam; total capacity 125,000 cubic feet a second. Control tower releases water for irrigation and power. This tower is 186 feet high, 60 feet wide. Its four control gates weigh 52 tons. Rates of discharge 20,000 cubic feet per second. The Morning Glory Spillway for flood control is 170 feet high, 101 feet wide. Its twelve gates weigh 240 tons; rates of discharge 55,000 cubic feet per second. The Emergency Spillway was also built for flood control; rate of discharge 50,000 cubic feet per second.

HYDRO-POWER PLANTS — Three. Total capacity, 75,000 h.p. Firm power, 233,000,000 kwh annually.

THE IRRIGATION SYSTEM serves four counties. Canals and laterals are 565 miles in total length.

A pertinent question is often asked: "Where is the water coming from to operate this vast project?" The Kingsley Dam and McConaughy Lake interfere in no way, and cannot legally interfere, with prior rights to Platte River water. Platte River irrigation water furnished from this lake is water that heretofore has gone down the Platte River unused and finally wasted in the Gulf of Mexico, and too often these waters helped accelerate damaging floods in the Missouri and Mississippi valleys.

The Platte River in years past has had a large flow in the winter and spring and early summer months when there was no demand for irrigation water, but in the later months its flow diminished frequently, being totally dry when critical need existed for irrigation. With the release of storage water in the summer from the reservoir created from this dam, the Platte

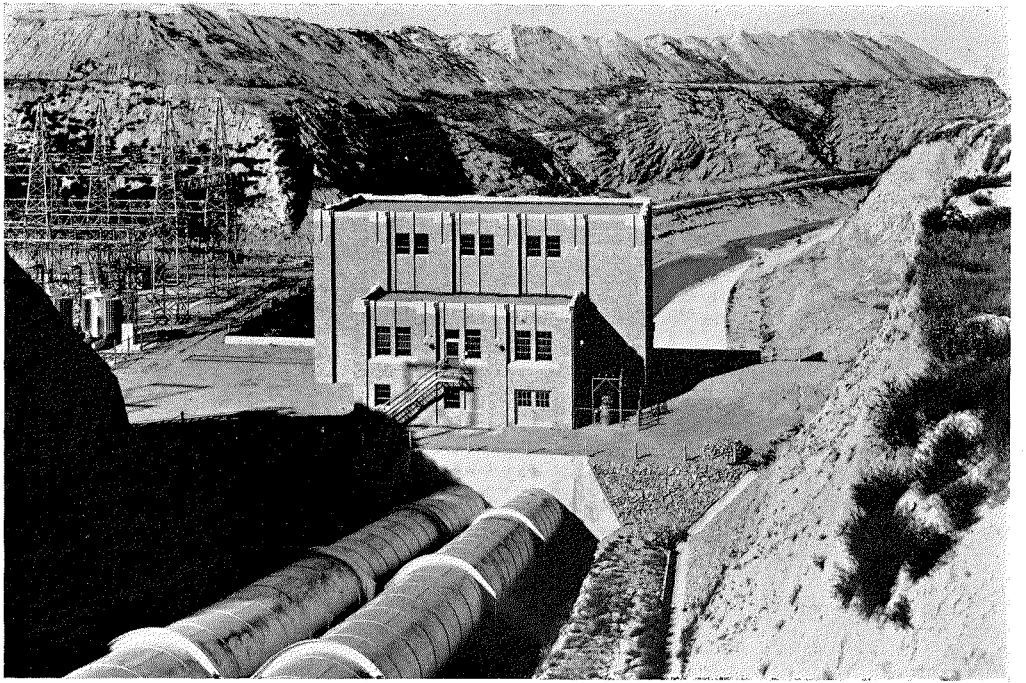
River in time should establish a more uniform flow, and the summer and the winter flow should and will become more balanced and constant.

This dam and reservoir act as a storage vault or bank to save, to store, and to control and make useful precious water. Instead of squandering these water resources, they are to be collected in this reservoir, like money in a savings account in the bank, to be held and made available for profitable use — not for the proverbial rainy day, but for distressingly dry days. Then in the summer, when crops need moisture which is not furnished by nature at the time needed, a draft will be made on the savings account, and the water will be released to render the best service to which it could be applied. Instead of burned-up and destroyed crops and blasted hopes and broken farmers, the water saved in the off-seasons will produce crops and add a tremendous income and benefit to the entire state.

The storage behind this dam in 1941 was very limited because it was completed too late in the season to permit storage. Water available for irrigation in the present year was therefore limited. There were about 25,000 acres which received summer water for irrigation from this project. Land which in recent years has produced on an average about four bushels of corn to the acre, this year has been irrigated with the result well stated in a news item in the press of the state during the past week:

> With fields in some cases expected to yield 100 bushels to the acre, farmers in the Tricounty area estimated that irrigation under the Tricounty project this season will add a million bushels of corn to the crop in parts of Gosper, Phelps and Kearney counties. The million-bushel figure was based on an average yield of 40 bushels an acre. About 25,000 acres, chiefly hybrid varieties, were irrigated this season — the first time summer water was delivered from storage in McConaughy Lake.

The farmers have stayed and labored through years of drought, dust storms and grasshoppers, with the hope and belief that some day irrigation would convert their dry, dusty fields into crop production of profitable proportions. All through this area the experience has been the same. It has been one of decreased livestock, dwindling population, abandoned farms, an economic



One of three Power Plants on the Supply Canal. This is Johnson No. 1

black-out in a fertile area that needed only water to restore production and return prosperity. The dream of these tillers of the soil is now being realized.

The benefits of irrigation in this district is a subject of vast importance to the State of Nebraska. An unbiased and well studied answer to the question, "What does irrigation in this district mean?" may be found in a report of the Department of Rural Economics of the Nebraska University College of Agriculture (Bulletin 311). This estimates a total of 26,905 carloads of farm products, with a gross annual increase in crop value of approximately $10,000,000. This figure seems colossal. However, Dr. H. C. Filley and Mr. Frank Miller, who prepared the bulletin, say:

> The agricultural and industrial developments resulting from irrigation within the Central Nebraska District may be far more extensive than is indicated in this study.

The farms are now generally too large for individual irrigation operation. They must and will be split into smaller units. More workers will be required; more buildings will be required for these new farm families, and this in turn will result in substantial population gains. Land values are gaining and will continue to advance, and agricultural industries will be established and multiplied as more land is prepared and placed under irrigation.

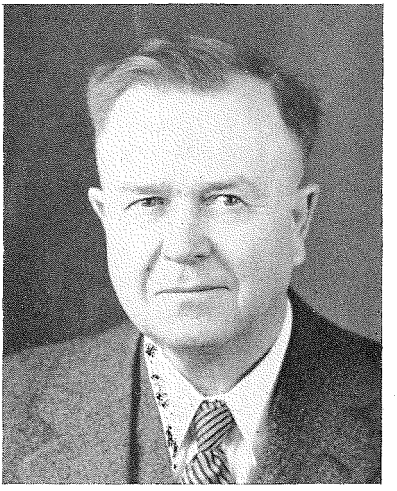
Considered from every angle, this district is not only a vast conservation project that saves precious water and utilizes it to salvage and restore farm investments and produce new crops and establish new industries, but it also exerts a stabilizing influence on other sections of the state. Economically, it has resulted in the shipment of thousands of carloads of freight in its construction, and millions of man-hours of work. But these will be nothing as compared to the tremendous permanent economic contribution and changes of the future. With two vast main-line railroad systems serving the district, it will stabilize a vast crop area from which Nebraska can and will draw new trade and enjoy self-sufficiency.

In this country where limited natural precipitation reduced (and in a large measure extinguished) the fruits of husbandry,

One hundred and five bushels of corn per acre

Tri-County Irrigation on Art Soderholm Farm

Nebraska genius, foresight, perseverance and industry have chained the waters of a great river, more especially the flood waters. These, under control, direction and use, have become and will remain currents of life and growth, and combined with summer sun, Nebraska soil and adequate effort, will bring generous harvest and wide prosperity. The vast area which was fast approaching a desert condition is being transformed by the contributions of this splendid project, and in the coming years, at the maximum of operation, will become in comparison a veritable Eden.



FRANK E. EDGERTON

Farmer, Irrigator, Stock-Raiser, Lawyer

The Romance of Corn

FRANK E. EDGERTON, AURORA

President Hamilton County Farms

One of the classic stories of drouth in man's history is that of the seven fat years and the seven lean years in the account of Joseph in the Valley of the Nile. He predicted for the Pharaoh of Egypt that the seven drouth years were coming and advised the creation of an ever-normal granary. Acting upon his advice, the Pharaoh appointed him Secretary of Agriculture and authorized him to take up the surplus for seven years in storage cribs and granaries. Whether Joseph loaned money upon this surplus, or whether he bought it, or whether the people voluntarily turned over the surplus or not, the story does not recite, but it does say that during those seven prosperous years storage of grains throughout the country was universal.

The seven lean years came just as Joseph had predicted, and during those years there was unemployment; there was drouth; there was failure of crops; and shortly it was necessary to turn to this stored-up grain belonging to the government. The seven years of drouth continued, and during those years all of this grain was consumed and for it the people gave all their possessions, personal and real property, and made themselves slaves. The result was that at the end of the seven years of drouth the Pharaoh of Egypt was the owner of everything in the Valley of the Nile.

The country surrounding Grand Island, which includes my Hamilton County, has had seven years of drouth. Beginning in 1933, this condition has been pretty general in central Nebraska throughout these years. True, we have raised some crops, and we have extended our irrigated land to raise more and more, but the general condition of drouth has continued.

Our people have been hopeful and we have planted each year and hoped for a crop, but the returns have been meager. You know that many of our farmers in central Nebraska have left the

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state. It does not make sense that a beautiful country, like that of Hamilton County, should be forever cut off from the rainfall.

Three thousand years ago, Solomon, King of the Jews, in his old age wrote down this sentence: "There is nothing new under the sun." It seems probable now that he was just repeating what some sage had said three or four thousand years before him. Solomon had seen the conditions of living and had decided that men were good and men were bad and crops were good and crops were bad; that men are born, live and die through the centuries, and the story is always about the same — there is nothing new under the sun.

Not in all the world is there a more beautiful, a more wonderful plant than corn — Indian corn. From early spring when first we see the tiny plants form perfect rows across the fields until September when it stands in lovely, golden majesty ready to deliver its bountiful harvest, it is a thing of beauty. Not wheat, not cotton, not flax nor any other crop is so beautiful as corn when its myriad green banners are waving, or when, touched by September's magic, those banners turn to bronze and the golden ears shine through the dying husks.

Can Nebraskans imagine a more beautiful sight than cribs filled with golden corn?

Nebraska has been a great corn state. That glory will come again. Through seven long years of drouth we have yearned for that time — the time when the lean years will be gone and the fat years come again — the years when corn will again fill our cribs, fatten our hogs and our cattle and make us prosperous as we once were.

Prosperity will never return to Nebraska until corn again grows and produces in abundance. The small grains, welcome as they are, cannot bring back the glory of the old days when our farmers owned unmortgaged farms and lived independent American lives. That was the time when the cribs were filled with corn each autumn.

The history of corn is as old as the history of America. When the white man first reached the Western Continent he found the Indian cultivating the plant in both North and South America. Practically the only farming done by the Indian was the production of corn. Corn was one of the principal articles of commerce

and trading between the tribes. The Cherokee and the Choctaw in Georgia and Tennessee and Alabama had large fields of corn when De Soto marched across the land to discover the Mississippi River. The Iroquois and other nations with headquarters in central New York were then the largest producers of corn. When the Pilgrims landed on the bleak coast of Massachusetts in 1620, corn was recognized as a food-producing plant from the St. Lawrence River to New Mexico, wherever Indians were established long enough to grow it.

Whence came corn? In the last thirty years, we have been breeding hybrid corn. The farmers of the entire Middle West and South are now sold on hybrid corn seed. I have thought that this was something new. I thought that the growers of hybrid corn were engaged in a new enterprise.

Several months ago, when I was in Cambridge, Massachusetts, I visited the great Peabody Museum on Harvard Campus and the first thing that attracted my attention was the graphic demonstration of the Romance of Corn. Perhaps it is only some agronomist's theory of the birth of corn, but it convinced me that corn itself is a hybrid, and hybridization of corn began in the dawn of America's life.

This museum exhibit shows how two grasses in South America, the Termiente grass and Mais de Coyote, were crossed, and they produced a seed-pod which had a cob with kernels upon it. This, the scientists say, happened six or eight thousand years ago in the central part of South America, and it might be suggested that some naked Indian agronomist studied the vegetation of his country and brought about the crossing of these two grasses and thus produced this result of the wonderful new hybrid. Whether the Indian who first produced this did it intentionally by sprinkling pollen of one grass upon the receiving end of another grass and thus produced the seed-pod, or whether these two grasses happened to be together and the wind blew the pollen from one to the other and naturally created the hybrid, of course no one knows.

Naturally, the ears were small and insignificant. Probably the fertilized ear at first grew right out of the tassel. The tassel produces the male spores and the silk is the female organ of the corn plant. From South America this new source of food was carried into Central America, and there the ears of corn have been

found in the Maya ruins covered by the dust of thousands of years. Then corn was carried north into New Mexico and Arizona. Among the cliff-dwellers' ruins are found ears of corn, evidence of its use long before the white man came.

Adapting itself to shorter, colder climate, corn pushed north to Louisiana, to Georgia, to Virginia where Captain John Smith in 1607 found the corn fields, then on north to New York and New England and up into Canada.

This wonderful plant through thousands of years adapted itself to the climate and to the soil of those new lands where it was taken by the Indian traders. Originally a tropical plant, it learned to mature and produce in the shorter, colder, dryer summers of the northland.

Longfellow in his *Song of Hiawatha* has written, for the teaching of those "whose hearts are fresh and simple," an Indian legend of the birth of corn. Hiawatha, leader of his people, prayed and fasted "for their profit." Then "the Master of Life descending" sent Mondamin, friend of man,

> To warn you and instruct you
> How by struggle and by labor
> You shall gain what you have prayed for.

So it was that Mondamin, "dressed in garments green and yellow," whose soft and golden hair was decked with waving plumes of green, "from the empty air appearing" commanded the young warrior to a test of faith and strength. Four nights they wrestled before Mondamin lay dead, "plumage torn, and garments tattered." Then

> victorious Hiawatha
> Made the grave as he commanded, . .
> Laid him in the earth, and made it
> Soft and loose and light above him, . .
> Sleeping in the rain and sunshine,
> Till at length a small green feather
> From the earth shot slowly upward,
> Then another and another;
> And before the Summer ended
> Stood the Maize in all its beauty,
> With its shining robes about it,
> And its long, soft, yellow tresses.
>
> . . . .
>
> And still later, when the Autumn
> Changed the long green leaves to yellow,
> And the soft and juicy kernels
> Grew like wampum, hard and yellow,

Then the ripened ears he gathered,
Stripped the withered husks from off them
As he once had stripped the wrestler;
Gave the first feast of Mondamin,
And made known unto the people
This new gift of the Great Spirit.

During the long, long years since corn first emerged from its romantic setting in South America, it became the established source of food and of commerce among the Indians. They did not have need for any great acreage. The Indian loved the blue, red, and white flint corn. Red ears were his delight. The white man prefers the golden ears with dented flat kernels.

Now in the last few years we come to another romance of corn — the birth of new and stronger corn hybrids. Iowa and Illinois are planting eighty or ninety per cent of their fields to corn hybrids. Nebraska last year planted about thirty per cent. The corn breeder has been developing the strength and eliminating the weaknesses of the corn plant. He has been trying to put into the seed corn the qualities that make it stand up straight and produce the golden ear in all of the climates and in all of the soils that may be found in the United States.

Since corn is of such intense importance in these parts today, let me explain to you in one minute the breeding of corn hybrids, for that certainly is a part of the romance of this great crop. All over the land, agronomists are experimenting with corn. They have done so for years. This is true not only in Nebraska but in every state where corn is staple. Scientific corn breeders have been planting and breeding and crossing and double-crossing this crop, trying to find a seed with the qualities that will make it produce more and better corn because peculiarly adapted to the conditions that prevail in every section of the state — for soil and climate vary greatly and what is suited to your county might not do well in mine. Likewise, other breeders in other states are seeking the same goal: a hybrid suited to their own particular needs.

The seed producer is not the breeder. The producer buys the seed stocks from the breeder. He plants four or six rows of one seed stock and on its either side two rows of another seed stock. Experiments show that certain seed stocks, crossed, produce a definite corn hybrid. If the producer plants those two stocks together and pulls out the tassels from the six rows and

leaves their silks for fertilization by crossing from the two rows, he will have the hybrid he wants.

Of course, my time does not permit a detailed description of the romance of corn hybridization. But if you have gone out into the field and seen the stalks standing straight with the yellow ears uniformly developed, then you know you have the corn that will grow and yield when the hot winds come in your country, and you will know that great good has been done you by the corn breeder and the producer of the corn hybrid.

Born in the warm climate of the Equator, corn has traveled north and south waving its banners in every land. It has conquered every soil and adapted itself to every climate. Wherever it grew in abundance, hunger and despair were banished from the land. Its full cribs are the sign of a prosperous and happy people. And a prosperous and happy people have made America the symbol of a proud, daring, resourceful and generous spirit for these four hundred years.