

## Chapter II

# *Store the Floods*

The modern American conservation movement grew out of the firsthand experience of federal administrators and political leaders with problems of Western economic growth, and more precisely with Western water development. Such men as Frederick H. Newell of the United States Geological Survey, George H. Maxwell, a California water law specialist, Representative Francis G. Newlands of Nevada, and President Theodore Roosevelt joined to promote a federal irrigation program.<sup>1</sup> Their experience in this campaign, and their later experiences—as they constructed and operated irrigation works—with problems of water rights, speculation, and siltation gave rise to extensive ideas about water conservation. These views gradually became crystallized into an over-all approach and by 1908 emerged as a concept of multiple-purpose river development. The movement to construct reservoirs to conserve spring flood waters for use later in the dry season gave rise both to the term “conservation” and to the concept of planned and efficient progress which lay at the heart of the conservation idea.<sup>2</sup>

<sup>1</sup> There is no comprehensive history of irrigation in the United States. The best general accounts are George Wharton James, *Reclaiming the Arid West* (New York, 1917); Elwood Mead, *Irrigation Institutions* (New York, 1903); Frederick Haynes Newell, *Irrigation in the United States* (New York, 1906); William E. Smythe, *The Conquest of Arid America* (New York, 1905); and Ray P. Teele, *Irrigation in the United States* (New York, 1915).

<sup>2</sup> The term conservation is used in this sense, for example, in United States Department of the Interior, *10th Annual Report of the United States Geological Survey, 1889-90*, part II, *Irrigation*, 22-23; in *Bradstreet's*, August 31, 1902 (FN #16, Clippings, v. 3); and in *The Forester* (Nov. 1898), 4, 223.

*New Horizons in Water Use*

In their task of gathering technical data about stream flow, hydrographers of the United States Geological Survey evolved the idea that water is a single resource of many potential uses.<sup>3</sup> This simple reorientation in outlook opened up new vistas of water development. It became the fundamental idea in water conservation.

In 1888 Congress authorized the first water resources investigation of the arid lands, a measure which Major John Wesley Powell, Chief of the Survey, had encouraged for over a decade.<sup>4</sup> Under this law the hydrographic branch of the Survey set out to measure water supplies, locate reservoirs and canals, and map areas susceptible of irrigation. It soon turned to studies of the movement of ground water and sedimentation, and before long was called upon to expand its work to the East.<sup>5</sup> On the basis of this information federal officials planned Western irrigation works. Corporations interested in irrigation, water power, and domestic water supply also drew upon the new data.<sup>6</sup> These private groups, in fact, encouraged the ever-

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Others used the term in connection with "the preservation and conservation of the range" and the "conservation" of water supplies in forested areas. See, for example, *Proceedings, American National Livestock Association, 1899*, 176, and *Forestry and Irrigation* (Apr. 1907), 13, 204. These uses, however, were not widespread until 1907.

<sup>3</sup> A brief summary of the history of the Geological Survey is in Institute for Government Research, *Service Monographs of the United States Government No. 1, The U. S. Geological Survey* (New York, 1918). The annual reports of the Survey, beginning in 1890, provide a more detailed account.

<sup>4</sup> Powell's views are in 45th Congress, 2nd Session, *House Executive Document 73*, 25-45.

<sup>5</sup> This work can be followed in detail in the successive annual reports of the U. S. Geological Survey, beginning in 1890. A good account of water resources investigation in the Appalachian Mountains is in Frederick H. Newell, "Forests and Water-Power," address before the Cotton Manufacturers' Association, printed in the *Manufacturers' Record*, May 12, 1914 (FN #17, Clippings, v. 4).

<sup>6</sup> For examples, see *The Forester* (July 1904), 10, 292-294, and the *Troy Times*, May 11, 1907 (FN #16, Clippings, v. 6).

widening activities of the Survey's hydrographic branch and supported its campaign for larger congressional appropriations.<sup>7</sup>

A young engineer, Frederick Haynes Newell, took charge of this work. Born in Bradford, Pennsylvania, in 1862, Newell graduated from the Massachusetts Institute of Technology in 1885 as a mining engineer. Three years later he became the assistant hydraulic engineer of the United States Geological Survey, and the first man assigned to carry out the Act of 1888. In 1890 he was promoted to chief hydrographer. From the very start of his official career, Newell took an active interest in the scientific work of the federal government and especially in promoting the dissemination of scientific information. He served, for example, as voluntary secretary of the National Geographic Society in 1892-93 and again in 1897-99. He also promoted a federal water development program, at first for irrigation, but later for power, navigation, and flood control as well. During the Roosevelt administration Newell became one of the architects of water policy and of the entire conservation movement.

The Geological Survey, among federal agencies, did not pioneer in water resource studies; yet it did bring forth a wider concept of water use. In 1824 Congress instructed the Army Corps of Engineers to improve the navigable streams, and since that date the Corps had carried out frequent hydrographic investigations such as the extensive Humphreys and Abbott survey of the Mississippi River completed in 1866.<sup>8</sup> Confined by Congress to the improvement of navigation, however, the Corps limited its hydrographic work to measurements of low water flow. It placed upon private landowners the responsibility for collecting data about drainage and floods, even though such matters, in the same watershed, intimately affected navigation. Until the advent of the Geological Survey these wider uses of water remained uninvestigated. As the California Commission on Public Works remarked in 1895, "The Army Engineers . . .

<sup>7</sup> See, for example, George C. Warner to Brigadier-General Alexander Mackenzie, March 31, 1908 (RG #77, #63743).

<sup>8</sup> A convenient summary of the Corps' water activities is in W. Stull Holt, *The Office of the Chief of Engineers of the Army; its non-military history, activities and organization* (Baltimore, 1923).

failed to appreciate the importance of the study of the water resources of the country. . . . It was left to the United States Geological Survey, through its Hydrographic . . . Branch, to collect the much-needed information."<sup>9</sup>

The Corps of Engineers also held a narrow view of water use and water development. Viewing rivers primarily in terms of transportation, the Corps confined its congressional reports to the effect of new projects on navigation.<sup>10</sup> It referred to water power, irrigation, and drainage as secondary to navigation; it did not propose studies or plans for the development of all possible uses of water. The Corps of Engineers, commented Mr. Carl Grunsky, a leader in the civil engineering profession, "has never looked upon the related problems in the broad progressive way that led the U. S. Geological Survey into a study of stream flow."<sup>11</sup> At the same time, the Corps regarded the Geological Survey as a competitive administrative agency and sought to protect its own role in water development by resisting coordination of navigation with any other water use.

The scientists and engineers of the Geological Survey approached water development from a fresh point of view, unhampered by limited interests or institutional loyalties. They investigated flood water as part of a cycle of precipitation, evaporation, percolation, run-off, and stream flow, rather than as simple quantities to be diverted or as instruments of navigation. They were as concerned with the sediment content and mineral quality of water as with its

<sup>9</sup> *Report of Commission of Public Works to the Governor of California, 1895, 138*, as quoted by Carl E. Grunsky in C. E. Grunsky, H. M. Chittenden, and H. F. Labelle, "The Flood of March, 1907, in the Sacramento and San Joaquin River Basins, California," *Proceedings, American Society of Civil Engineers* (Apr. 1908), 34, 368.

<sup>10</sup> *Ibid.* "Without data relating to the river in all its stages," Grunsky also commented, "the U. S. Engineer Corps will be but poorly equipped to combat or acquiesce in the recommendations of engineers studying drainage problems."

<sup>11</sup> Carl E. Grunsky, "Presidential Address before the San Francisco Association of members of the American Society of Civil Engineers, February 16, 1912," MSS in FGN, *Waterways—River Regulation, Correspondence, 1912, 1*.

physical movement.<sup>12</sup> This approach gave rise to a broader view of river planning. In federal programs, the Survey argued, all possible uses of water should be considered so that rivers could produce the greatest possible benefit for man. Multiple-purpose river-basin development in later years arose directly from the experiences and ideas of these new hydrographers in the Geological Survey.

### *The Federal Government Undertakes Irrigation*

While Newell and his field force carried on their hydrographic studies, Western leaders undertook a search for capital for reservoir construction which was to bring the federal government directly into the task of water development. After the irrigation boom-and-bust of 1887-93, private investors turned away from the West to seek more lucrative opportunities. The West, in turn, began to look to the federal government for aid. The Carey Act of 1894, passed in response to this demand, sought to solve the problem by granting a million acres of land to each Western state to be used to finance irrigation. This program produced few projects, so that by the late 1890's the West, through the National Irrigation Congress, demanded a new program.<sup>13</sup> The Act of 1888, which initiated hydrographic studies, had anticipated direct federal financing, and members of the Geological Survey, especially Frederick H. Newell, strongly backed the proposal.<sup>14</sup> Toward the end of the nineties these federal officials joined with Western irrigators to promote a program of federal investment in irrigation.

George H. Maxwell, a young California lawyer, spearheaded this campaign. A native of Sonoma, California, Maxwell became a court stenographer, developed an interest in irrigation, studied law, was admitted to the bar in 1882, and became a specialist in California

<sup>12</sup> An excellent expression of this point of view is in WJ McGee, "Water as a Resource," in "Conservation of Natural Resources," *Annals of the American Academy of Political and Social Science* (May 1909), 33, 37-50.

<sup>13</sup> By 1910 seven states had developed 1,089,677 acres under the terms of the Carey Act; 742,618 of this total were in Idaho. See Teele, *Irrigation*, 67.

<sup>14</sup> Newell wrote *Irrigation in the United States* (New York, 1902), primarily to further the cause.

water law. In the late 1890's he became convinced that irrigation could solve national social problems by decentralizing population from urban centers back to the land. In 1907, for example, he formed the Homecroft Society to popularize homesteads for urban workers on the fringes of industrial centers. He also became the major irrigation propagandist in the country. He led the educational campaign for federal financing, and, having achieved this goal, vigorously entered the fight for a comprehensive federal program for multiple-purpose river development. A tireless and devoted worker who secured little financial reward for his efforts, Maxwell was impelled by the sheer conviction that homes on the land would save the country from a great peril.<sup>15</sup>

In 1896 Maxwell led the advocates of federal financing to victory in the annual convention of the National Irrigation Congress, when they persuaded that organization to back their proposal.<sup>16</sup> It was more difficult for him to arouse the enthusiasm of the rest of the nation for the plan. Early in 1898 he set out to gain the backing of the nation's commercial and industrial interests by convincing them that more irrigation would increase Western farm population and enlarge markets for Eastern business.<sup>17</sup> Responding to these pleas with enthusiasm, the National Board of Trade, the National Business Men's League and the National Association of Manufacturers passed resolutions at their annual conventions in 1898 in support of federal aid to irrigation, and continued to do so each year until the National Reclamation bill became law.<sup>18</sup> In 1899 Maxwell organized the National Irrigation Association, located at Chicago; from here he disseminated literature to newspapers and to the general public and published a monthly periodical, *Maxwell's Talisman*.<sup>19</sup> Together with the annual resolutions of the National

<sup>15</sup> An unpublished memoir of Maxwell is in the files of the National Reclamation Association in Washington, D.C.

<sup>16</sup> William E. Smythe, *The Conquest of Arid America* (2nd ed., New York, 1905), 272-273.

<sup>17</sup> *Ibid.*, 273.

<sup>18</sup> *The Forester* (Nov. 1900), 6, 273, for example.

<sup>19</sup> *Maxwell's Talisman*, published from 1902 through 1908, and again in 1912 and 1913 contains a running account of Maxwell's activities and point of view.

Irrigation Congress, this campaign aroused sufficient public sentiment to persuade both major parties in 1900 to adopt platform planks which called for federal construction of irrigation works.

While Maxwell conducted his educational campaign, several Westerners promoted their cause in Congress. Representative Francis G. Newlands of Nevada offered the specific proposal which Congress accepted. Newlands had long taken an interest in irrigation. Although not a native-born Westerner—he was born in Mississippi in 1848—he went to California to practice law in 1870, soon after graduating from Yale and Columbia. When his father-in-law, William Sharon, wealthy silvermine owner and Senator from Nevada, died in 1889, Newlands moved to Nevada to manage the estate; from that time on he became deeply involved in the state's economic and political affairs. In 1892 he was elected to Congress, where he served in the House until 1903, and then in the Senate until his death in 1919. Here he played a leading role in the fight for federal irrigation and for over a decade labored unsuccessfully to persuade Congress to adopt a multiple-purpose river development program for the entire nation.<sup>20</sup>

Convinced that irrigation farming would provide the only remedy for Nevada's declining population, Newlands plunged into the task of promoting that cause soon after he moved to the state.<sup>21</sup> At his own expense he investigated possible reservoir sites on Nevada rivers, and presented his findings to the public in a pamphlet published in 1891.<sup>22</sup> Fearing that speculators might acquire these sites, he purchased several and offered to sell them to any water users' association for their original price plus interest charges.<sup>23</sup> Newlands played a leading role in the first National Irrigation Congress in 1891. During the mid-1890's he concentrated on the silver question, as a leading advocate of bimetallism; but as the West once more

<sup>20</sup> The best account of the public life of Francis G. Newlands is A. B. Darling (ed.), *The Public Papers of Francis G. Newlands* (2 vols., 1932).

<sup>21</sup> *Proceedings, National Irrigation Congress, 1900*, 114-115.

<sup>22</sup> Francis G. Newlands, "An Address to the People of Nevada on Water Storage and Irrigation" (Reno, 1891) (FGN, Irrigation, 1891-1900).

<sup>23</sup> Newlands to the Secretary of the Interior, June 16, 1904 (FGN, Scrapbook #13).

turned to irrigation problems toward the end of the decade, so did he.

In 1901 Newlands proposed that the federal government finance irrigation through a Reclamation Fund composed of proceeds from the sale of Western public lands.<sup>24</sup> Thus, the West would pay for its own development. The Secretary of the Interior, he advocated, should have complete discretion in selecting projects for construction and in apportioning funds to each. The Nevada Representative hoped to forestall any possibility that disagreements among Western congressmen over the location of projects might retard the entire program. Congressional control of annual appropriations, he argued, would produce the same inefficiency, confusion, and delay prevalent in rivers and harbors work. Newlands hoped that expert knowledge and planning, rather than logrolling, would determine the course of federal irrigation construction.<sup>25</sup> This provision for considerable executive discretion in resource development and management became a central feature of the later multiple-purpose program and of the entire conservation movement.

Representative Newlands added two other important items to his proposals. Family, rather than corporation farmers, he argued, should benefit from federal irrigation. No individual should receive water rights for more than eighty acres of land from a federal project. On the other hand, he contended, the Secretary of the Interior should prevent speculation by having the authority to withdraw from all forms of entry land which might be included in the program.<sup>26</sup> These proposals arose, not from Newlands' democratic political convictions, but from his view that a growing farm population provided the best hope for the economic progress of Nevada

<sup>24</sup> See "Bartine MSS" in the Newlands MSS, Irrigation, History of National, 2. In the later scramble among politicians to receive credit for the Newlands Act, there was much confusion as to who first had proposed the Reclamation Fund. Most concerned denied any knowledge of its origin. For example, see *Albuquerque Daily Citizen*, July 19, 1904 (FGN, Scrapbook #16). The earliest mention of the Fund that I have found, however, is in the bill introduced by Newlands, Jan. 16, 1901, a copy of which is in Smythe, *Conquest*, 342-344.

<sup>25</sup> 60th Congress, 1st Session, *Congressional Record*, 395.

<sup>26</sup> Smythe, *Conquest*, 343.



and the entire Mountain West. A farm of eighty acres sufficed for irrigation agriculture. The more such homesteads the government could carve out of its projects, the greater the benefit for the West.<sup>27</sup> Moreover, Newlands intended that the anti-speculation proposal would protect the program not only from unscrupulous land companies but also from the speculative predispositions of the settlers themselves which he personally had faced in his Nevada transactions.

These views did not please many who, although desiring the aid of the federal government, feared its restrictions. Most Western congressmen, for example, demanded a larger limited acreage. Newlands complied by raising the maximum to 160 acres, the figure which Congress finally approved. Westerners also opposed the plan to withdraw irrigable lands from all forms of entry. Once before, under the Act of 1888, similar withdrawals had aroused sufficient antagonism to force their restoration to entry. The very word "withdrawal" aroused Western farmers to a fighting pitch. Heretofore they had faced withdrawals for railroad construction, withdrawals for forest reservations, and withdrawals for irrigation, and they had fought, often successfully, to restore these lands to the public domain. The West now hesitated to grant the Secretary of the Interior power to suspend entry even temporarily, for fear that the suspensions might become permanent.<sup>28</sup> Actual development of withdrawn lands might not occur until the far-distant future. Newlands compromised on this point, too; the final Act provided that areas in proposed irrigation projects be withdrawn from all private entry except under the homestead laws.

The Newlands proposal met stiff opposition from Eastern Republicans as well. Federal aid to irrigation, they argued, would create unfair Western competition with Eastern farmers.<sup>29</sup> The East melted considerably when Senator Thomas Carter of Montana

<sup>27</sup> *Proceedings, National Irrigation Congress, 1900*, 114-115.

<sup>28</sup> Newlands discussed these problems in a long letter to William F. Herrin, Feb. 5, 1905 (FGN, Letters).

<sup>29</sup> A summary of petitions from the East to Congress both for and against the measure is in *Forestry and Irrigation* (Feb. 1902), 8, 50-51, 70-71, 77; (Mar. 1902), 8, 134-136. A brief account of the arguments on both sides is in E. Louise Peffer, *The Closing of the Public Domain* (Stanford, 1951), 36-38.

counterattacked in the spring of 1901 by filibustering to death the Rivers and Harbors bill with its many projects close to the hearts of Eastern congressmen. The prodding of a new chief executive, enthusiastic about Western irrigation, also helped persuade the Republicans to yield. President McKinley had refused to push the measure in the face of Republican opposition, but Theodore Roosevelt eagerly championed the cause. Roosevelt could not increase Republican votes for the Newlands measure, but he did persuade the party leaders to permit the House to consider it, and it passed on June 17, 1902.<sup>30</sup> Following the Newlands plan, it established the Reclamation Fund and gave the Secretary of the Interior authority to select and construct projects.

Roosevelt contributed even more to the irrigation movement by publicly identifying himself with it. Having lived in the semi-arid West, he had first-hand knowledge of its vital need for water. During his Western campaign tour in 1900 he reiterated the Republican platform pledge and emphasized his great personal interest in a federal irrigation program. Shortly after the campaign, in a letter to the National Irrigation Congress he repeated his support of the cause.<sup>31</sup> Both Gifford Pinchot, Chief of the Forestry Bureau, and Frederick H. Newell influenced Roosevelt's views on the subject even before the election of 1900. These two men were overjoyed at the opportunity which Roosevelt's advance to the presidency in 1901 offered them to carry out their plans. The new president invited them to make suggestions for his first message to Congress. Following their advice Roosevelt made clear to the lawmakers that he personally supported the irrigation measure and disagreed strongly with the hostile Republican leaders.<sup>32</sup>

<sup>30</sup> Roosevelt, without success, appealed to Speaker Cannon to withhold opposition; see Roosevelt to Cannon, June 13, 1902 (TR). See also William E. Smythe, "Democracy and the West, the Newlands Irrigation Act," (FGN, *Irrigation, History of National*, 2), 20-24.

<sup>31</sup> Roosevelt to the 9th Irrigation Congress, Nov. 16, 1900, *Proceedings, National Irrigation Congress, 1900*, 104-108.

<sup>32</sup> Theodore Roosevelt, *Theodore Roosevelt, An Autobiography* (New York, 1913), 394-396; Gifford Pinchot, *Breaking New Ground* (New York, 1947), 189-190.

The new president's attitude toward the Newlands measure was not an isolated affair. He took a keen interest in all conservation matters and identified the entire movement as "my policy." This interest in conservation stemmed, in part, from Roosevelt's personal love for the out-of-doors, and, in part, from his admiration for organization and efficiency in economic affairs. In early life he became an avid big-game hunter, and helped to found an organization of like-minded people—the Boone and Crockett Club. As governor of New York in 1899 and 1900 he took a special interest in the Adirondacks forest reserve, in fish and game affairs, and in streamlining the state's resource administration. As president, Roosevelt originated few of the new conservation ideas, but he did give full rein to those officials in his administration who promoted efficient resource development, and freely lent his personal prestige to their cause.

#### *Conservation Requires an Effective Water Law*

President Roosevelt entrusted the administration of the Newlands Act to the Reclamation Service, a new branch of the Geological Survey, and placed Frederick H. Newell in charge. In 1907 the Service became an independent Bureau directly under the Secretary of the Interior. In 1903 the Secretary approved four projects and the same year the Service began its work by tackling the Roosevelt reservoir on the Salt River in Arizona. In 1905 it completed its first project, the Truckee-Carson ditch in Nevada; and by 1910 some twenty-four others were under way.<sup>33</sup> In carrying out this work those at the forefront of the federal irrigation movement faced a variety of new problems. Their experience with questions such as water rights, speculation, and silt control played a significant role in shaping the larger water development concepts of the Roosevelt Era.

From the day of its inauguration, for example, the Reclamation Service faced a confusing Western water law which greatly hampered its work. In the East, where rainfall was abundant, water

<sup>33</sup> An account of the progress of federal reclamation work is in James, *Reclaiming the Arid West*.

rights created few problems; riparian land owners could legally use water flowing through or by their land. The West, however, an area of slight precipitation where the demand for water far exceeded its supply, required different legal arrangements. Most Western states adopted the doctrine of prior appropriation of water rights. Anyone could establish a prior appropriation by posting notice at the point of diversion and filing with the county clerk a statement of the amount of water claimed. If he continued to use this water beneficially, a prior appropriator retained his title over all later claimants.<sup>34</sup>

This method of determining water rights often led to much confusion. If a prior appropriator found others using his supply, he sued to defend his rights. The court then reviewed the record to determine who had a prior claim. But no one knew how much water was available. Moreover, since the law provided that filings be recorded by counties instead of by watersheds, no one court could determine the total number of water rights claimed on a single stream. Consequently, judges often established rights far in excess of available supply. Invariably appealed to higher courts, litigation became extremely expensive. Moreover, a title established in one case secured the appropriator against only that one claimant. If others later challenged his title, he had to repeat the same costly litigation. Many, in fact, chose to use extralegal means to protect their rights. Such confusion retarded both private and public irrigation development. Private corporations would not risk funds on projects which involved insecure titles, and, before the federal government undertook construction in any state, it also demanded that water use on its projects be protected by more adequate state laws.<sup>35</sup> The Reclamation Service, in fact, detailed one of its officials, Mr. Morris Bien, to deal exclusively with this question. Bien drew up a model water law which the Reclamation Service, with some success, tried to persuade states to adopt.<sup>36</sup>

<sup>34</sup> Mead, *Irrigation Institutions*, 62-87.

<sup>35</sup> *Ibid.*, 62-87.

<sup>36</sup> An excellent account of this problem is William E. Smythe, "The Battle in the States," *Out West* (August 1902), 17, 233-37. Bien described his own work in "Proposed State Code of Water Laws," *Proceedings, National Irriga-*

Western states gradually evolved a more orderly system. In Wyoming, for example, an appointed state engineer, after having determined the amount of water available, decided priorities, enforced them, and granted new rights. His administrative organization conformed to watersheds and his decisions were subject to court review. Few states, however, copied the Wyoming law, which the engineering profession considered to be a model statute.<sup>37</sup> The state engineer usually received far less power and in some cases reform consisted of only a complete judicial determination of existing priorities. The leader of Wyoming water law reform, Elwood Mead, became the state's first official engineer and for many years thereafter worked actively to introduce the Wyoming law into other Western states.<sup>38</sup> When in 1898 he became Chief of the Office of Irrigation Investigations in the Department of Agriculture he pursued this task on an even wider scale.<sup>39</sup>

Western water rights were originally established by local custom and later protected by state laws and local courts. Since Congress confirmed these arrangements in 1866, water rights, even on the public lands, were subject to state, rather than federal law. The federal irrigation program brought to the fore the potential conflicts between state and federal authorities inherent in this arrangement. To render its investment more secure, for example, the federal government acquired water rights under state laws, and later transferred them to the individual farmer after he had paid for the irrigation works and had assumed ownership of the distribution system. Until that time, however, water rights which the federal

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*tion Congress*, 1903, 169-174. Bien's work was criticized in *Irrigation Age* (Jan. 1909), 24, 70-71.

<sup>37</sup> The Act, however, was influential in water law reform in other states. See, for example, *Reno Gazette*, Oct. 17, 1892 (FGN, Scrapbook #6).

<sup>38</sup> For an account of Mead's early work see Fred Bond and J. M. Wilson, "The Irrigation System of Wyoming," United States Department of Agriculture, Office of Experiment Stations, *Bulletin #96, Irrigation Laws of the Northwest Territories of Canada and of Wyoming*, 47-90.

<sup>39</sup> J. M. Wilson described the problems with which the Office dealt in *Proceedings, National Irrigation Congress, 1900*, 14-25. See also J. C. True to Gifford Pinchot, Dec. 10, 1913 (GP #1937).

government owned were subject to state law. By the terms of the Act of 1902, moreover, the federal government retained title to the reservoirs and large ditches, and agreed to continue their maintenance and operation forever. Under these circumstances, farmers owning water rights under state law would be at the mercy of federally operated reservoirs which stored state-controlled water. Conflicts between state and federal authorities arose frequently, especially when the Reclamation Service tried, by cutting off the water supply, to force settlers to meet their legal obligations to the federal government.

An even more troublesome problem confronted the Reclamation Service: water in one state often could most efficiently irrigate lands in another. Yet the transfer could rarely be accomplished. In Nevada, for example, Newlands and others waged an unsuccessful campaign to obtain water from Lake Tahoe in California to irrigate lands in the lower Truckee Valley in Nevada.<sup>40</sup> Newlands had hoped that the federal government could plan for full development of interstate streams by retaining the freedom to locate reservoirs and irrigable lands irrespective of state lines. Yet, the Reclamation Service met great resistance from local people who wanted to use the water in their own state and complained of federal interference with state rights.<sup>41</sup>

<sup>40</sup> This complicated but little known controversy over Lake Tahoe is described in letters in the Newlands collection over a period of fifteen years, and also in the papers of William Kent, California congressman, located in the Sterling Memorial Library, Yale University. For a version favorable to the California groups see Elizabeth T. Kent, *William Kent, Independent* (Private photo-offset printing, np, 1950), 318-324. The Nevada point of view can be traced in A. E. Cheney to Newlands, Dec. 26, 1900 (FGN, Letters); Newlands to President Wm. H. Taft, Aug. 14, 1909 (FGN, Irrigation—Tahoe-Truckee, 1909-1912); D. L. Noble to Newlands, July 11, 1913 (FGN, Scrapbook #13).

<sup>41</sup> In 1906 the National Irrigation Congress appointed a committee to examine this matter. It proposed that priorities across state lines be established by a federal administrative system corresponding in character to that needed for establishing and protecting rights within a state. See speech of Gov. George E. Chamberlain of Oregon before the Joint Conservation Congress, Dec. 8, 1908, as reported in *Conservation* (Jan. 1909), 15, 9-10.

Even before the Newlands bill became law, Western state leaders recognized the degree to which it would affect their water rights. In the summer of 1901, meeting at Cheyenne, Wyoming, several Western state engineers drew up a rival measure which provided that the federal Reclamation Fund be distributed through the state engineers who would construct projects approved by the Secretary of the Interior.<sup>42</sup> In this way state officials hoped to combine federal financing with a minimum of federal interference with local water law. Although Western congressmen considered this measure late in 1901, Newlands vigorously opposed it and it was laid aside.<sup>43</sup> Newlands, however, agreed to an amendment to his measure which emphasized that water from federal projects would be distributed and used under state law.<sup>44</sup> This concession calmed Western fears momentarily, but hardly solved the problem permanently. State-federal conflicts over water rights continued to plague the Reclamation Service. Federal officials, in fact, frequently advocated, though without much hope for success, that a federal water law supplant state statutes.

### *Speculation Interferes with Planning*

The speculative predispositions of Westerners interfered with a program of efficient water development as much as did state water law. The problem of speculation, in fact, revealed the degree to which the petty land shark could paralyze large-scale water projects, whether carried out by private or public agencies. Earlier irrigation diversion works had been cheap, temporary, and simple to construct. Large reservoir and ditch systems, however, required detailed technical data, a secure water right, and long-term operation sufficient to repay the large capital investment. The planning and stability essential for such a program were difficult to foster in a frontier area of rising land values, quick profits, and rapid change. Not yet settled down to permanent and stable development, the West, even in the

<sup>42</sup> *The Tribune* (no further identification), nd (FGN, Scrapbook #12, p. 59).

<sup>43</sup> Newspaper clipping (no further identification), nd (FGN, Scrapbook #12, page 61); see also "Bartine MSS" in FGN, Irrigation, History of National, 2.

<sup>44</sup> Newlands to William F. Herrin, Feb. 5, 1902 (FGN, Letters).

early twentieth century, exhibited many attitudes which ran counter to the spirit of efficient planning. Most important among these was the desire and opportunity to speculate.

Federally owned lands had always offered a great opportunity for Americans from all walks of life to reap profits from rising values,<sup>45</sup> and Westerners proved no exception. Each settler hoped to make a capital gain. Obtaining lands cheaply through homestead entry, he sold them for a tidy sum to another who did not want to wait five years to prove up his claim. After passing through the hands of several owners, each of whom plucked his share of unearned increment, lands purchased originally at \$1.25 an acre reached \$500 or even \$1000 an acre in areas where irrigation gave rise to fruit and vegetable farming.<sup>46</sup> Speculation increased investment costs for every purchaser interested in permanent development, and especially to farmers under irrigation projects. Most speculators had no intention of settling down to work their land as a continuing investment, seeking only to "cut out and get out" of the business of land ownership. They took a short-run attitude toward land ownership and land values as readily as they exploited natural resources without thought for future economic growth. Speculation was not so much the work of large corporations, as of fly-by-night sharks, most often operating on small capital. Only the larger firms could provide the long-term investment and stability essential for more rational development.

Both private and public irrigation promoters tried to restrain spiraling land values and prevent speculation from interfering with their plans. The fact that land titles came from the federal govern-

<sup>45</sup> Historians have identified the Western speculator with the large corporation, and have considered speculation as one phase of the struggle between the concentration of corporate wealth and the "people." Men of small means, however, speculated just as frequently as did men of large means. Speculation was significant less as an aspect of social and economic conflict, and more as a problem in economic development. It thwarted large corporate as well as federal enterprise.

<sup>46</sup> Frederick H. Newell discusses the effect of speculation on irrigation development in an article, "Irrigation Finance," MSS dated Feb. 28, 1913 in FN #6.



ment and water rights from the states, creating divided ownership of land and water, rendered every ditch and reservoir company an easy victim for the enterprising land shark.<sup>47</sup> Although the company owned the ditches and water rights, its success depended upon the willingness of farmers to take up land from the federal government, only to settlers who purchased water rights from the company for the water. Many settlers, however, did not intend to become permanent farmers; they obtained land, waited for values to rise, and sold out. Since ditch owners could not force a farmer to purchase a water right, they often received less revenue than anticipated and went bankrupt.<sup>48</sup> Such experiences gave rise to a provision in the Carey Act of 1894 that land in these new projects be sold only to settlers who purchased water rights from the company which constructed the works. The author of the Act, Senator Robert Carey of Wyoming, had faced difficulties with speculators in irrigation projects which he had promoted, and hoped to avoid similar problems in the new program. In the Reclamation Act of 1902 the provision that land ownership and water rights be combined afforded equal protection for federal projects.

These measures, however, did not restrain speculators who staked out claims on strategic reservoir, ditch, and farming sites before the Reclamation Service approved a project for the same area. That agency's attempt to keep its plans secret hardly succeeded when a Western community had boosted a project for years and speculators had entered the field early. Both private and public promoters tried to solve this problem by recommending that Congress authorize the Reclamation Service to withdraw from entry all land capable of being irrigated. Finding that settlers used the Desert Land Act, in particular, to acquire potentially valuable irrigation sites for speculation, they also demanded repeal of that Act. By 1908 complaints

<sup>47</sup> Many soon realized the disadvantages of this dual jurisdiction. "It is now realized," Elwood Mead, for example, wrote, "that the federal government should have asserted the same ownership over the public water that it did over the public land, and disposed of both together. Rights to streams could then have been acquired by some orderly and systematic administrative procedure." Mead, *Irrigation Institutions*, 62.

<sup>48</sup> *Ibid.*, 20-22.

from private groups persuaded the Commissioner of the General Land Office to recommend that Congress immediately withdraw from entry all remaining irrigable land in the West. Only in this way, he argued, could promoters thwart speculators and proceed with projects in an orderly manner.<sup>49</sup>

### *Irrigation and Forest Cover*

A number of water supply problems brought the irrigation movement into close connection with forestry. In fact, the conservation movement of the Roosevelt administration grew out of a fusion of land and water policies which took place around the turn of the century. Many historians have not sufficiently emphasized the close connection between forestry and irrigation. Although he pays tribute to Newell and to the political support for forestry by the organized irrigation movement, Gifford Pinchot, in his major work on the Roosevelt Era, *Breaking New Ground*, minimizes the role of water development in the larger conservation movement of 1907-1908. Charles R. Van Hise wrote more accurately of the historical development: "It was seen by Mr. Pinchot and other scientists . . . that there is a close connection between the forests and waters. There was a strong public demand that our rivers maintain a uniform flow for water powers and for navigation. Therefore those primarily interested in forests and those interested in waters became associated in the conservation movement."<sup>50</sup>

Western irrigators pioneered in the theory that watershed vegetation directly affected their water supply. Forests, they argued, absorbed rainfall, retarded stream run-off, and increased the level of ground water; forests retarded snow melting in the early months of the year, reduced spring floods, and saved water for summer use when supplies ran low; forests retarded soil erosion and silting in

<sup>49</sup> U. S. Department of the Interior, *Report of the Commissioner of the General Land Office, 1908*, 14-15.

<sup>50</sup> Charles R. Van Hise, *The Conservation of Natural Resources in the United States* (New York, 1910), 5.

irrigation ditches and reservoirs.<sup>51</sup> Private power and water supply corporations, as well as municipal water departments, joined with irrigators in presenting these arguments.<sup>52</sup> They opposed commercial use of the watersheds; they fought to prevent lumbering in the forests and grazing on the mountain ranges. They centered their fire especially on sheep, which cropped vegetation close to the ground and, they argued, vastly accelerated erosion.<sup>53</sup>

Western irrigators played a major role in establishing the national forests and in defending them from attack. The primary intent of Congress in setting aside forest reserves in fact was watershed protection. The chairman of the conference committee from which the Act came, for example, explained: "We have made a provision in this bill authorizing the President of the United States whenever in his judgment he deems proper to do so, to make a reservation of the timber lands, principally applying in the watersheds of the West, so that the water supply in the country may be preserved. . . ."<sup>54</sup> Throughout the nineties irrigation groups petitioned, often successfully, that the president reserve particular watersheds as national forests to protect them from commercial use. At the same time, the National Irrigation Congress supported the federal forestry program. Irrigators constantly sought to improve protection of the forests from fire and timber depredations, to withdraw them from all commercial use, and to prevent timber cutting and grazing within them.<sup>55</sup>

<sup>51</sup> For these views see Colorado Experiment Station, Ft. Collins, Colorado, *Weekly Bulletin* #28, described in *The Forester* (April 1899), 5, 85; L. G. Carpenter, *Forests and Snow, Colorado Agricultural Experiment Station Bulletin* #55 (Ft. Collins, 1901); William Wallace Pardee to Edward A. Bowers, March 27, 1893 (GP #1674); James D. Schuyler, "The Influence of Forests Upon Storage Reservoirs," *The Forester* (Dec. 1899), 5, 285-288.

<sup>52</sup> Adolph Wood to Edward A. Bowers, Mar. 23, 1893 (GP #1674).

<sup>53</sup> These attitudes are expressed, for example, in *The Forester* (May 1898), 4, 96, and by Representative Loud of California in 56th Congress, 1st Session, *Congressional Record*, 1446, 5522.

<sup>54</sup> 51st Congress, 2nd Session, *Congressional Record*, 3547.

<sup>55</sup> For grazing problems on the forest reserves in the 1890's see John Ise, *The United States Forest Policy* (New Haven, 1920), 121, and U. S. Department of the Interior, *Annual Report of the Commissioner of the General Land Office, 1899*, 108-110.

These views prevailed especially in California where steep slopes and torrential rainfall created acute flood and erosion problems. Urbanites concerned with water supplies and irrigators led in demanding public action to protect forest cover. Early in the 1890's, for example, President Benjamin Harrison, responding to petitions from southern California groups, created the San Bernardino National Forest. The leader of this particular movement was General Adolph Wood, president of the Arrowhead Reservoir Company, a corporation engaged in storing water for power, irrigation, and domestic supply. By 1899 Wood and others of like mind had organized the California Water and Forest Association, which agitated for more adequate state laws to protect forests, encouraged tree planting on denuded watersheds, and advocated state cooperation with the U. S. Geological Survey to measure water resources. When the state legislature failed to grant an appropriation to finance water investigations, the Association itself provided the funds to match federal contributions for the Survey's work. The Association attacked grazing in the forests, argued that livestock should be excluded, and persuaded the Department of the Interior to institute proceedings against forest trespassers. Responding to petitions from many groups throughout the state, Presidents Cleveland, McKinley, and Roosevelt greatly extended California reserves. When in 1907 Congress prohibited the president from establishing more reserves in many Western states, it expressly excluded California from the law.<sup>56</sup>

Irrigators in other states displayed similar concern over forest cover. Colorado State Engineer John Field described the benefits to irrigators from forested watersheds and encouraged and applauded the efforts of the Colorado Forestry Association to extend the federal reserves in that state. Hydrographers at the Colorado State College of Agriculture at Fort Collins wrote of the close connection between

<sup>56</sup> The California movement can be traced in *California Illustrated Magazine* (Nov. 1892), 2, 792-807; (Nov. 1893), 4, 841-850; in *The Forester* (Jan. 1899), 5, 18, (Feb. 1899), 5, 38, (Mar. 1899), 5, 65, (June 1899), 5, 136-137, (July 1900), 6, 170-171, (Oct. 1901), 7, 244-250; and in *Forestry and Irrigation* (Nov. 1904), 10, 521.

forests and stream flow and of the detrimental results of stock-grazing on the headwaters of the South Platte River. In Arizona, irrigators on the Gila River near Phoenix opposed the commercial use of the watersheds above them. After the territorial legislature memorialized the federal government to protect the headwaters of the Gila, the Department of the Interior established three forest reserves there. For a time Arizona irrigators were able to exclude grazing entirely from these reserves, but after protests from stockmen and intervention by Gifford Pinchot, the Department permitted a limited amount of grazing.<sup>57</sup>

Engineers and scientists in the new water and forest departments of the federal government shared the view that watershed cover improved water supplies. The Division of Forestry carried out numerous studies of the effect of forest cover on stream flow. James W. Toumey of the Division undertook the first such investigation in southern California, and reported that run-off from forested areas was far below that from non-forested. Hydrographers in the Geological Survey, with even wider experience, gave the theory vigorous support. The national forests, so they argued in governmental reports and public speeches, contributed immeasurably to the conservation of water resources.<sup>58</sup>

These common views brought the forest and irrigation associations into close contact; they supported each others' programs before Congress and the country at large. During the 1890's, while Frederick H. Newell was undertaking hydrographic investigations and agitating for a national irrigation law, he also served as secretary of the American Forestry Association, which fought to extend the national forests and to adopt a sound national forest management

<sup>57</sup> *The Forester* (Feb. 1899), 5, 41, (Mar. 1899), 5, 65; C. S. Crandell, "Reproduction of Trees and Range Cattle," in *Ibid.* (July 1901), 7, 170-174; U. S. Department of the Interior, *Annual Report of the Commissioner of the General Land Office, 1899*, 98; Pinchot, *Breaking New Ground*, 177-181.

<sup>58</sup> Bernhard E. Fernow, *Relation of Forests to Water Supplies, United States Department of Agriculture, Division of Forestry Bulletin 7* (Washington, 1893), 123-170; James W. Toumey, "Relation of Forests to Stream Flow," *United States Department of Agriculture Yearbook, 1903* (Washington, 1904), 279-388; *New York Tribune*, Jan. 11, 1904 (FN #17, Clippings, v. 4).

program.<sup>59</sup> George Maxwell and the National Irrigation Association supported the forest movement as actively as they campaigned for federal irrigation, with the motto, "Save the Forests, Store the Floods, Make Homes on the Land."<sup>60</sup> Forestry enthusiasts, in turn, promoted federal irrigation. In 1901 the American Forestry Association changed the name of its official magazine to *Forestry and Irrigation*, and proceeded to publicize the irrigation movement. Gifford Pinchot, chief of the Bureau of Forestry, attended sessions of the National Irrigation Congress, spoke frequently on the beneficial influence of forests on stream flow, and joined with Newell in pushing the Newlands reclamation measure.<sup>61</sup>

The close association of Newell and Pinchot in forest and irrigation matters illustrated a common attitude toward resource development then emerging in the federal government. Members of the Bureau of Forestry and the Geological Survey, in particular, developed a similar outlook. They became personal friends, came together frequently in meetings of scientific societies in Washington, and gave each other mutual encouragement and political support. At first preoccupied with a federal water resource program, they next turned their attention to forestry and then to an increasing variety of problems in which they could apply their interest in rational and efficient development. They became the nucleus of a group of federal scientists and technicians whose search for greater efficiency in economic growth gradually committed the administration of Theodore Roosevelt to a wide program of natural resource conservation.

<sup>59</sup> Newell was corresponding secretary of the Association at least as early as 1897, and resigned when he was placed in charge of federal irrigation work. As early as 1889 he had been on the legislative committee of the Association. See Edward A. Bowers to H. H. Chapman, Nov. 18, 1916 (GP #1674).

<sup>60</sup> Through Maxwell's influence, business organizations also backed the national forest movement. See resolutions of the National Board of Trade, the National Business League, and the National Association of Manufacturers in *The Forester* (Feb. 1901), 7, 47-48; (Nov. 1900), 6, 273; *Forestry and Irrigation* (June 1904), 10, 243.

<sup>61</sup> For several years Pinchot was chairman of the forestry section of the National Irrigation Congress, and Pinchot, rather than Newell, was President Roosevelt's personal representative at those Congresses. See Pinchot, *Breaking New Ground*, 189-191.