through the illicit killing of its cows and calves was to leave it absolutely alone? A cattle man would stop the killing of the females and young, would look out for a reserve of bulls, and market his steers as usual. Especially would he do this if it were necessary for him to pay for the cooperation of his neighbors in suppressing the illicit killing.

Mr. McLean would have us take a different course. He would have the government begin by depriving itself of an immediate income of about $400,000. The herd has probably yielded this amount in the lowest year of its existence. This income has possibilities of indefinite increase with the recovering herd. But there would be no increase. With no quota to share with the cooperating nations the treaty would lapse. Pelagic sealing would be resumed. The herd would continue on its way to extinction. Is this what Mr. McLean and the Camp Fire Club want?

George Archibald Clark
Stanford University, Calif.,
February 7, 1912

Another View of the Principles of Water-Power Development

In Science of December 15 the foremost place is given to Dr. W J McGee's statement of the above-mentioned principles. As the subject is one of general scientific interest, I beg leave to present it from a different point of view.

A couple of centuries of legislation, following decade by decade the settlement of the country and the appropriation and use of its waters for power, irrigation, etc., have left little scope for the application of Dr. McGee's principles, at least on the part of the federal government. He writes as if he were laying out plans for a continent not yet occupied by human beings. It may as well be recognized that in the older part of the United States the more desirable water powers have all passed completely into private ownership. The practical application of his principles, if there be any, must then be in the newer, and chiefly the western, part of the United States. But even here irrigation waters are already appropriated very generally except in those not rare cases where a large capital is required for the first installation. Water-power can not be dissociated from the subject of irrigation in the west, because the same water often serves both purposes, and may even be taken away from one to serve the other. It is surprising to see all through the west that every spot where irrigation can be cheaply applied to good soil has been farmed with the aid of water for many years. Many cases have come under my observation, from forty to a hundred miles from a railroad, where irrigation has been practised for thirty or forty years, generally up to the limit of the water supply or of the good land. It is very late in the day to talk about the general principles which should govern the framing of laws on irrigation, but it is astounding to read (McGee's principles 34 and 36) that legislation at present should be tentative and experimental. Every western state has voluminous laws on the subject, and ten times more voluminous legal decisions on those laws. The general principle has had full acceptance for a long time that the states have complete authority over the use of waters within their respective borders except for the purpose of navigation and in a few unusual cases. While there is a "borderland" here that is not worked out, there is no reason to suppose that the general control of its own irrigation waters by the state will be materially impaired.

This control necessarily extends to the public lands within the state. In nearly every case where the settler puts in a small irrigation system for his own use, his head-gate and the most of his ditch are on government land, since he has to go some distance above his own land to get the fall requisite. A later homesteader above him can not disturb his ditches, even though occupying a tract across which they run. This policy runs back almost beyond history, and is as well settled as anything can be.

Turning now to the subject of water-power, we find that all the western states have pro-

vided definite methods by which it may be appropriated, as in the case of irrigation waters. Even on public lands the authority of the state has until lately not been questioned. But with the rise of the conservation movement there has come about a demand that the federal government assert a right to the disposal of water-powers on public land, and especially in national forests. This demand has its origin in the belief that the western states are allowing the water-powers to be monopolized, and are in danger of losing all right of subsequent regulation, so that the public served by the power will be compelled to pay "all that the traffic will bear."

In the absence of any explicit law or precedent for federal interference with water for power or irrigation, the proponents of the policy have grasped at general constitutional powers, such as "to promote the general welfare," or the right to control navigation in rivers and internal waters. President Taft a year ago favored the assertion of a claim to the banks of the stream by the federal government, so that the *site* would become paramount to the *water* in a power installation, conceding that the state had exclusive jurisdiction over the latter; the interposition of a technical claim to the stream banks would, in his opinion, operate to prevent the establishment of any power plants without federal approval, even though the government had no claim on the water. This admittedly technical and strained position is just about paralleled by his proposal that, since we have solemnly pledged our word to other nations that we will make the tolls in the Panama Canal equal to all, we will make some sort of a subsequent gift to our own vessels to equal the fees paid by them. The good intention we all concede, but lament the facile readiness to "beat the devil about the stump."

This is not the place for an adequate discussion of the safeguards which the western states have placed around the disposal of water power, nor for a description of the propaganda by which, largely through misrepresentation, many people have been made to believe that only in federal control could there be any assurance of permanent management in the interest of the people. Enough to mention that fundamental safeguards are two—forfeiture for non-use, and the reservation of regulatory powers by the state. Both of these are embodied in the constitution of Idaho.

But the most notable principle enunciated by Dr. McGee is his No. 30. It is as follows:

> 30. The essential principle of natural equity on which specific legislation may rest has already found expression, both by statesmen and by powerful associations of citizens including both jurists and publicists, in the incontrovertible proposition —now become axiomatic—that *all the water belongs to all the people.*

So far is this principle from being true, either legally, equitably, or even as an ideal relation, that the reasonableness of the opposite view will appear immediately on stating it. If Dr. McGee is correct, then the general government should collect as a tax on every water power the full value of the power above a reasonable interest on the cost of installation; from every user of irrigation water it should collect the difference in value between what will grow with water and without it, minus the cost of applying the water; from every municipality a tax on its use of water; even from the owner of a well a proportionate assessment. Otherwise the people as a whole can not derive the benefit which their ownership of all the water ought to entitle them to. A closer analysis would necessitate even a farther extension of water taxation, for it is obviously unjust to tax the western user of irrigating water while the eastern farmer is allowed the free use of rainwater. Such are the absurdities into which we are led if we admit the principle that all the water belongs to all the people.

Is it possible to express in a simple way the correct principle as to ownership of water? Not in all relations, because of their variety. But some are unquestioned: a man owns the water in his well, we all believe; he has a right to the benefit of what falls from the sky on his land; communities rightly own the water that flows through their mains to their citi-

zens. So far all agree that the present legal relations could not be improved; they are substantially ideal.

How about water for irrigation? Prior use is the determining element in ownership, according to the laws in all the western states, and continuity of use is the element which perpetuates the title. This is the simplest possible plan, and taken all in all is the most feasible one, and works as little hardship as any.

Now about water for power. This is the "nub" of the whole matter for the conservationist, and is probably all that Dr. McGee had in mind in enunciating his principle, which seems so fundamental to him as to be "axiomatic," "incontrovertible," and even (principle 38) "a part of the body of ethical conviction underlying American character and constituting its strength." In the face of these overwhelming assertions, I will undertake to maintain that the people as a whole have no interest whatever in any specific water power. A portion of the people are in each case interested, those who are in a position to make a reasonable use of the benefits of the power, but the rest have no right whatever to claim a share by taxing those more favorably situated with reference to this particular power site. To illustrate: the Snake River in southern Idaho has several large falls, principal among them being Shoshone Falls, with Twin Falls second. These have been partially developed, and a large amount of power, light and heat can be obtained from the present installation. Now what part of the people of the United States are equitably interested in what is being done here? Simply those who live within the range of power transmission, and are not more accessible to another source of power. These people, in a very real sense, have an interest in that water power, and have a right to be protected from extortion by the laws of the state, and as a matter of fact they have a recourse in the constitution of Idaho. But the people of Cape Cod, or of Washington, D. C., have no equity in Shoshone Falls, and no right to expect dividends from its successful development. This is not only ideally sound in principle, but it is recognized in law and embedded in the whole organization of state and nation.

Differences of opinion in regard to policies of conservation have had their origin very largely in loose and vague thinking such as is illustrated by Dr. McGee's principles. Not realizing that the west has been facing these problems for decades, and has pretty nearly settled them, a class of theorists in the east has taken up the same subjects *de novo*, treating them as if they had never before been touched by the hand of man and the way were free for any sort of plan to be carried out.[1] I do not accuse all conservationists of being so visionary, but Dr. McGee represents something of an element. It wearies the patience of the people of the west to be obliged to deal with such persons, who have a missionary zeal to teach us things we have always known, and know much better than the would-be teachers, and who would view us as either a set of thieves and robbers or helpless children whom they would protect. Our best reliance is ourselves; we are amply clothed with authority to do all that is necessary; our experience and training have familiarized us with the work ahead; and our purpose is to protect the interests of the public, our own public, ourselves, in all necessary and reasonable ways.

J. M. ALDRICH

FIRST USE OF WORD "GENOTYPE"

I HAVE recently asked Dr. J. A. Allen, the leading authority in this country on nomen-

[1] A beautiful illustration, which I will not charge to Dr. McGee, is in the withdrawal of power sites from entry under the public land laws. It was a great relief to many eastern conservationists when sweeping withdrawals of this class were made a few years ago; but in fact under the laws of Idaho the acquisition of a water power is a process entirely apart from the filing of any sort of entry on land, and the withdrawal did not change the legal status of the power sites by one iota. The mode of acquisition of water power under the laws of the state is precisely the same as before, and I doubt not that the same is true in other western states.