



Annals of
WYOMING

The Wyoming History Journal
Vol. 85, No. 1
Winter 2013

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CONTENTS

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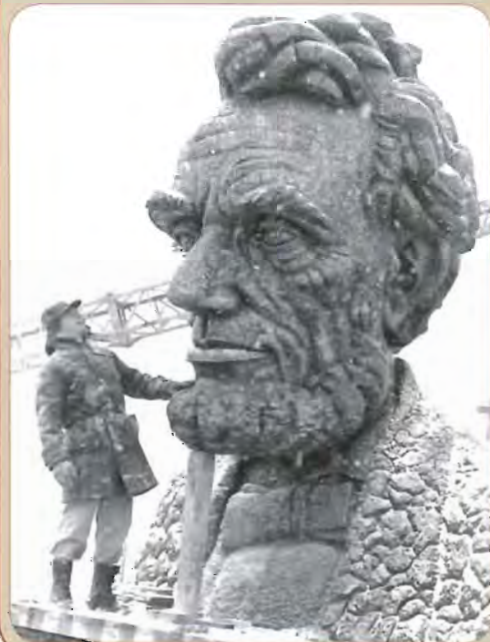
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2
**Murder in the Freeze-
outs: Loyalty, Sedition,
and Vigilante Justice in
World War I Wyoming**
by Phil Roberts

22
**Elwood Mead's Establishment of
the Constitutional Foundations of
Wyoming's Water Law**
by John W. Shields



43 Book Reviews

47 Index

Inside back cover
Wyoming Picture

Elwood Mead. Courtesy the author.



Elwood Mead, with the assistance of Constitutional Convention delegates James A. Johnston and Charles H. Burritt, was responsible for incorporating the fundamental concepts and operational elements of Wyoming's water law in the foundational document of Wyoming's legal system – its Constitution.

Elwood Mead's Establishment of the Constitutional Foundations of Wyoming's Water Law

by John W. Shields¹

The basic precepts of Wyoming's water law are embedded in the Wyoming State Constitution. Article VIII, addressing water and irrigation, was revolutionary in its approach to water control, use, and allocation. The Constitution set up a complete system of water allocation, unique among states to that time. It also established the principle of state ownership of the resource.² Elwood Mead, with the assistance of Constitutional Convention delegates James A. Johnston and Charles H. Burritt, was responsible for incorporating the fundamental concepts and operational elements of Wyoming's water law in the foundational document of Wyoming's legal system – its Constitution.

Widely acclaimed during his career and lifetime as the father of the "Wyoming system," Elwood Mead was able to witness, enjoy, and be celebrated for the changes he wrought in the way water rights were created and administered. Mead's education, background, and experiences prior to, as well as after, his selection as the Wyoming Territorial Engineer provided him the opportunity to interact with the drafters of the Wyoming State Constitution in 1889. Mead's understanding of human nature and the critical importance of water to the welfare of western societies remain relevant today.

Introduction to the Irrigation and Water Rights' Provisions of the Constitution

As Wyoming's only territorial engineer and first state engineer, Elwood Mead framed a revolutionary code of water law for arid and

¹ The author expresses his gratitude to the Wyoming State Historical Society Lola Homsher Awards committee for the Committee's favorable consideration and support of the application for this Wyoming history research project and for providing a complimentary one-year membership in the Wyoming State Historical Society. Thanks are expressed to my wife, Janelle Shields, and to Nancy McCann for their continuing encouragement and editorial assistance.

² Phil Roberts, "The Wyoming Constitutional Convention and Adoption of Wyoming's Constitution, 1889, and the Aftermath," 2010. University of Wyoming, Department of History, Laramie, Wyoming. Accessed July 9, 2011, at http://uwacadweb.uwyo.edu/ROBERTSHISTORY/readings_in_wyoming_history1.html.

semiarid regions which he assured was written into Wyoming's constitution. His creation was the model for irrigation laws adopted not only by four-fifths of the western American states, but also by Canada, Australia, South Africa, and New Zealand. This new water law rejected the old English common-law principle of riparian rights as inappropriate for arid regions. Instead, it declared all water, surface and underground, to be state property; thus giving water the same status as minerals and land - thereby ending legal conflicts between those who owned the land through which the water flowed and those who wished to use the water.³

The "Irrigation and Water Rights" provisions of our state's law are found in Article VIII of the Wyoming's Constitution. This article is comprised of five short sections:

SECTION 1. The water of all natural streams, springs, lakes or other collections of still water, within the boundaries of the State, are hereby declared to be the property of the State.

SECTION 2. There shall be constituted a board of control, to be composed of the State engineer and superintendents of the water divisions; which shall, under such regulations as may be prescribed by law, have the supervision of the waters of the State and of their appropriation, distribution and diversion, and of the various officers connected therewith. Its decisions to be subject to review by the Courts of the State.

SECTION 3. Priority of appropriation for beneficial uses shall give the better right. No appropriation shall be denied except when such denial is demanded by the public interests.

SECTION 4. The legislature shall by law divide the State into four (4) water divisions, and provide for the appointment of superintendents thereof.

SECTION 5. There shall be a State engineer who shall be appointed by the governor of the State and confirmed by the senate; he shall hold his office for the term of six (6) years, or until his successor shall have been appointed and shall have qualified. He shall be president of the board of control, and shall have general supervision of the waters of the State and of the officers connected with its distribution. No person shall be appointed to this position who has not such theoretical knowledge and such practical experience and skill as shall fit him for the position.

Katherine Coman's views, although included in an economic evaluation of irrigation, do an excellent job of summing up the context of what was accomplished by the Wyoming Constitutional Convention in developing Article VIII:

The water code of Wyoming, adopted with its constitution in 1890, was the first thorough-going attempt to put the vexing question of water titles on a scientific and equitable basis and to render the water right inseparable from land ownership. Under this law, application for diversion of any portion of a lake or stream must be registered with the state engineer, and no claim has any validity until ratified by his office. The registration of a claim gives prescriptive right, but to secure legal title, the claimant must prove that the projected works have been constructed within the specified time and that the water is being used for a beneficent purpose. . . . This comprehensive and highly satisfactory system has been adopted with minor modifications in Nebraska, Idaho, Utah, Nevada, the two Dakotas, Oklahoma, New Mexico, and Oregon and has gone far to straighten out the confused tangle of riparian rights, priority rights, excess claims, etc.⁴

Mead's Path to Becoming An Irrigation Engineer

Mead published an influential treatise in 1903 titled "Irrigation Institutions."⁵ In his preface therein, Mead stated:

³ Pierre Y. Julien and Robert N. Meroney, "History of Hydraulics and Fluid Mechanics at Colorado State University," presented at Darcy Memorial Symposium on the History of Hydraulics at the World Water and Environmental Resources Congress 2003, June 23-26, 2003, Philadelphia, Pennsylvania. Accessed July 28, 2011, at <http://www.engr.colostate.edu/~meroney/PapersPDF/CEP02-03-4.pdf>, p. 3.

⁴ Katherine Coman, "Some Unsettled Problems of Irrigation," *American Economic Review*, vol. 1, no.2 (March 1911): 1-19. Reprinted in *American Economic Review* 101 (February 2011): 36-48. Accessed March 22, 2011, at <http://www.aeaweb.org/articles.php?doi=10.1257/aer.101.1.36>.

⁵ Elwood Mead, *Irrigation Institutions - A Discussion of the Economic and Legal Questions Created by the Growth of Irrigated Agriculture in the West* (New York: The MacMillan Co., 1903). Accessed February 21, 2011, at <http://www.archive.org/details/irrigationinsti01meadgoog>, pp. v-vi.

This work is based on twenty years' experience in the development of irrigated agriculture in the arid West. Fifteen years of this time were devoted to the study and administration of irrigation laws as assistant State engineer of one commonwealth and territorial and State engineer of another. The duties of these positions brought the writer into personal and official relations with all classes of men to whom the problems of irrigation were of vital interest. . . . The lesson of these years is that the vital agricultural problem of the arid West is to establish just and stable titles to water and provide for their efficient protection in times of need. Every farmer in this region comes to understand the overshadowing importance of water. . . . Irrigated agriculture is an organized industry, and the prosperity and happiness of those engaged in it are largely determined by the character of its institutions.

Mead's journey to gaining his considerable expertise as an irrigation engineer began when he moved to Fort Collins, Colorado, in December 1882, when he joined the faculty of Colorado State Agricultural College (now Colorado State University) as a professor of mathematics and physics.⁶ According to James R. Kluger, "although the Indianan knew little about the problems of the arid West, . . . he had practical experience both in farming and in river control. While his academic duties had nothing to do with irrigation, Mead was fascinated by the developments in this field and assisted Edwin S. Nettleton, the newly appointed Colorado state engineer, in superintending the distribution of water in the Fort Collins area, as a part-time watershed engineer in Larimer County."⁷

Kluger's biography of Mead, titled *Turning on Water With a Shovel, the Career of Elwood Mead*, documents that:

After three semesters at Fort Collins, Mead resigned and moved back East. In 1883 he received a civil engineering degree from Iowa Agricultural College at Ames, and was awarded a master of science from Purdue the following year.⁸ But he had still not decided on a career. He liked teaching, but he had also liked engineering and farming. He had returned to Indiana mainly at the urging of Hiram Chase, his father-in-law, who wanted him to form a partnership in his legal firm. Mead "read" law under Chase, and even tried one case—which he lost. Apparently it was not discouragement over this failure, however as it was ill health and interest in irrigation that caused him to look westward again. In July of 1885, the Meads moved back to Colorado.

Mead's return to the East had not been a total loss. In addition to his graduate degrees from Purdue and Iowa State, he had acquired a valuable knowledge of law. This combination of legal and scientific skills would stand him in good stead in the years ahead. He began working for Colorado State Engineer Nettleton as his assistant, and then in the fall of 1885 he was reappointed to the faculty at Fort Collins. As his [Mead's former] position in mathematics had been filled, President Ingersoll, who was eager to have Mead back, named him professor of irrigation engineering. It was the first such position in the United States.⁹

Accurate Measurement Essential for Water Administration

The doctrine of prior appropriation in the arid West recognizes water is a most valuable commodity. As water is only available in limited quantities, it is vitally important to establish appropriate measurement systems. Physical instruments are essential to gauge the diversion of river and stream water into canals so as to effectively accomplish the

⁶ James R. Kluger, *Turning on Water With a Shovel, the Career of Elwood Mead* (Albuquerque: University of New Mexico Press, 1992), p. 8.

⁷ *Ibid.* Other sources indicate that E.S. Nettleton was appointed state engineer in April 1883 and served until April 1887, including the *Fourteenth Biennial Report of the State Engineer to the Governor of Colorado for the Years 1907-1908* (Denver: Smith-Brooks Printing, Company, 1909). The Biennial Reports of the Colorado State Engineer indicate the department was organized on June 3, 1881, and that the first state engineer was Eugene K. Stimson, who served from June 1881 until April 1883. Owing to the lack of funds, Stimson was able to accomplish little. Under Nettleton the office was thoroughly organized and the first records were made. See Wilbur Fisk Stone, ed., *History of Colorado*, vol. 1 (Chicago: The S.J. Clarke Publishing Company, 1918), p. 220. Accessed December 31, 2011, at http://books.google.com/books/about/History_of_Colorado.html?id=-uVYAAAAAMAAJ.

⁸ Although many sources, including Kluger, note that Mead earned his Master of Science Degree in 1884, Purdue Board of Trustee Minutes of June 6, 1888, clearly state that a degree was recently conferred on Mead. See Patricia J. Rettig and Robert C. Ward, "Elwood Mead's Role in Founding CSU's and USDA's Fort Collins Irrigation Programs." Accessed June 20, 2012, at <http://www.ars.usda.gov/sp2UserFiles/Place/54021000/MeadsRoleFinal909.pdf>, p.3 of unnumbered document.

⁹ Rettig and Ward, "Elwood Mead's Role," pp. 10-11.

division of the water supply and its distribution into canals; as are administrative systems for gathering, recording, and taking action based upon physical flow rate and volumetric measurements and accounting for the water supply. When the Colorado legal and administrative provisions were formulated, such a system did not exist.

Colorado holds the unique distinction of being the first state to provide for the distribution of water by public officials. In 1881, the Colorado Legislature established the Office of the State Irrigation Engineer, referred to today as the State Engineer's Office, and also known as the Colorado Division of Water Resources. The agency's primary responsibility continues to be the administration of the appropriation doctrine, "first in time, first in right," by maintaining a list of water rights on each stream, in order of priority, and distributing water according to the priority. In most river basins, the flow in the river controls administration and typically a compact call or administration "acts" as the number one priority.¹⁰

The state of measurement in early years was described in 1883 by William E. Pabor in *Colorado as an Agricultural State*:

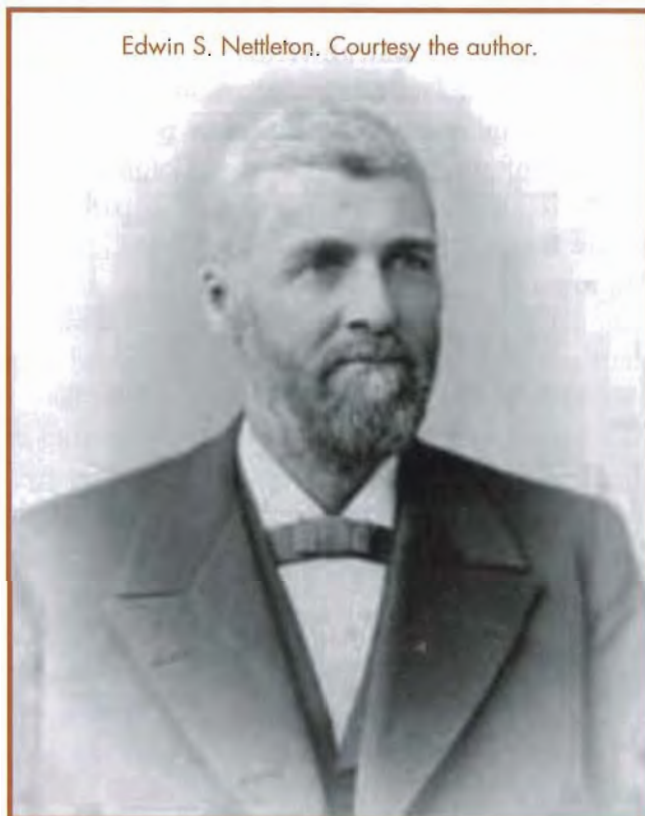
There are few farmers who, using the inch measure under pressure, know how much water they get or use, though they know how much they pay for. The grade, the size of the orifice through which the water flows, the depth and breadth of the channel, all affect the result, more or less. There is no one rule that governs all the canals in Colorado.¹¹

The uncertainties of water measurement undermined Colorado's system of water rights. As Donald Worster described it, appropriators "with no accurate sense of flow dynamics or crop requirements, with only a primitive means of measurement, made immense claims, Amazonian claims, calling for more water than any ten streams could carry, enough water

to sail a clipper ship across the plains."¹²

A Friend and Mentor in Edwin S. Nettleton

Edwin S. Nettleton served as the Colorado State Engineer from 1883 through 1887.¹³ Mead accepted a position as assistant state engineer working for Nettleton in 1885, but they remained friends for the remainder of Nettleton's life (he died on April 22, 1901, in Denver, Colorado). Nettleton hailed



from Ohio and attended public school at Medina and Oberlin College, but did not graduate on account of trouble with his eyes. He studied and practiced mechanical engineering for three years. After a stint in Michigan, he went to the oil regions of Pennsylvania in 1864 and rose in his engineering practice there to become the chief engineer of the Oil Producers' Association of Pennsylvania.¹⁴

In 1870, Nettleton took a position as the chief engineer of the Union Colony which founded the

¹⁰ Dick Wolfe, P.E., "Surface Water and Ground Water Administration in Colorado – Water 101.5," June 3, 2005. Prepared and Presented by the Assistant State Engineer of the Office of the State Engineer, Colorado Division of Water Resources. Accessed July 27, 2011, at http://water.state.co.us/DWRIPub/DWR%20Presentations/dwclife_060305_a.pdf.

¹¹ William E. Pabor, *Colorado as an Agricultural State: Its Farms, Fields, and Garden Lands* (New York: Orange Judd, 1883), p. 47.

¹² Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Pantheon, 1985), p. 95.

¹³ Edwin S. Nettleton, *Report of the State Engineer to the Governor of Colorado for the Years 1883-1884* (Denver: The Times Printing Company, 1885), p. 5.

¹⁴ L.H. Bailey, ed., *Cyclopedia of American Agriculture – A Popular Survey of Agricultural Conditions, Practices and Ideals in the United States and Canada, 1910*, vol. IV, second ed. (New York: The MacMillan Company), p. 599. Biographical Sketch of Edwin S. Nettleton therein written by R. P. Teale. Accessed July 26, 2011, at <http://www.archive.org/details/cyclopediaofamer011bailrich>.

town of Greeley, Colorado.¹⁵ The colony was a group of settlers who organized themselves elsewhere¹⁶ and came to Colorado as a group to build a community. Prospective colonists paid \$155 for a Union Colony membership, which entitled them to an irrigated farm and a lot in town. The Union Colony's leader, Nathan Meeker, had bought twelve thousand acres on the Cache La Poudre River, and five hundred families arrived on the site during the summer of 1870.¹⁷ Within a year, sixty thousand acres of land were irrigated with water diverted from the Cache la Poudre.¹⁸

In the following year, Nettleton became chief engineer of the Colorado Springs Colony, laying out the city of Colorado Springs and its parks and canals. In 1872, he was employed by the Colorado Improvement Company (later known as the Colorado Fuel and Iron Company, which was at the time one of the largest producers of coal and iron in the West) in locating coal and iron lands. In 1878, he went back into irrigation engineering as the Colorado Mortgage and Investment Company's engineer, supervising the survey and construction of the Highline Canal diverting from the South

Platte River. As early as 1878, he was termed "one of the most accomplished irrigation engineers in the west."¹⁹ In March 1883, he assumed the duties of the state engineer of Colorado and held the position for four years.²⁰

Since the uncertainties of water measurement undermined Colorado's newly adopted system of water rights, it is not surprising that Colorado State Engineer Nettleton spent much time in his initial year as state engineer in establishing stream measuring sites on the Cache La Poudre, Big Thompson and St. Vrain rivers, and in developing a more rugged meter for measuring current velocity.²¹

Nettleton addressed the absolute necessities associated with water measurements as a part of water administration, on several levels, in comments he included within a section of his 1883-1884 Annual Report titled "Efficiency of the Present Law":

The establishment of the office of Water Commissioner has had a most beneficial effect on the practice of water division of streams which were supposed to be entirely appropriated. The constant attendance and intelligent supervision of the Water Commissioners

¹⁵ L.H. Bailey, ed., *Cyclopedia of American Agriculture – A Popular Survey of Agricultural Conditions, Practices and Ideals in the United States and Canada, 1910*, vol. IV, second ed. (New York: The MacMillan Company), p. 599. Biographical Sketch of Edwin S. Nettleton therein written by R. P. Teele. Accessed July 26, 2011, at <http://www.archive.org/details/cyclopediofamer01bailrich>.

¹⁶ Led by Nathan Meeker, the agricultural editor for Horace Greeley's *New York Tribune*, the Union Colony had been launched with an organizational meeting at the Cooper Institute in New York City on December 23, 1869. Those coming to the Cooper Union on that December night heard Meeker extol the great promise of irrigated agriculture in the West and the effectiveness of cooperative action in achieving it. *Ibid.*

¹⁷ Michael Holleran, *Irrigation and Water Supply Ditches and Canals in Colorado, 1787 to 1961*, January 2011, National Register of Historic Places Multiple Property Documentation Form. Accessed March 22, 2011, at http://www.historycolorado.org/sites/default/files/files/OAHP/crforms_edumat/pdfs/Ditches-MPDEdraft.pdf, pp. 8-11.

¹⁸ Carol Drake Mehls and Steven F. Mehls, *Weld County Colorado – Historic Agricultural Context*, 1988. Revised and Reprinted in 2006. Office of Archaeology and Historic Preservation, Colorado Historical Society. Accessed Dec. 30, 2011, at http://www.historycolorado.org/sites/default/files/files/OAHP/crforms_edumat/pdfs/612.pdf, p. 7.

¹⁹ Edwin S. Nettleton biographical file, Colorado Historical Society, Denver, Colorado; "The Founding and Early Years of Eaton, Colorado," *Colorado Magazine* 18 (March 1941): 54-55.

²⁰ Bailey, *Cyclopedia of American Agriculture*.

²¹ Nettleton, *Report of the State Engineer*, p. 8. Nettleton reported that at first the Fteley meter was used, but it:

"was soon apparent that this instrument was entirely too delicate for the rough torrents, filled with drift of all sorts, in which it was necessary to use it. An instrument was designed by me, more suitable to the work (named the 'Colorado' Current Meter) a description of which is given elsewhere. The main object kept in view in designing this instrument was to make it self-clearing; the great defect of the Fteley meter being its liability to error from clogging with grass, weeds, etc., which, at times, would vitiate many hours' work, and make the readings so diverse that doubts would arise as to the value of a whole day's work. A secondary object was to reduce the speed of revolution, the high speed of the Fteley instrument necessitating expensive jeweled bearings, and a delicacy of construction, incompatible with the rough work which is required to be done. Three 'Colorado' Meters, having been made for this department by W. W. Scott & Co., of Denver; these instruments have since been in continuous use in gauging rivers and ditches giving entire satisfaction."

Also known as the Fteley-Stearns current meter, the Fteley current meter has a wheel made up of helicoidal blades which rotate upon a horizontal axis. Its major purpose was to measure, through a manhole, the velocities occurring in underground conduits which had been built for conducting water from the Sudbury River to Boston. It was always suspended from a rod. See Arthur H. Frazier, *Water Current Meters in the Smithsonian Collections of the National Museum of History and Technology* (Washington: Smithsonian Institution Press, 1974), pp. 58-60 and 75-78. Can be accessed at <http://www.sil.si.edu/smithsoniancontributions/HistoryTechnology/pdf/lo/SSHT-0028.pdf>.

has had a marked influence in reducing the number of water quarrels among irrigators.

Like smuggling in England, in the olden time, irrigation seems to have the singular power of turning honest, law-abiding citizens, in all other relations of life, into truculent, bellicose rioters, as soon as their real or fancied rights as water users are interfered with. Many men, whose word is their bond, who, in all other relations with their fellow-men are model neighbors and citizens, and who would not allow themselves to be guilty of stealing (as generally understood) will *deprive* their neighbor of water without a scruple. A reason for this may be found in the long held idea that air and water were the free gifts of God to all men, and the lack of a notion that there could be such a thing as a *right* to the water of a running stream. The present law has the great virtue of clearly and decisively providing for adjudicating priority of right to the use of the natural waters, and the full and complete enjoyment of the quantity; and the order of priority so adjudicated is secured to the beneficiary by the powers giving to the Commissioner for the enforcement of the law. The mere fact that a man, in whom the neighborhood has confidence, is constantly attentive to the distribution of the water has a great moral effect. Misunderstandings and disputes relative to water are settled by him in their incipiency, and good feeling is maintained between appropriators.

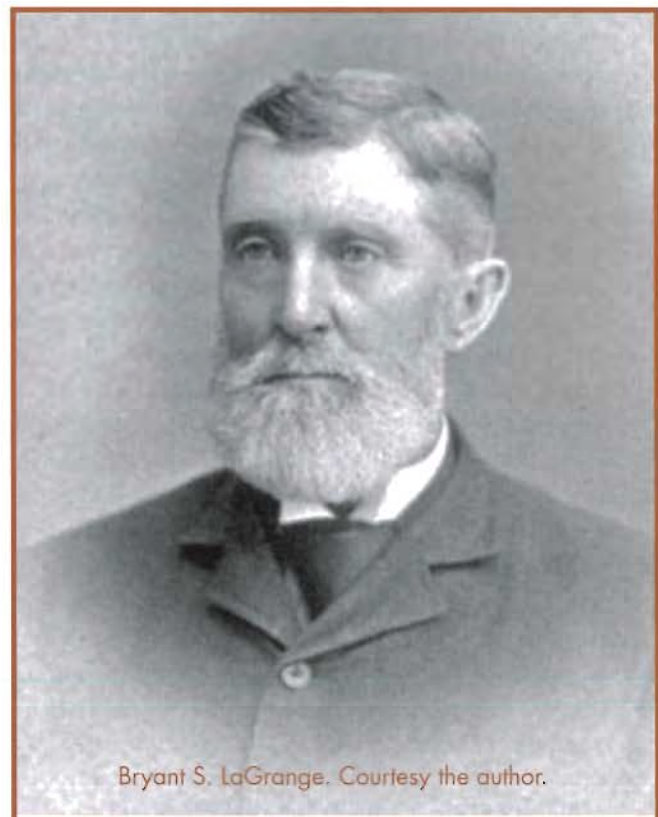
The ill feeling and wrong notions, engendered by years of no law, takes time to eradicate; but it is confidently affirmed that the present irrigation law, as far as it goes, is certainly working wonders in most of the irrigation districts of the State. ‘This is not only the opinion of this office, but that of many who strenuously opposed the law when first proposed, and the State is fortunate in having taken the first bold step forward in a direction, which the whole body of appropriators approve as *right*.²²

Learning Much About the Colorado System

Mead learned a great deal about the Colorado water rights system by working as the Assistant State Engineer under the supervision of Nettleton beginning in the fall of 1885. It is also apparent that

Mead was busy learning about the Colorado water rights system before accepting the assistant state engineer position as explained below.

The Colorado Legislature provided for the appointment of water commissioners by the governor in legislation enacted in 1879.²³ The first person appointed as the water commissioner to divide the waters of the Cache La Poudre River by Governor Frederick W. Pitkin in July 1880 was Bryant S. LaGrange. A native of New York, LaGrange had come to Colorado in 1870 with the Union Colony and had homesteaded near Greeley. Having been engaged in grading and road work contracting for a



Bryant S. LaGrange. Courtesy the author.

few years prior to coming West from Michigan, he was soon employed supervising the construction of the two Union Colony canals.

During the winter of 1883-1884, LaGrange, who began his water commissioner duties at age fifty-seven, prepared a paper titled ‘LaGrange on Irrigation’ setting forth what he had observed during his experiences as a water commissioner for four

²² Edwin S. Nettleton, *Report of the State Engineer to the Governor of Colorado for the Years 1883-1884* (Denver, The Times Company, State Printers, 1885), pp. 83-84.

²³ Robert G. Dunbar, *Forging New Rights in Western Waters* (Lincoln: University of Nebraska Press, 1983), pp. 92-93.

irrigating seasons. Interestingly, the paper was read by Professor Elwood Mead at the annual Farmers' Institute held in Fort Collins on February 24, 1884.²⁴ Also of note, LaGrange's paper was included in its entirety in the *Report of the State Engineer to the Governor of Colorado for the Years 1883-1884* prepared by State Engineer Edwin S. Nettleton.²⁵

In his paper, LaGrange related certain of his experiences leading him to conclude that diversions by the irrigators in his district (District No. 3, Cache La Poudre River) and the decreed appropriations as established in the April 1882 adjudication decree were both excessive. His paper included the following observations and recommendations:

Now the lesson to be drawn from these figures seems to me to be this—that it is the urgent and imperative duty of the State—to take such control of our streams as will prevent the building of additional canals or the enlargement of the present ones until it has been ascertained that there is a surplus of water in the stream. As it is now, canal building is going on rapidly on the Platte and other streams when even the projectors of these enterprises are ignorant as to whether there is sufficient water in the stream to supply their wants. If our present system only worked a hardship to those parties who might build canals after the capacity of the stream was exhausted, the result would not be so disastrous, although it would be far from desirable. The real hardship would fall on the agriculturalists of small means, who, coming from the East and not understanding the situation, would settle among these canals, fondly imagining that he was at least secure from the vagaries of the weather. These are the parties who would suffer.

A Board of State Control, however, would prevent all this, and at the same time would work no hardship to anyone. Their granting of a permit to build a canal would be an assurance to the projectors of the enterprise that the project was a safe one, and in this way it would furnish a basis of credit. It would relieve our farming interest of any apprehension as to a possible future conflict over this question.²⁶

The seasoned water commissioner also offered criticism of Colorado's reliance on the courts; he offered his thoughts on the necessity of the state giving equal protection to the ownership of water as well as to the land in the following:

Prior to 1880 a conflict of interests had grown up, as each irrigation enterprise progressed. The laws of the State afforded no adequate method for adjustment. Every water user, private or corporate, became the opponent of all others. There were no defined rights, and in the case of conflicting claims the only remedy was a resort to the courts, and then in most cases the claim could be but partially established as against some particular rival claimant. The policy of the State was to leave the distribution of all disputes to the courts. The general government might just as well have thrown open the public domain to appropriation; have no regulation; require no proof of claims except when disputed in the courts. There would be no basis of credit in lands and no limit to the acquirement of large holdings. It is just this policy which the State pursued towards the irrigation interests—a free to all rule which brings trouble to all. A non-intervention policy on the part of the government of a country never has nor never can solve the problem of irrigation.

How then can we acquire a right to water? The whole foundation of the water right system is its use. Whoever has acquired a legal vested right to the use of water, and has need for the same, must be protected at all times in the enjoyment of its use. But whenever that need ceases then it becomes the property of the public. The streams are the property of the public; segregation must be made before we can get possession. Once in possession it becomes property, coupled always with a beneficial use and no waste.

Owing to the climatic conditions and atmospheric influences on our water sheds, the water is ever variable in amount, constantly slipping from the grasp, ever moving onward, wasting in many ways an element of wealth temporarily and at not very regular periods and then in quantities rarely sufficient for all,

²⁴ *Ibid.*, p. 99. See also, *Portrait and Biographical Record of Denver and Vicinity, Colorado - Containing Portraits and Biographies of many well known Citizens of the Past and Present* (Chicago: Chapman Press, 1898), p. 983. Accessed January 29, 2012, at <http://ia600508.us.archive.org/23/items/biographportrait-00chaprich/biographportrait00chaprich.pdf>.

²⁵ Nettleton, *Report of the State Engineer*, pp. 121-32.

²⁶ *Ibid.*, p. 129.

and is most precious at the time of least supply and should be administered in a manner that the public will derive the greatest possible benefit. Our lands are worthless without water, and the State should give equal protection to the ownership of water as well as to the land.

The constitution of the State of Colorado dedicates all the waters in the natural streams of the State to the use of the people, irrigation being a necessity. Here is an element of wealth, a valuable commodity, the use of which is donated to the people. "We must keep constantly in mind that the agricultural possibilities of this region are only limited by the water supply, and that land practically worthless without water becomes fertile and valuable when that element is added. There is a constant danger, therefore, that the cultivated area will be extended beyond the limit that is either profitable or safe.

In conclusion, I would recommend the following measures as tending to secure a more efficient control and equitable distribution of the waters of the State:

1. There should be established a State Board of Water Commissioners and a State registry of all existing water claims.
2. Provide for the issue of water privileges in proportion to the water supply in each stream.
3. Establish a definite standard of measurement for agricultural or mining purposes, together with regulations from time to time tending to prevent waste and guard against the careless use and waste of water in irrigation.
4. State control of the sources of water supply on the various watersheds, and allow no interference with the same without a permit from the proper authority.

A record should also be made of the discharge of each stream whose waters are used for agricultural purposes, and an act should be passed making it unlawful for any person or corporation, except upon a permit from the proper authority, to construct any weir or dam across, or partially across, or in the channel of any stream within the boundaries of any organized Water Division in the State, or to construct any canal in or alongside the banks of any stream within any organized Water District in the State.

Mead Sets Forth His Observations of Shortcomings in the Colorado System

The 1885-1886 Biennial Report of the Colorado State Engineer contained a section titled "Report of Elwood Mead, Assistant State Engineer," which included his "report of gauging made by me in the various districts in Water Division No. I, during the irrigation seasons of 1884, 1885 and 1886." In his report, he stated his "attention was very forcibly called to a matter to which it seems proper to refer" which was the "wide discrepancy which often exists between the decreed and actual carrying capacity of ditches and canals." He went on to state that "so great was this in some instances that the results of the gauging and the decreed capacity seemed to have no connection with each other." Mead noted:

[d]itches were met with having decreed capacities of two, three and even five times the volume they were capable of carrying, ever have carried, or will probably ever need. Other ditches in the same district have decrees which fairly represent their actual needs. It needs no argument to show the worse than uselessness of these decrees as a guide to the Water Commissioner in the performance of his duties. On the other hand, the amount of uncertainty, difficulty and annoyance which they entail on that official can only be appreciated by those who have had some personal experience in the matter. When called upon to make a division of water among rival claimants, the Water Commissioner has the judicial decree to guide him in performance of his duties; but to divide water in accordance with its terms, is, in many cases, a physical impossibility, and would work great hardship and injustices on others. He has, however, no legal sanction for exercising his discretion in such cases, and should he do so, becomes a violator of the law he was chosen to execute. I am led to speak of this matter because I do not think these errors are due to negligence or intentional misrepresentation, but to a radical defect in the law providing for taking testimony.

Mead went on to present his thoughts about the cause of these problems, and, important to what he would propose in the future with regard to how water right parameters ought to be determined, to set forth how he would propose to solve this vexing problem with the following:

To accurately estimate the capacity of a ditch or canal requires considerable acquaintance with the laws of hydraulics, and some engineering experience and judgment, and however

painstaking the judge or referee may be, it is not desirable that he should be required to pass judgment upon the competency of the person or persons making the estimates submitted to him. In most cases it would be impossible for him to do it.

The majority of the decrees of smaller ditches are based on testimony of men having no engineering training or experience, and however honest the estimate may have been, it is in the majority of cases a mistaken one, being almost universally too large. The remedy would seem to be to permit no decrees to be rendered until the State has been represented and an estimate of the capacity of the ditch made by some competent and disinterested engineer, either the State Engineer or someone selected by him.²⁷

Nettleton included, in the "Recommendations" section of his 1885-1886 report, as he had done in the prior edition covering the 1883-1884 period, a recommendation that a board of commissioners for water divisions be established by law. He noted in the latter report:

[t]he necessity for such a board is apparent to all who have had practical acquaintance with the working of the present law. This board, composed of two or three commissioners from each water division of the State, and the State Engineer *ex officio*, should have the power to make rules and regulations, in conformity to law, for the guidance of Water Commissioners and appropriators in the various water districts. There are many questions connected with the diversion, division and the use of water, and the subject of irrigation generally, that are not, as yet, covered by statute or court ruling, and it would be a very great advantage to settle such questions promptly, as they arise; such settlement being subsequently open to review by the proper court.

It is relevant to point out that these matters were addressed in Wyoming, in the first instance, through

their inclusion in the Wyoming State Constitution. In his excellent biography of Elwood Mead, historian James Kluger summed up the situation that Mead found himself in 1885, when he had accepted the Professor of Irrigation Engineering position and was also working as Assistant State Engineer for the Colorado State Engineer:

At the age of twenty-two, Mead had finally found his life's work. His two jobs, as a teacher and as assistant state engineer, enabled him to devote all of his energies to one end—"the study of all the physical, human and legal problems of turning on water with a shovel." The dual occupations complemented one another. In preparing his lectures, Mead became intrigued with the history of irrigation, and began studying the water laws of other countries. This not only made his classes more interesting, but it aided him in making recommendations for the improvement of Colorado water statutes.²⁸

Mead provided an assessment of his understanding of the workings of Colorado's water laws when he was asked to make a speech at the 1887 Farmers Institute held in Fort Collins. Mead directly addressed the ownership of water in that speech:

We have in water a direct gift from nature in which all alike have ownership, and it is only permitted to become private property to secure a public benefit. How is this accomplished? Not, I think by its passage through a ditch. If its application or use ended there, for all practical purposes it had as well remain in the stream. The benefit which the State and public receives comes clearly from its application to the land. It is this which converts the barren plain into productive fields, and has covered this State with thriving and happy homes. It is the farmer who makes the public return, who takes the water and gives us bread. Furthermore, the return for subduing nature, for beautifying and improving his home, all depends on the security and perpetuity of his title to water.

²⁷ Elwood Mead, "Report of Elwood Mead, Assistant State Engineer," as contained within the *Third Biennial Report of the State Engineer to the Governor of Colorado for the Years 1885-86*, by Edwin S. Nettleton (Denver: Collier and Cleveland Lith. Company, State Printers, 1887), pp. 12-13.

²⁸ Kluger, *Turning on Water*, p. 11.

Before going further, therefore, we want to see clearly what is likely to be the ultimate effect on the prosperity and progress of our agricultural interest. Is a system which separates the ownership of a land and the control of water attended with less danger here than elsewhere? On this point Major Powell, in his work on a land system for the arid region,²⁹ has spoken so clearly that I quote his views at length. Speaking of water-rights, he says:

The general subject of water rights is one of great importance. In many places in the arid region irrigation companies are organized who obtain vested rights, in the waters they control, consequently the rights to such waters do not inhere in any particular tracts of land.

When the area to which it is possible to take the water of any given stream is much greater than the stream is competent to serve if the land titles and water rights are secured, the owner of any tract of land is at the mercy of the owner of the water right. In general the lands greatly exceed the capacities of the streams, thus the lands have little or no value without the water. If the water rights fall into the hands of irrigating companies, and the lands into the hands of individual farmers, the farmers will then be dependent upon the stock companies, and eventually the monopoly of water rights will be an intolerable burden to the people.

The magnitude of the interest involved must not be overlooked. All the present and future agriculture of more than four-tenths of the area of the United States is dependent

upon irrigation, and practically all values for agricultural industries inhere not in the lands, but in the water. Monopoly of land need not be feared. The question for legislators to solve is to devise some practical means by which water rights may be distributed among individual farmers, and water monopolies prevented.

The right to use water should inhere in the land to be irrigated, and water rights should go with land titles.³⁰

Opportunity Presents Itself

In early 1888, the tenth Wyoming Territorial Legislative Assembly acted on the growing need for appointment of a territorial official to exercise authority over the development and use of all manner of facilities to put Wyoming's water to use. The 1888 Legislature adopted a bill proposed by James A. Johnston of Wheatland that created the office of territorial engineer, a position to be held by an individual "known to have such theoretical knowledge and practical skill and experience, as shall fit him for the position." The territorial engineer was to be appointed by the governor and serve for a term of two years. One of his duties was, for the first time, to have supervision over the work of the county water commissioners.³¹

Mead related the circumstances that led to being appointed as the territorial engineer much later in his life in response to a request made of him by University of Wyoming History Professor and University Librarian Grace Raymond Hebard. Mead's detailed remembrances, as set forth in a document titled "Recollections of Irrigation Legislation in Wyoming – Enclosure with Letter to Grace Raymond Hebard, March 27, 1930" provide

²⁹ Mead directly quotes from John Wesley Powell's famous work titled *Report on the Lands of the Arid Region of the United States, with a More Detailed Account of the Lands of Utah, With Maps* (Washington: Government Printing Office, 1879). The report can be read online at the University of North Texas Digital Library at: <http://digital.library.unt.edu/ark:/67531/metadc125/>. Report was accessed May 14, 2012.

³⁰ "The Ownership of Water. Address by Professor Mead Before the Farmers of Fort Collins. The Laws on Which The Title to Water is Based. The Danger of Monopolies" (Denver: Times Printing Works, 1887). Speech delivered at the Farmers Institute in Fort Collins, Colorado. The actual date of the address to the Farmers Institute is not reported in the pamphlet or is it mentioned in any of the sources reviewed, but the March 12, 1887, issue of *Engineering News*, vol. XVII (New York: Engineering News Publishing Company, 1887), p. 174, reported on the speech and began by stating "in a late address before the Farmer's Institute at Fort Collins ..." Accessed June 20, 2012, at <http://books.google.com/books/>.

³¹ Craig Cooper. *A History of Water Law, Water Rights and Water Development in Wyoming - 1868-2002*, p. 15, June 2004. Funded by Wyoming Water Development Commission and State Engineer's Office. Available for download at <http://wwdc.state.wy.us/history/waterlawhistory.html>.

a detailed and most interesting account of the events leading to his important role in Wyoming's water law history. Mead related the following:

My first contact with the irrigation and water right questions of Wyoming came in the early winter of 1887 and 1888, when Gibson Clark, an attorney living in Cheyenne, visited Fort Collins, Colorado, which had formerly been his home, and conferred with me about a bill to create the office of territorial engineer of Wyoming. I was at that time professor of irrigation engineering in the Colorado Agricultural College, and had been for one year assistant state engineer of Colorado.

Mr. Clark explained that this bill was to be introduced in the forthcoming legislature of Wyoming, by J. A. Johnston, of Wheatland. Mr. Johnston, as the manager of the largest irrigation enterprise in the state, had given considerable attention to water right matters, and believed that the time had come for the creation of the position of territorial engineer, and for exercising general public control over the streams of the territory. At that time there had been nine different water districts created, and considerable litigation looking to the settlement of the priorities and amount of water rights, but there was nothing in the law which coordinated the work on different tributaries of a stream or created a record which would show the extent of the state's irrigation development.

I don't recall offering any advice regarding the bill. It required the territorial engineer to do the things which are now generally done by the state engineers of all the arid states, but included in the duties of the engineer was the following provision:

He shall become conversant with the waterways of the territory and the needs of the territory as to irrigation matters, and in his report to the governor he shall make such suggestions as to the amendment of existing laws or the enactment of new laws as his information and experience may suggest.'

Requiring the engineer to suggest new laws opened the way for consultations with the territorial engineer, when the Constitutional Convention came to deal with irrigation and water rights. It was known that I had been making a study of the laws of other counties, and in the report of the territorial engineer for 1889 there were recommendations almost identical with those of Article VIII of the Constitution.

Mr. Clark did not intimate that I had been considered for the position which the bill would create, and it did not occur to me that this might be the case because I had practically no acquaintance with either the state of Wyoming or its people. I knew Gibson Clark and Mr. Johnston,³² but outside of these two I did not know a half dozen people in the state. Nothing more was heard about this legislation, until I read in the *Denver Republican* the day after the Wyoming Legislature adjourned, that in the last hours of the session the bill had passed, and that I had been appointed and confirmed territorial engineer. A few hours later a letter came from Governor Thomas Moonlight, telling of my appointment and asking me to accept. The Governor said he had refrained from writing me because he did not believe the bill would pass and he did not wish to raise hopes that might not be realized.

I found it difficult to convince President Ingersoll of the College that the offer had gone wholly unsought and was as much of a surprise to me as it was to him. However, shortly afterwards I went to Cheyenne, met Gibson Clark, Andrew Gilchrist, C. A. Campbell and J. A. Johnston, the author of the bill, and together we went to the Governor's residence, I told him that I could not leave the college until the end of the term, but if this was agreed to, I would accept, and the matter was so arranged. That afternoon I met the Governor on the street. He said "you have been on my conscience ever since I first saw you this morning. I had no idea you were so young. If I had known this I would never have offered you the place, and the reason is that if you come here I am sure you will fail." The Governor had quarreled with the legislature and had an unfavorable opinion of the

³² Referring to James A. Johnston, at least one source credits him as having obtained the position of territorial engineer for Elwood Mead. In W.E. Chaplin, "Reminiscences Of A Member of the Wyoming Constitutional Convention," *Annals of Wyoming*, vol. 12, no. 3 (1940): 191, the following is contained: "Not long before the effort for statehood there had been imported into the Territory a young civil engineer to take the position of Territorial Engineer by the name of Elwood Mead. He owed the obtaining of this position to Mr. Johnston, who had known him favorably as a professor in the Agricultural College at Fort Collins. It was a hard fight for Mr. Johnston, because of Mead's youth, to get him appointed to the Wyoming position."

influences which dominated public life in Wyoming. He ended his talk with me by saying “I so hope and pray to God that you will reconsider and not accept this place.”

I told him I would take a week to think it over, but before the decision was made, J. C. Arthur, one of the leading citizens of Fort Collins, and who had property interest in Wyoming, called on me and urged me to accept. He said, “I have run cattle in Wyoming for fifteen years. I know its people. They are the finest body of men on earth. You will like them and they will like you.” He further told me that ex-Governor Warren was in the city, had stayed at his house the night before, and wanted to talk to me. I met Warren and told him of my misgivings, based on youth and lack of political experience. He urged me to accept and mentioned a number of territorial officers who had served through different administrations, among these being Robert Morris and Daniel Gill. This was the beginning of a friendship which lasted unbroken until Senator Warren’s death, and in which my admiration for his great ability and kindness of heart grew with the years. In speaking of it, Senator Warren rightly regarded himself as being responsible for my going to Wyoming, but, like Governor Moonlight, the principal impression of our first interview was my youth. Talking of it a year or two ago, Senator Warren said that when I came to Cheyenne I was still wearing pinafores.³³

That Mead knew Gibson Clark was not surprising; Clark had begun practicing law when he moved to Fort Collins in 1883, and continued with his law practice after he moved to Cheyenne in January 1886.³⁴ A native of Virginia, Clark had served in

Longstreet’s Division of the Confederate army until the surrender at Appomattox, and had come to Fort Laramie in 1886 where he was employed as a clerk and bookkeeper in the post-trader’s store.³⁵ Clark was elected and served as a member of the Territorial House of Representatives in 1871. From 1872 until June 1883, Clark was occupied in the mining industry, first in Nevada and later in Utah, studying law at intervals and in 1880 was admitted to the bar while in the Utah Territory. Gibson served as an Associate Justice of the Supreme Court of Wyoming beginning in 1892, was appointed United States Attorney for the District of Wyoming in 1894 and was a trustee of the University of Wyoming at the time of his death in December 1914.³⁶

Nettleton Likely Had A Key Role in Mead’s Hiring by Governor Moonlight

Notwithstanding Mead’s written account in 1930, cited above of the circumstances leading to his being hired as the Territorial Engineer of Wyoming, there are other accounts and information concerning Governor Moonlight’s choice of Mead. Another source states that Edwin S. Nettleton, who was serving as the Colorado State Engineer in 1888, had been quite influential in assisting the process of getting Mead appointed as the territorial engineer.³⁷ John T. Peterson’s unpublished (and unfortunately, un-annotated) biography contains the following description regarding the circumstance of Elwood Mead obtaining the position:

The consequences which led to a change in occupation and career, and to some extent a turning

³³ “Recollections Of Irrigation Legislation In Wyoming.” Written By Elwood Mead Enclosure With Letter To Grace Raymond Hebard, March 27, 1930. Included in full in *Selected Writings of Elwood Mead on Water Administration in Wyoming and the West*, 2000. Compiled by Anne MacKinnon and John Shields. Available for download at <http://seo.state.wy.us/PDF/FinalMeadBooklet.pdf>.

³⁴ “In Memoriam, Gibson Clark,” *Wyoming Reports – Cases Decided in the Supreme Court of Wyoming From July 19, 1913 to January 26, 1915*, Reported by Charles N. Potter, vol. 22 (Laramie Republican Company, Laramie, 1915), p. v. Accessed June 11, 2012, at www.books.google.com/books/. Original hard-copy book at Harvard University digitized on August 21, 2007. See also Judge Gibson Clark, “Reminiscences of Civil War Days,” in the Documents and Letters section of *Annals of Wyoming*, vol. 15, no. 4 (October 1943): 377. Essentially the same information about Gibson Clark is found in: Virginia Cole Trenholm, ed. *Wyoming Blue Book* (Cheyenne, Wyoming State Archives and Historical Department, 1974) vol. II, p. 201.

³⁵ See Merrill J. Mattes, “The Sutler’s Store at Fort Laramie,” *Annals of Wyoming*, vol. 18, no. 2 (July 1946): 93-138. Gibson Clark is described as being an assistant “and right hand man” to the bookkeeper, Mr. Ben Mills, on page 111.

³⁶ *Wyoming Reports—Cases Decided in the Supreme Court of Wyoming from July 19, 1913 to January 26, 1915*.

³⁷ John T. Peterson’s unpublished biography of Elwood Mead, unpublished manuscript contained in the John T. Peterson Papers, #1606. American Heritage Center, University of Wyoming, Laramie. A bound copy of this manuscript, identified as “Elwood Mead: an unpublished biography,” was created by Britt Storey, Senior Historian of the Bureau of Reclamation and placed in Reclamation’s Library at the Denver Technical Center, located on the Federal Center in Lakewood, Colorado.

point in the life work of Elwood Mead, began on a [*MS. illegible*] turn. It seems that Colonel Nettleton, State Engineer of the State of Colorado and counselor of Mead had told him that he (Mead) was to be offered a new position, and that he should under no consideration refuse this proffered position. Mead was not informed of what this new and to some degree, not chosen position was. He inferred that it was within the administration of either Colonel Nettleton, or in the College of Agriculture where he was already employed.

Within a few days from the interview between Nettleton and Mead, the *Denver Post*, one of the leading newspapers of the Rocky Mountain region, announced that Governor Thomas Moonlight of the Territory of Wyoming had appointed Elwood Mead as Engineer of the Territory, even though there had been no correspondence between Mead and Governor Moonlight.

Peterson's account, and to a lesser extent Mead's own recollections, seemingly indicate that the appointment was more or less a complete surprise. That said, however, Nettleton's March 6, 1888, letter to Mead is clear in stating that Nettleton was overtly seeking the position for Mead. The letter in its entirety stated the following:

Dear Prof,
Your letter of yesterday is received.

I have just wrote [sic] a letter to Gov. Moonlight of Wyo. recommending you to the position of Territorial Engineer.

Mr. Campbell who is a personal friend of the Gov. has also written him on the same subject.

I expected Litcomb would be an applicant. In many respects L. is a good man and a good engineer, but he is hardly the man for this position.

Faithfully yours,³⁸

The Judge's Decision is Found to Be Lacking

Mead took to his new duties as the territorial engineer with characteristic zeal and a clear vision of what the newly created office needed to accomplish. His first report to the Governor of Wyoming³⁹ is quite detailed in setting forth the history of the operations of the engineering department from April 1, 1888, forward. A synopsis of Mead's efforts in trying to administer a judicial decree during his first year as territorial engineer was provided in Mead's March 27, 1930, "Recollections of Irrigation Legislation in Wyoming" discussed above:

The uncertainties of the water claims were not, however, as serious as the emissions in the court decrees which had already been rendered. For this no one in particular was to blame. The system was wrong. In order to avoid expense, the recording of claims and the determination of rights had been imposed on officials who had other duties and who had no special knowledge of the subject or any direct responsibility for results. The county clerk was made recorder of claims, the county surveyor was to measure the ditches, and the district judge was to fix the rights. There were no salaries, but the harassed irrigator soon found that the fees of the arrangement were far more costly than would have been the expense of a proper system of control. For example, the owners of the ditches on two small streams in Laramie County paid in fees for recording their claims and measuring the ditches, over \$10,000, and in the end, there was no official to whom they could appeal to protect their rights.

Because of the greater use of water in the vicinity of Cheyenne, the first scarcity appeared there, and the first suits to determine priorities and amounts appropriated came on in the court presided over by Judge McGinnis, who had recently been appointed to the territory from Ohio, where the main problem of water was how to get rid of it. These cases were entirely outside the sphere of his previous law practice,

³⁸ Letter from Edwin S. Nettleton to Elwood Mead, March 6, 1888, Records of the Wyoming State Engineer, record group 37, General Records/Elwood Mead, correspondence series, box 1, AS 1620, Wyoming State Archives, Cheyenne. Mr. Campbell, to whom Nettleton referred, is believed to have been J.W. Campbell, who was Nettleton's engineering firm partner. The letter was written on the firm's letterhead, which reads: "Nettleton and Campbell, Civil, Hydraulic and Consulting Engineers, Irrigation A Specialty, Barclay Block, Larimer St."

³⁹ Elwood Mead, *Second Annual Report of the Territorial Engineer to the Governor of Wyoming for the Year 1889* (Cheyenne: Bristol and Knabe Printing Company, 1890), pp. 1-27.

and he did not seem to realize the significance of his decisions. The rights to water, included in his decrees, would fix the value of farms and the security of the lives of the unnumbered generations in the future who cultivated these farms. Instead of attempting to determine what were the conditions on the streams where rights were being decreed, the judge dealt only with the claimants who appeared before him, and ignored those who did not appear. Hence, on Bear Creek, the decree included only 6 rights out of the 42 actual users of water on the stream, and instead of fixing the place of diversion and the area of land irrigated, the language of the decree made these water rights personal grants to the individual claimants, regardless of any location or use.

The first request received by the territorial engineer to exercise his authority in dividing the waters of a stream, was made early in 1888 by the City of Cheyenne, which under the McGinnis decree had the first right to the waters of Crow Creek. This request asked that the 75 ditches above the city be so regulated as to allow water so come to meet the needs of the City. On consulting the decree it was found that not one of these seventy-five ditches were named or located. Instead, the decree made grants of water to individuals who might live in Cheyenne, on their farm, or in Hong Kong. I consulted the judge and asked him how I was to determine what headgates to close or partly close in order that the City's requirements might be met. He said I would have to look up the individuals to whom the water had been granted and ascertain from them where they proposed to use the water allocated in the decree. I also pointed out that the decree showed no relation between the actual use of water and the amount used. For example, Anon Simmons, with 28 acres of land, was granted a right to over 11 cubic feet of water a second, while the next appropriation, with 300 acres of land, was only given 5 cubic feet of water a second. In other words, the first appropriation was given twenty times as much water for an acre of land as the second. I told the judge I knew something about the opinions and prejudices of irrigators and that if I attempted to give one irrigator twenty times as much water for the same acres as I gave another, it was probable that I would be lynched, and his reply was that if I did not carry out the decree he would see that I was jailed!

Realizing the hopelessness of attempting to begin public administration of streams on this basis, I

appealed to the Attorney General, Hugh Donzelman, pointing out the omissions in the decree and its departure from what was generally recognized as the principle which should govern appropriations, and asking for his advice. In his letter, which was published in the first report of the territorial engineer, he stated the decree did not conform to the law, did not give the information which I must have to prepare instructions for the water commissioner, and said if the settlers would agree among themselves on a list of priorities and appropriations, and ask me to act in accordance with it, I could go ahead.

I secured from the court record the testimony given in the trial and from it made up a list of ditches, priorities and amounts of water, based on the acres irrigated, and this table governed the action of the water commissioner as long as I remained at the head of the state water system.

While living in Colorado I had become familiar with the discrepancies in court decrees where the rights to water on a stream had been determined in proceedings similar to those of ordinary courts of law, and the experience in Wyoming led to the conviction that the first step in a determination of rights should be a thorough physical examination of the stream, the measurement of the water it carried, the location and measurement of the ditches which diverted the water, determination of the area of land actually irrigated, and the area of land that could be irrigated from the works already built or in process of construction. In other words, instead of leaving the determination of water rights to be fought out by the different water users, either on the banks of ditches or in the court, there ought to be an impartial and competent examination by public authorities. Furthermore, any system, to be efficient, must deal with watersheds. It must bring together in some coordinated record not alone the diversions on each small tributary of a stream, but on the main stream and all the waters which contributed to its flow.

In my contact with county officials, in examining the claims to water rights, and with the irrigators in their homes and on the banks of their ditches, I became the voice of John crying in the wilderness for a more adequate public control, and for a better understanding of the principles which should govern the determination of water rights and the limitations on those rights.

Proposing a Better System to Wyoming's Constitutional Convention

The basic precepts of Wyoming's water law are embedded in the Wyoming State Constitution. Wyoming's Article VIII, involving water and irrigation, was revolutionary in its approach to water control, use, and allocation. The constitution set up a complete system of water allocation, unique among states to that time. It also established the principle of state ownership of the resource.⁴⁰ As with nearly all good ideas, the elements of this system were first written down in a letter – in this instance in a letter Elwood Mead addressed to the Wyoming Constitutional Convention's Committee on Science and Irrigation. That letter was reprinted in full in the following article contained in the Friday, September 13, 1889, issue of the *Cheyenne Daily-Leader*:

AN IMPORTANT LETTER

The letter of Territorial Engineer Mead presented to the convention yesterday is well worthy of reproduction. It is also well worthy of study as indicating the vast importance of the subject in this territory. The letter is as follows:

I have the honor to submit some statements as to the principles which should control the constitutional provisions affecting irrigation.

First. Water is a public commodity which should only be utilized and segregated by individuals in order that the public may be benefited thereby. To accomplish this it should be under the control of the state.

Second. In providing for its appropriation and use by private parties, regard should be had for the natural conditions and resources of the state. These conditions differ widely in different localities, and laws which are satisfactory in California or Arizona may prove a failure in Wyoming because unsuited to the physical peculiarities or requirements of this region. We should study our own needs and possibilities, as so frame our irrigation code as to best secure the protection and development of the various

interests concerned. To do this original legislation will be required.

Third. The governing physical conditions of irrigation are the amount and the distribution of the water supply, the area and adaptability of the agricultural lands, and the climatic conditions governing the range and value of products. Considering these as a whole, Wyoming occupies an exceptional position. The number of its available streams exceed those of any other arid commonwealth, and with the exceptions found in the northern counties their waters can be diverted throughout their entire length, making it possible to unprofitably and injuriously distribute irrigation works and the water supply over too great a territory, and unless some action is taken to place the location of irrigation works under some intelligent restriction, this will result in a great loss and waste of water and make the future supervision and distribution of the water supply difficult and expensive. Many of our streams from the nature of the source of their supply or the lands through which they pass have little value for agricultural purposes owing to their small and irregular volume of water. It is questionable whether the diversion of their water does not entail more loss and damage on the grazing interest than it benefits agriculture from its use in irrigation. There are four important industrial claimants concerned in the proper distribution of the public water. There are, first, water for household or domestic uses; second, water for the sustenance of live stock, including range cattle, horses, and etc; third, irrigation and fourth, mining and manufacture. All of these interests sustain a vital relation to our future development and prosperity and I believe it a mistake to regard either as of paramount importance. Theoretically considered, water for household use holds the highest rank, but making it a preferred priority jeopardizes the value and security of all other appropriations and has led to such complications and abuses in other states as to endanger the success of the system and threaten the prosperity of all concerned. With us the grazing issues are of unusual value. We have the finest natural pastures to be found in the arid domain. These are supplied with water in many instances by small streams discharging so little water as to have scarcely any value for irrigation uses but which furnish sufficient water for stock and make

⁴⁰ Phil Roberts, "The Wyoming Constitutional Convention and Adoption of Wyoming's Constitution, 1889, and the Aftermath," 2010, University of Wyoming, Department of History, Laramie, Wyoming. Accessed July 9, 2011, at http://uwacadweb.uwyo.edu/ROBERTSHISTORY/readings_in_wyoming_history1.htm.

valuable and available large areas of grazing land that without this water must be abandoned. To make irrigation a preferred priority will seriously in such cases embarrass and injure one of our most stable and valuable resources.

Fourth. The prosperity of our agricultural interests demands that all claims to water should be determined at the least possible expense to the claimants, and at the earliest possible date consistent with an adequate examination of the natural conditions and a thorough investigation of the rights of the various claimants. These investigations and examinations should be conducted by persons possessed of both theoretical and practical knowledge of the subject and of the natural possibilities and requirements of the district concerned, and in such examination, and appropriation based thereon, priority in the beneficial use of water should give the better right regardless of what that use is.

Fifth. In order that our system may be effectively and cheaply administered, it is necessary that its administration should be as simple and direct as is the management of a great railway system. To effect this the department of water supply should be a distinct and responsible branch of the state government. The plan tried here and elsewhere of dividing authority and responsibility in this work among a half dozen branches of state and county government has uniformly proven a failure and will continue to do so.

In California every year increases the complications resulting therefrom. In Colorado a commission is now at work preparing a code to remedy this defect in their previous legislation. It is the source of the outrageous expenses which have been saddled upon the irrigators of this territory and of the difficulties which have beset this office. Instead of burdening our judges with the examination of physical problems wholly foreign to the nature of their profession and of which they have little practical knowledge and experience; instead of cumbering the offices of county clerks with a class of records for which he has no use and which are recorded under such circumstances as to make many of them of little or no value to the parties concerned; and instead of compelling the state engineer to go to a half dozen disconnected sources for his information and

authority there should be a bureau for the recording of all claims and the disseminating of information, whose head shall be the responsible director of the system. By doing this and in connection therewith empowering the court with the authority to review and correct any arbitrary, unjust or illegal action in connection therewith, we will have placed our system on a simple, economical and businesslike basis which will, I believe, greatly enhance our future progress and prosperity.⁴¹

Mead's Recollections of the Letter to the Committee on Science and Irrigation

Within his "Recollections of Irrigation Legislation in Wyoming," Mead summarized the preparation, submittal, and consideration of the "Letter" he had submitted to the Constitutional Convention with the following description:

H. R. Mann, one of the leading citizens of Buffalo, Wyoming, was specially insistent that I should prepare for the Constitutional Convention an argument for such an administrative code of laws, and when the Constitutional Convention met, this idea was very forcibly and clearly presented by C. H. Burritt of Buffalo, who in submitting my statement brought out the fact that in the court decrees already registered, not half of the ditches had been included, and that among those included they were, as a rule, given whatever they claimed, rather than what they needed or were entitled to on any proper basis of use or ability to use.

The proposal which I submitted to the Constitutional Convention was for a special tribunal, which would have practical knowledge of irrigation and water methods, and that its decisions as to water rights would be based first upon measurements of the stream, surveys of the ditches and determination of their capacity, and a surveyed location of the lands irrigated or susceptible of irrigation. I rather feared that this interference with what had heretofore been regarded as the function of the courts, would be opposed by lawyers of the state, as a profession, because water litigation promised to be a very fruitful field of employment, but when the matter was before the Constitutional convention, the leading lawyers in it supported Section VIII, and among those outside, the influential firm of Lacey and VanDevanter

⁴¹ "An Important Letter," *Cheyenne Daily Leader*, September 13, 1889, p. 2.

approved it. Without the endorsement of Willis VanDevanter, now Justice of the (U.S.) Supreme Court, these features of the Constitution would not have obtained the impressive endorsement of 35 votes for and only 2 against.

The state legislature, 1890-91, passed a law for carrying into effect the constitutional provisions on irrigation and water rights, and put into effect the scheme for acquiring rights to water in the future.⁴²

Constitutional Convention Proceedings – and the Two Men Who Championed the Cause

Three men were mainly responsible for drawing up Article VIII of the Wyoming Constitution: Territorial Engineer Elwood Mead and two convention members, James Albert Johnston, Laramie County farmer and engineer, and Charles H. Burritt, Johnson County lawyer. Johnston was Chairman of the Committee on Irrigation and Water Rights.⁴³

“James Albert Johnston was born on a farm near Dayton, Ohio, on December 7, 1840, attended public school for a few years, worked in a wagon factory in Cincinnati and came to Cheyenne in 1867. From there, he journeyed to Denver where he worked on a farm, soon joining a party bound for Texas to drive cattle to Colorado and Wyoming. He took up a homestead twelve miles south of Denver and by 1874 had married Melissa Drummond and had a family of three children. In 1878, he became interested in mining at Leadville, Colorado, and later in the building of large irrigation works which brought him in contact with Edwin S. Nettleton, State Engineer of Colorado. Nettleton recommended Johnston to the Wyoming Development Company and in 1883 he became associated with the company.”⁴⁴

In 1887, Johnston began serving in the territorial legislature. He introduced the bill which established the office of territorial engineer. After serving as superintendent of water division number one he moved to Mexico, returned to Cheyenne, and



James A. Johnston. Courtesy the author.

became affiliated with the Stock Growers National Bank. He eventually moved to Denver and finally to California where he died in 1936.⁴⁵

Charles Henry Burritt was an extraordinarily effective spokesman for the Committee on Irrigation and Water Rights in convention debate. Burritt was born at Manchester Depot, Vermont, on February 15, 1854, and was educated at Brown University, Rhode Island, and the Detroit Law School. At the age of twenty-two, in 1876, he was admitted to practice law in the state of Michigan. When he first came to Wyoming in 1878, he obtained employment with George B. Dunham, a stockman operating on Horse Creek. Early in 1883, he was connected a few months with the law office of Colonel Stephen W. Downey in Laramie. He then moved to Buffalo, where he engaged in regular law practice, and took active part in the affairs of his community, where he served as the first mayor of Buffalo from May

⁴² *Selected Writings of Elwood Mead on Water Administration in Wyoming and the West*, 2000. Compiled by Anne MacKinnon and John Shields. Can be downloaded at <http://seo.state.wy.us/PDF/FinalMeadBooklet.pdf>.

⁴³ T.A. Larson, “Wyoming Statehood,” *Annals of Wyoming*, vol. 37, no. 1 (April 1965): 24. See also T.A. Larson, *History of Wyoming*, second ed., revised (Lincoln and London: University of Nebraska Press, 1978) pp. 253-55.

⁴⁴ “A Memorial to the Members of the Constitutional Convention of Wyoming,” *Annals of Wyoming*, vol. 40, no. 3 (July 1940): 183-84.

⁴⁵ *Ibid.*



Charles H. Burritt. Courtesy the author.

1881 to April 1897.⁴⁶ Burritt served in the House of Representatives during the fourth session of the state legislature (1887).⁴⁷ He had a keen legal mind, and was referred to as “the most active member in the Wyoming Territorial Convention in connection with establishment of the irrigation code and the provisions for irrigation in the Constitution.”⁴⁸

In addition, Burritt served as chairman for two committees: Rules, and Emigration and Agriculture. There was one committee member from each county, and he was selected as chairman of each. Coming from far-off Johnson County, 125 miles from a railroad, this was considered quite a feat and a singular honor. For the benefit of his stock-raising clients at home, he sought to become a member of

the Stock Raising and Stock Laws Committee, and served with distinction. While exceedingly busy with his many duties, he still had time to serve as one of the leaders in advocating woman suffrage.⁴⁹

When the Committee on Irrigation and Water Rights’ report first reached the convention floor, Burritt made a claim, unique in the debates, that the report “in some respects . . . is radical and different from anything that any state or territory in the union now has.” Convention delegate Conaway stated that others must have thought when he said *apropos* the claim that all water belongs to the state: “We may be claiming more than we are rightly and legally entitled to.” He added: “I suppose it is true . . . that we cannot lose anything by claiming too much.”⁵⁰

Burritt read from Mead’s report to illustrate some of the evils of the territorial irrigation system. Mead had documented that the district court in Laramie County had allowed the Carey Horse Creek Ditch No. 8 to take twenty cubic feet of water for 190 acres when one cubic foot was adequate for fifty or sixty acres.⁵¹

T.A. Larson’s account of the Constitutional Convention debates about the water articles states there was much discussion about whether “appropriation” meant diverting water from a stream, or if it should be defined as the point of beginning construction of physical works to divert the water or the application of water to land. President Brown in support of Burritt argued that the definition of appropriation should be left to the courts.⁵²

President Melvin Brown also thought the right acquired by appropriation should be qualified or limited in some way. Henry S. Elliott, who like Burritt was a lawyer then residing in Buffalo,⁵³ agreed and moved an amendment that after “Priority of appropriation shall give the better right,” should

⁴⁶ Per information displayed on the city of Buffalo’s website at <http://www.buffaloz.com/mayor.shtml>, accessed June 21, 2012. This was verified by personnel communication with Deann Meyer, who works in the Office of the Mayor in Buffalo, Wyoming, on June 21, 2012. The photograph of Charles H. Burritt used herein was provided by Meyer on behalf of the city of Buffalo and its use is gratefully acknowledged.

⁴⁷ Virginia Cole Trenholm, ed. *Wyoming Blue Book*, vol. II (Cheyenne: Wyoming State Archives and Historical Department, 1974), pp. 266-67.

⁴⁸ “A Memorial to the Members of the Constitutional Convention of Wyoming,” pp. 176-77.

⁴⁹ Burton S. Hill, “Buffalo—Ancient Cowtown, A Wyoming Saga,” *Annals of Wyoming*, vol. 35, no. 2 (October 1963): 135-36.

⁵⁰ Larson, “Wyoming Statehood,” p. 24. See also Larson, *History of Wyoming*, p. 255.

⁵¹ Larson, “Wyoming Statehood,” p. 24.

⁵² *Ibid.*

⁵³ “A Memorial to the Members of the Constitutional Convention of Wyoming,” 176-77.

be added “but shall not be conclusive in determining the better right.” His amendment lost, 13-19.⁵⁴

When a further assault was made on the right of appropriation, Burritt pled eloquently for its retention. President Brown, who was not convinced, insisted that it was contradictory to say first that the state owns the water and then that priority of appropriation shall give the better right. Brown on the final vote could get only one supporter, George C. Smith of Carbon County. Hence the final vote was 35-2 in favor of the Article VIII provisions.⁵⁵ In the November 5 general election, the Constitution was approved by a vote of 6,272 to 1,923.⁵⁶

Recollections of the Constitutional Convention By a Delegate

The *Annals of Wyoming* provides considerable information concerning the work of the Constitutional Convention; however recollections and information specific to the inclusion of the foundations of Wyoming’s water law in the state constitution in the state’s history journal (as reviewed above) are relatively limited. William E. Chaplin, however, provided quite high praise of this work when he wrote the following:

If I were called upon to choose the article of the Constitution I believe of the highest value, I would name Article VIII, Irrigation and Water Rights. The Chairman of that Committee was James A. Johnston of Laramie County, an engineer of ability. Not long before the effort for statehood there had been imported into the Territory a young civil engineer to take the position of Territorial Engineer by the name of Elwood Mead. He owed the obtaining of this position to Mr. Johnston, who had known him favorably as a professor in the Agricultural College at Fort Collins. . . . Mead and Johnston drew the article, only five sections in length, and then looked over the roll of the Convention for a man whom they considered capable of making an adequate argument in its favor. They decided upon Delegate Charles H. Burritt of Johnson County. Burritt was a young

lawyer who had much experience in the adjudication of water rights. He entered into the work with a zest and made an argument for the measure as presented that was unanswerable. Many objections were raised by attorneys, but they were all answered satisfactorily. Under the terms of the proposed constitutional provision, Wyoming was winning virgin ground. Riparian ownership of water was thrown in the discard, the state was given ownership of all waters within its borders. The citizen could only secure the right to use the water and to obtain that right he must put it to beneficial uses and continue to use it. He is not permitted to use the water of a stream if the use interferes with a prior appropriator below or above. In other words, the first man to take out a permit has the better right. Another change from the then general practice was the division of the state into four water districts and the appointment of district commissioners. The four district commissioners, together with the State Engineer, were to constitute a Board of Control, to which appeals could be made from the District Commissioners. This, some believed, would provide too much interference with the functions of the Courts. However, all opposition was overcome and the article went into the Constitution with slight amendment. It has worked quite well for a period of fifty years. Wyoming has the distinguished honor of having pioneered in irrigation and water right law.⁵⁷

William Hammond Hall Provides His Reaction to the Constitutional Provisions

On September 30, 1889, once the Constitutional Convention had adopted the committee resolutions that became the water articles, Mead wrote to several professional colleagues to share with them a copy of the convention’s handiwork concerning water and water rights. One of those favored with Mead’s letter and enclosure was William Hammond Hall, the former State Engineer of the State of California, who was then employed as the Supervising Civil Engineer of the United States Geological Survey’s Irrigation Branch, headquartered in San Francisco, California. Hall had gained a considerable reputation as an

⁵⁴ Larson, “Wyoming Statehood,” p. 24. See also Larson, *History of Wyoming*, p. 255.

⁵⁵ Larson, “Wyoming Statehood,” p. 24.

⁵⁶ Virginia Cole Trenholm, ed., vol. I, *Wyoming Blue Book* (Cheyenne: Wyoming State Archives and Historical Department, 1974), p. 664.

⁵⁷ William E. Chaplin, “Reminiscences of a Member of the Constitutional Convention,” *Annals of Wyoming*, vol. 40, no. 3 (July 1940): 191-92.

expert on water rights by virtue of having completed the first part of his “Report on Irrigation and the Irrigation Question” to the governor of California, George Stoneman, in 1885 while serving as the California State Engineer. That report had been widely distributed and studied by water engineers across the West, including Elwood Mead.

Hammond acknowledged “[y]ours of the 30th of September is just at hand together with the enclosed constitutional resolution,” relative to “Water Rights” in his October 4, 1889, letter to Mead, but stated he did not have time just then to send his views on the subject of “. . . your Irrigation Water Rights Sections, in the Wyoming Constitution.” Hammond did,

...note one point for criticism, however. I do not believe in the distribution or acquirement of water rights by appropriation. It is a word which should never have been admitted into Water Rights Legislation, and a custom which should never have been sanctioned in Water Rights practice. To ‘appropriate’, pre-supposes that the thing taken is without ownership, like a wild beast of the forest or of the plain; and it has been the curse of irrigation from time immemorial, that water has been treated like it was a beast – to be shot down and dragged out by the first brute that came in sight of it. The principle is wrong, and I am very sorry to see that your State, in common with some others of the new ones, purposes admitting it into your Constitutional legislation.

I am glad to see that you purpose (sic) setting up a “Board of Control”. This is a step in the right direction, and that you make the State Engineering office a permanent one.

The waters of your proposed State, should be subject to utilization, or useful employment, upon application to your “Board of Control” for permits. This is the correct principle.⁵⁸

The Results of Their Handiwork Have Served the

State of Wyoming Well

Wyoming did not originate the idea of recognizing water rights according to priority of appropriation for beneficial use. California and Colorado had pioneered in breaking with the English common law of waters, which gave all who had land along a stream the rights to a “full and undiminished flow.” Earlier still, appropriations had been permitted under Mexican sovereignty. Wyoming’s major contribution lay in adopting a complete system for state control of water. Wyoming’s achievement was such that William E. Smythe wrote in 1900 in his *Conquest of Arid America*:

It [Wyoming] is recognized as the law-giver of the arid region. It is the State which has contributed most to the working out of the legal institutions on which our great future civilization will rest throughout western America. In this respect its position of leadership is alike unapproached and unchallenged.⁵⁹

Smythe’s high praise for Wyoming’s part in water law needs qualification. Wyoming built upon the system initiated in Colorado as shown in this article, hence it is more correct to state that both showed leadership in working out the procedures which have been copied by other Western states.⁶⁰

As Mead wrote in his seminal 1903 book, *Irrigation Institutions*:

In some of its details the Wyoming irrigation code needs modification, to adapt it to changing conditions, and because it was in the first place a compromise between the advanced views of reformers and the conservatism of those who wished to pattern after the older irrigation states. On the whole, however, the system justifies the commendation bestowed upon it by William E. Smythe in the *Conquest of Arid America*:

These laws and the administrative system have not only given peace and prosperity to the irrigation

⁵⁸ Letter, William Hammond Hall to Elwood Mead, October 4, 1889, record group 037, box 1, AS1620, General Records/Elwood Mead, Federal Government Offices – Incoming Correspondence folder, Wyoming State Archives.

⁵⁹ William E. Smythe, *Conquest of Arid America* (New York and London: Harper and Brothers Publishers, 1900), p. 214.

⁶⁰ Larson, “Wyoming Statehood,” p. 24. In this *Annals of Wyoming* article, Larson also noted in a footnote therein: “Cf. particularly Wells A. Hutchins, *Selected Problems in the Law of Water Rights in the West* (Washington, 1942), pp. 64-109.”

industry of Wyoming. . . . Other states have copied them extensively, and there can be no question that in the end they will become common to the entire arid region. Idaho, Nebraska, South Dakota, Kansas and Washington have enacted portions of the Wyoming laws. In all the other States, with the single exception of California, the example of Wyoming has produced results, and there is hope that even California will learn in time that irrigation and litigation are not necessarily synonymous terms.

Wyoming's place as the lawgiver of the arid region is due neither to geographical location nor to superior natural resources; certainly it is not due to large population. It owes its commanding position solely to the character and ability of a few public men, who happen to have found in this line of work their best opportunity for usefulness. As a result of this fortunate circumstance, Wyoming occupies among western States, at the beginning of the twentieth century, a relation not unlike that which Massachusetts and Virginia held to the States of the Atlantic Seaboard at the beginning of the nineteenth century.⁶¹

Little could Elwood Mead have dreamed, when he advised the Constitutional Convention of Wyoming, that he would have such great influence on the irrigation institutions of the western states.⁶² The University of Michigan, in 1925, in bestowing upon Dr. Mead an honorary degree of doctor of laws, included in their statement: "He brought order out of confusion and opened a way where none had been."⁶³

Conclusion

Elwood Mead's recognition of the critical importance of water to the current and future welfare of Wyoming's people at the beginning of our state's settlement led him to take extraordinary steps to assure that the basic precepts of Wyoming's water law were embedded in the Wyoming State Constitution. Mead's strongly held beliefs remain relevant today. Article VIII of the Wyoming State Constitution, addressing water and irrigation, was revolutionary in its approach to water control, use, and allocation. Recognition that Wyoming's Constitution established the principle of state ownership of all of the water resource on, under, and over our state's boundaries and further established a complete system of water allocation, unique among states to that time and fundamentally unchanged to this date, can continue to be a source of considerable pride to all citizens of Wyoming.

John W. Shields is Interstate Streams Engineer for the Wyoming State Engineer, who is charged by the Wyoming Constitution with the responsibility of supervising the general distribution of the waters of the state of Wyoming. Shields is the state engineer's lead staff member on Colorado River Basin interstate water issues and serves as Wyoming's representative on numerous multi-state/agency work groups. He earned Bachelors and Masters degrees in agricultural engineering from the University of Wyoming. He has had articles previously published in Annals of Wyoming, including "Perry W. Jenkins: 'Father of Sublette County.'"

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⁶¹ Elwood Mead, *Irrigation Institutions* (London: The MacMillan Company, 1903), p. 274.

⁶² Dunbar, *Forging New Rights*, p. 132.

⁶³ "Dr. Elwood Mead, Commissioner of Reclamation, Dies," *The Reclamation Era*, vol. 26, no. 2 (February 1936): 33.