

that river in those early days. As the years passed, endeavors were made to carry water to the higher lands in the Jordan val-

ley, and a little work was done at times for that purpose, but it was not unth about the year 1880 that water to any extent, was made to flow on the elevated lands about the Jordan; and ft was after that time, by some years, that farming under the Jordan canal

that farming under the Jordan canal commenced in earnest. About the year 1880, four of the five canals were completed, the South Jor-dan canal being older by a few years. The expense of constructing was in the neighborhood of \$700,000. The subscrip-tions for stock on the canals, with the exception of the one built by Salt Lake City, was mostly paid in labor as the owners of the land possessed very the owners of the land possessed very little means. The construction of works of this magnitude, practically without money, was quite an undertak-ing and required no little effort to carry through. The Jargest of the canals is 29 miles long, 20 feet wide at the bottom, and in some places where it is

bottom, and in some places where it is carried along the side hill, a cut of 60 feet on the upper side was necessary. The settlers were not, in a general way, a class out of which to make a lood farming community, as quite a lorge percentage were English factory hands, and quite a number were Utah men who had followed sheep herding men who had followed sneep beroing and stock raising for an occupation. There were, however a few Utah farm-ers from other settlements, and some Scandinavian farm laborers, (these last

N the early fiftles the narrow, to the beautiful appearance they had up to a short time ago strip of bottom land on the river Jordan was taken up and farmed, and a grist mill built on der the Jordan canals was quite rapid; the farms were divided so that a farm of forty acres was above the average size, beautiful homes were crected with everything appertaining thereto; or-chards and shade trees planted out, so

that in that short course of time. began to equal in appearance the best districts that could be found in any farming land no matter where situated. The users of the waters, from a large stream likes the Jordan river, (as usual with the appearance of the lower with the appropriators of the lower reaches of rivers) did not have any doubt but that they had an unlimited supply of water to draw from. They

did not realize that the use of the feed-ers of Utah Lake by the Irrigators on the higher streams, would in a few years deprive them of water for their land, and with it their means of making a living, and, if means are not taken to prevent it, may cause the abandonment of one of the most fertile districts of the state.

The lands irrigated by these canals as claimed by the canal companies, amount to 53,000 acres, but a portion of these lands are some of the alkali-lands west and south of Salt Lake City, which at present, from a farming point of view, are worthless. The ir-rigated land had better be placed at 0,000 acres.

The acreage of the Salt Lake City Canal, which corporation has traded its water with farmers for the use of Par-ley's and Cottonwood creeks being estimated the same as the North Jor-

dan Canal company. Below find the capacity of the different canals in second feet, also the greatest amount of water they have carried, and what may be reckoned Ald not understand irrigation) who by their average flow during the Irrigation who by their average flow during the Irrigation up to two years ago. their average flow during the irright ing season up to two years ago. All

Utah and Salt Lake Canal Co......  $160 \\ 150$ 100 165 South Jordan Canal Co ..... 195 100 East Jordan Canal Co ..... orth Jordan Canal Co. 85 -85 ......... 80 250 125 938 460 Total .....

To give an idea of the loss sustained find the average loss sustained on a oy the farmers, a form was made out and 40-acre farm. Many of the farmers after signing it, said they did not know signed by about a hundred of the prin-they were making that much, but this cipal land owners. In the schedule re-is only a portion of the ir gross earnferred to, grain was estimated at 1 centings, the profit between primary and per pound, potatoes at 30 cents persecondary products, as butter, eggs, bushel and lucern at \$8 per ton. Belowhogs, etc., not being taken account of

	CROPS	RAISED	AVERAGE	YEARS.		
Lucern W ons. amt. bush.		heat amt.	Potatoes.	Beets.	Garden.	Total.
90 \$720	400	\$340	\$120	\$240	\$20	\$1350

By Thomas P. Page, Who Surveyed the Route of the Proposed Canal From the Headwaters of the Provo River-Various Methods Suggested.



## MAP SHOWING HOW SALT LAKE MAY INCREASE ITS WATER SUPPLY

The above map was drawn by Thomas P. Page, who surveyed the line of the canal which is intended to tap the Weber river at its headwaters and convey the same in to the Provo, which in turn will take them to the Utah so that in time of plenty they can be reservoired for times of scarcity. C—To place pumps into Utah lake and pump water into the Jordan river at the time of low water levels. D—To prevent losses of water, by puddling and cementing main ditches in places of excessive seepage; and by of excessive irrigation by individual farmers

1-The buying up of the milling and other properties on the River Jordan which use water for power purposes alone. These rights ought to be bought up at the earliest opportunity and the waters stored in Utah lake. They amount to 69 second feet.

2-The diversion of the winter, spring and flood waters of the Weber river into Provo river and there into Utah lake. The situation here is that while the irrigators using the waters of the Weber are short of water from the middle of June until the end of the irrigating season, during the other por-tion of the year there is water, on this water shed, they are unable to use and it runs to waste into Great Salt Lake. The water thus wasting into Great Salt lake, on the upper Weber, at the point where it could be diverted, varies from 50 to 500 second feet during the months commencing in December and ending in June. The length of the canal to be

built would be eight of the canat to be built would be eight miles and the cost would not exceed \$45,000. 3—The diversion of the Duchesneriver also into Utah lake. This river, which runs into the Green river and the Gulf of California, heads in the high mountain, near where the Provo, the Weber and the Bear also head. The diversion of the head water of the Duchesne into the Provo would not be a very expen-sive proposition; but the Duchesne after a course to the south, afterwards turns eastward, to bring over the lower Duchesne would necessitate a long and expensive canal. It, however, ought to be investigated.

4. The enjoining of the use of waters by irrigators in Utah, Wasatch and Summit counties, whose rights are sub-sequent to the irrigators in the Jordan canals. This has been discussed con-siderably by the board of canal presi-dents, but while they were unanimous in desiring to carry this plan out they as usual were unable to agree on the mode of procedure. We need not expect that much water will be regained from this source, as the amount of water taken out by the new ditches is small compared with that taken by the en-largment of the old ditches; and should the Jordan farmers endeavor to compel the irrigators of Utah and other counties to reduce the flow in their ditches to what it was twenty years ago, the Utah county farmers also would be apt to bring the attention of the Jordan farmers to the fact that the latter have brought a great deal of land into cultivation since that time. B-In the matter of retaining the wa-ters of Utah lake, in times of plenty, so

they can be used in times of scarcity. This is a matter of absolute necessity As we have formerly stated, the highest point reached at any time during the past season by the waters of Utah lake was thirteen inches below com-promise point. It is, however, to be hoped that Utah lake may raise during the ensuing winter. In any year the

DEEP INTEREST IN CROPSEY MYSTERY.

it could be handled with a few electric pumps placed on the bank of the dyke. The dyke method we understand is ad-vocated by Mr. Newell, the chief of the United States geological survey, who investigated the proposition for that de-partment. In connection with the rais-ing of Utah lake, some work is also needed to remove some bars in the Jordan river, which to some extent at cortain seasons, prevent the upper Jor-dan delivering its full flow of water. It being at those times similar to a large bottle with a small neck.

bottle with a small neck. C.-In the matter of pumping. At times when the waters of Utah lake are too low for a suffedent stream to flow into the Jordan river, pumps would be a great benefit, and if they had been installed during the past season, a say-ing of crops to the amount of nearly half a million dollars would have been accomplished. One of the canal com-panies at its stockholder's meeting held last week unanimously decided on last week unanimously decided on pumps being erected during the coming pumps being erected during the coming season. The pumping plant needed is one with a capacity of 500 second feet with a lift of four feet. D.—In the matter of the preservation of loss of water after it renches the canals. Measurements of the flow should be made; in places on the canals where an unusual loss of the

canals where an unusual loss of the canals where an unusual loss of water through seepage. is suspected, the bad places should be puddled or ce-mented. A large amount of water can also be saved by the farmers bringing their cultivators more into use than is renorally practiced at the present the generally practiced at the present time, With many of the crops a cultivation and a watering will do more good than wo waterings.

The greatest thing that is needed, however, is that a consolidation of the canal companies be effected and that the patient be put under the charge of one doctor instead of five doctors, who years rarely can agree on the way to ad very rarely can agree on the way to administer a remedy of any kind.

Some of the foregoing figures may show what can be accomplished by anow what can be accomplished by farming on irrigated land. The aver-age of value of crops with sufficient water being about \$30 an acre, while crops of boyts are often worth \$50 an acre, and orchard returns will at timos double the last mentioned sum As bit acre, and orchard returns will at times double the last mentioned sum. As this is accomplished by the slip-shod meth-ods so many of our farmers employ it may show to some extent what might be accomplished through intensive farming, by young men who would go in to learn the business of farming (by apprenticeship to successful farmers, study of labor-saving methods at our study of labor-saving methods at ou agricultural college, etc.) as they would an industrial or professional calling.

an industrial or professional calling. Irrigated lands, wherever found, are the lands that please the eye, are the lands of homes surrounded by fruit and shade trees, and of pleasant surround-ings, and whether you travel in our Utah valleys; or among the orange groves of California; or through the po-tato fields of Colorado; or through Lombardy that sarden and of E Lombardy, that garden spot of Europe where, although most crops can be raised without irrigation, yet irrigated

Potatoes. Beets. Garden. Total. Lake now talked of as a great community reservoir. bush. amt. amt. 10 \$80 100 \$20 \$10 \$180 winter, the raise of the lake should be \$60 retained and prevented from going to Losses this year, \$1,170. the flood waters of the Provo river and quainted with the engineering, legal | were impounded until they reached | vaste and business problems that they are this level, but on raising above this encountering at the present time, for level the gates were opened and the other streams amount to less and less The board of canal presidents have We put the loss at \$25.00 per acre, | of about \$8,000,000, being 40,000 acres at every year, in consequence of the reagreed in this matter, to petition Conthe farmers to expect much relief at | waters turned down the Jordan river servoiring and division of these stream which is considerably below the aver-\$100 per acre, an equal amount for gress for an appropriation of \$1,090,000 and wasted. For many years the wat-ers of Utah lake reached above comby enterprising settlers in Utah and Wasatch countles. During the present age on the list signed by the farmers. buildings, stores, churches, and investpresent. to be used for this purpose. There are There, however, is a strong and growments of people occupied in other bus-This on 40,000 acres would amount to two ways of accomplishing this. \$1,000,000. As one of the canal cominess besides that of farming. ng feeling in favor of consolidation of promise point and the flood waters of season Utah lake reached at its high One, by buying the lands around Utah lake where the waters would flood, the Provo and other streams coming in to Utah iake, at the time the Jor-The management of the canal com-panies is in the hands of presidents the canal companies which is a great est stage a level that did not come up panles through having a small acreage. ctride in the right direction. to compromise point by 13 inches. if the waters were raised two feet above compromise point. The lands to and other causes, did not sustain losses and boards of directors elected by their About the year 1885 a water level was established on Utah lake by agreement between the irrigators of Salt Lake dan farmers were drawing the level of the lake lown, they were well sup-plied with water for irrigation. If, like the others, we place the loss sus-Such being a diagnosis of the complaint we will now proceed to state the be purchased, much of it swamps of very remedies prescribed. The remedies are little value, would be about 5,000 acres. tained at \$750,000 for the present year. The abandonment of these lands be purchased, much of it swamps of very respective stockholders, but there are too many independent companiesand Utah counties. This level is known between the parties interested as "compromise point," At the dam of four classes: A-To bring waters from other sources into Utah lake. The other method is to throw up a dyke on the eastern and southern shores of the lake at a level below however, the waters of Utah lake should now raise to compromise point, many conflicting interests which I do not expect to see, but which many fighting would occur if steps are not taken to ---too units-will not give the Jordan farmers too many different policies; and too prevent it, would be a national misforcome mit a shovel." tune and would be a loss to the state ' many officials that are entirely unacbuilt on the Jordan river the waters sufficient water, the reason being that B-To retain the waters in Utah lake | compromise point. This would reclaim 



### 



State Engineer.

THE RECENT agitation of the question of enlarging Utah lake as a reservoir, followed closely by the declaration of President Roosevelt that "it Is as right for the national government to make the streams and rivers of the arid

region useful by engineering works for water storage as to make useful the rivers and harbors of the humid regions | by engineering works of another kind," encourages the view that the early and full utilization of this great storage basin is now probable if not assured.

It is impossible to overestimate the value which the execution of this work would bring to the communities affect. Not only those who live below but those who reside on lands above the reservoir will be benefited. It promises advantages to all and injury t It should meet with no opposinone, ion but receive the hearty approval of all. It is not the purpose of this paper, however, to discuss this partie lar work, but rather to persent some features of the irrigation problem, which it is thought will be of general

### AN OPPORTUNE TIME.

The writer believes that the time has now come when favorable action both state and national can be pro-ured; that any such action to be help-ul in the greatest degree must be shaped by the water users themselves

and that it devolves on us to do all in our power in that direction. The situation in Utah is different in many respects from that of neighboring states. Here, streams and rivers of great length are exceptional. Few of the streams which rise in the state flow beyond its borders and only a limited number which have their sources in other states flow into this. Most of the reams are wholly within the boundaries of the state. This diminishes the fear of possible inter-state or in-

ernational complications. In he majority of cases but one community is supplied from the same stream. Mill creek in Salt Lake coun-ty; Salt creek in Juab county; Farmington creek in Davis county: Boxelder creek in Boxelder county and Settle-ment Canyon creek in Tooele county are examples of streams which supply a single and separate community. The auses for contention are thereby lesened as each community is independnt of the other and has only its own al-questions of water supply to deal with

### SOME COMPLICATIONS.

On the longer streams the situation not so simple, as several communies are here supplied from the same tream and their interests in the comon supply naturally lead to more or eas contention. In such enses much hat causes contention may be avoided brough a proper understanding of tha relationship which the situation im-poses. Although separate and distinct location and political organization, iese constitute but a single communy as related to the irrigation system on which all depend. erroneous view so generally

dopted, that the canals which divert vater from a stream and the ditches nich distribute it over the land conjeads to corlous misunderstanding a sufficiently comprehensive view would entirely dispel.

### A COMPLETE SYSTEM.

A complete irrigation system in Utah comprises not only the diverting canals and distributing ditches but the entire cam or river and the shed from which the water supply is derived. Any narrower view reveals but part of

the system and not the whole. The principal irrigation systems of the state, both with respect to numbers and importance, are situated in the Great Salt Lake basin. Here also are most of the people and wealth of the state. In this basin irrigation by the Anglo-Soxan race had its beginaz. Practically all of the water in a basin has been appropriated. Here - results of irrigation surpass thos

any other locality. Here the limit extension under present methods has been reached, and here, in the opin-on of the writer, must the work of per-recting our lorization systems he begun.

liverting canal in the several systems, nd provide a place for recording the ight so determined. It is as necessary to have definite and perfect titles to water and to have them properly recorded as it is that titles to land should be perfect and NATIONAL LEGISLATION.

of record.

There is great need, and the writer believes there is justification, for na-tional legislation which will enable the munity on every stream and rive of the state to control absolutely the entire irrigation system of such stream. hat is to say-the water shed; the stream or river originating and flowing therefrom; the canals which divert the water and the ditches that distribute it over the land irrigated. It is as right and necessary for the irrigation systems of the state to own and con-trol lands upon which they are sliuated as for the railway systems of the state to own and centrol the lands upon which they are built. The storage rounds of the irrigator are as essential to the irrigation systems as the storage yards of the railroads are to

the railway systems. A generous government has made it possible for the raliway systems to procure all needed public land without price. The same principle of ald and encouragement extended to the irriga tion systems of the state would place them on a secure footing and insure their rapid development and perfection

### ABSOLUTE CONTROL.

The writer believes that anything short of absolute control, by the water users, of these shed lands is not sufficient and therefore looks with disfavor on their segregation as forest reserves. As forest reserves, they will be under forign control and would not receive the same solicitous care that control any management by the resident communities would insure. As well might the government take under its control the motive power of the railroad systems of the state as to withhold the full control of these sheds by the irrigation systems of which they are the vital part.

In early days these sheds were, by general consent, regarded, and used exlusively, as pasture ground for stock of the community resident thereunder. Then the stock of the community was branded with a common or communi-y brand. The poorest husbandman nd the widow were owners of live stock, which formed part of the com-nunity herd. In summer the stock nunity herd. anged on the lands of the water shed and in winter were cared for on the rrigated area. Thus unlted, the irrigable and non-irrigable lands were both made to contribute in the work f community building.

### LARGE HERDS EVIL.

The advent of large flocks and herds, often owned or controlled by nonresi-lents or capitalists having no interest whatever in the preservation of the shed or in the water which it produced, soon effected the complete destruction of the community herd and drove the

work, the writer believes it is essential be no experiment in returning to the o pass a state law which will enable a determination of the rights of each original plan of the community contro (which should be supplemented by community ownership), as it has been fully tried in times past and proven most satisfactory. It is the natural and only practicable plan of uniting and using the irrigable and non-irriga-ble lands of the state and at the same time protecting its irrigation systems. COMMUNITY OWNERSHIP.

# Under community ownership and ontrol these sheds would be speedily

estored to their original value as graz-ng grounds, and weuld properly suport more live stock than now find scanty sustenance upon them; the sys-tematic removal and replacement of timber would be insured; the growth of underbrush and browse would be re atored; reservoirs would be construct ed at all available places until their ag gregate capacity would be sufficient to ully retain and control all of the wa It would also encourage the resi lent communities to improve the rive channels in such manner as to preven waste of water, through absorption, which is now general, and often exces-It would inaugurate an era of sive. general improvement in the entire ir rigation system. All unnecessary canal and ditches would be abandoned. Only such as were absolutely necessary

would be retained and these would h lined with impermeable substances. The loss from unnecessary canals and diches would be entirely saved and that from unlined ones (which is from 10 to 70 per cent) be reduced to the minimum, while the expense of main-tenance and operation would he great-ly lessened. The distributing ditches

yould be re-arranged in a manner to secure the most economical and effect tive application of water to the crops The whole system so improved and per-fected would then be capable in the utmost degree, and all its possibilities would be fully and rapidly developed.

### GOVERNMENT RESERVOIRS

The construction of reservoirs by the government, as contemplated by the various measures that have been introduced into Congress, is viewed by the writer as desirable only in locali-ties where few if any individual appropriations of water have been made; unless the government shall come in the attitude of aider, and not of appropriator. All measures so far pro-posed contemplate that the government shall take part in the work of reclaiming its arid lands by providing a wa-ter supply and then selling the land and the water at a price which will reimburse the cost of the work. This is termed "Government Aid," and is popularly misconstrued to mean that reservoirs are to be built and turned over to the people without cost. The aid thus proposed would, in the writer's opinion, be most unwelcomed interferance in the case of communities already established, as it would have the same effect as if an individual appropriator

ould intrude himself upon the lands of the irrigation system and construct reservoirs for the purpose of storing and appropriating the flood and winter waters of the system to be used be-yond the limits and independently of the astablished system. The advent the established system. The advent of the government in such a case and

should raise through

land has seven times of value of land which is not irrigated; or through the Syria; or in the country around Damas-cus, about which the Arabs go wild, comparing it with Eden and Paradise; or into the land of Egypt, where the ir-rigation canal sharply marks the boundary between the greatest fertility and absolute desert: and if you compare the appearance of the irrigated lands with the looks of the countries where they awalt the water to come from the clouds, there can be only one conclusion and that immensely in favor of the lands where, as a Colorado German ex-

pressed himself, "They make the rain THOS. P. PAGE.

# IAMES WILCOX

The fate of Nell Cropsey, the young girl who mysteriously disappeared from her home in Elizabeth City, N. C. is a subject of eager discussion all over the country. The police are working hard trying to obtain a clew. Some of the most skilful detectives in the country are interested in the case. Above are portraits of Nell Cropsey, the missing girl, William H. Cropsey, her agonized father, and James Wilcox, her former lover and suspected by the police of being concerned in her disappearance. Also a snapshot of the section of the Pasquotank river, which has been constantly dragged and re-dragged for the body of the lost girl.

## 

gator are identical.

# course of development.

William H. Cropsey

WILL NOT OBTRUDE ITSELF. The writer has no idea that the government will attmept any work where it is not welcomed by the people, but believes that the purport of the pro-posed measures should be generally and ully understood. When fully perfected, the irrigation systems of the state will easily perform double their present duty. To accomplish this work will require able, earnest and unselfish ac-tion on the part of all. It is a situa-

and that they should be as fully and | twenty-nine who is about to marry carefully protected as are the irrigation In the October Journal Mr. Bok uses a page for his answer. Its salient points are these: that a man should interests. Mining is, however, a subsurface proposition and need not be interfered with in the least through con-trol of the surface in the interests of terfered with in the least through con-trol of the surface in the interests of the water supply—with respect to which ation, as well as love her; that he should remember that he owes his wife the interests of the miner and the irrito her mother, and treat his mother-in-law with respect, at least; that he should keep his wife informed as to his A. F. DOREMUS, State Engineer. income: that he should give her a reg-ular allowance and that he should have his life insured in her favor. And above

