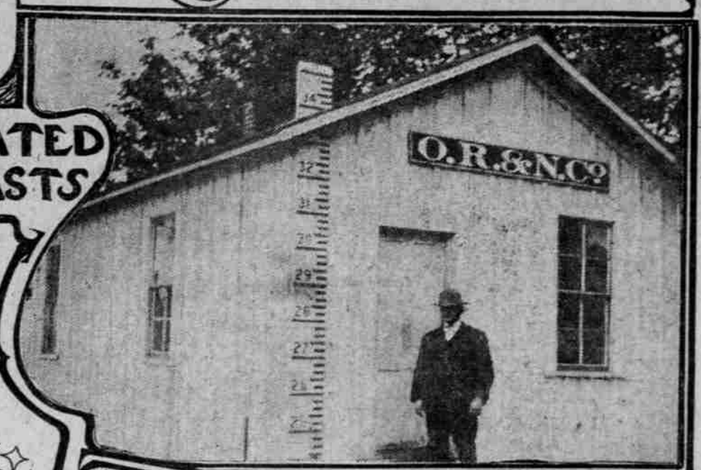
UNCLE SAM'S CORPS OF FLOOD PROPHETS

THEIR BUSY SEASON IS NOW BEGINNING; NEW SYSTEM INAUGURATED FOR COMPILING FORECASTS

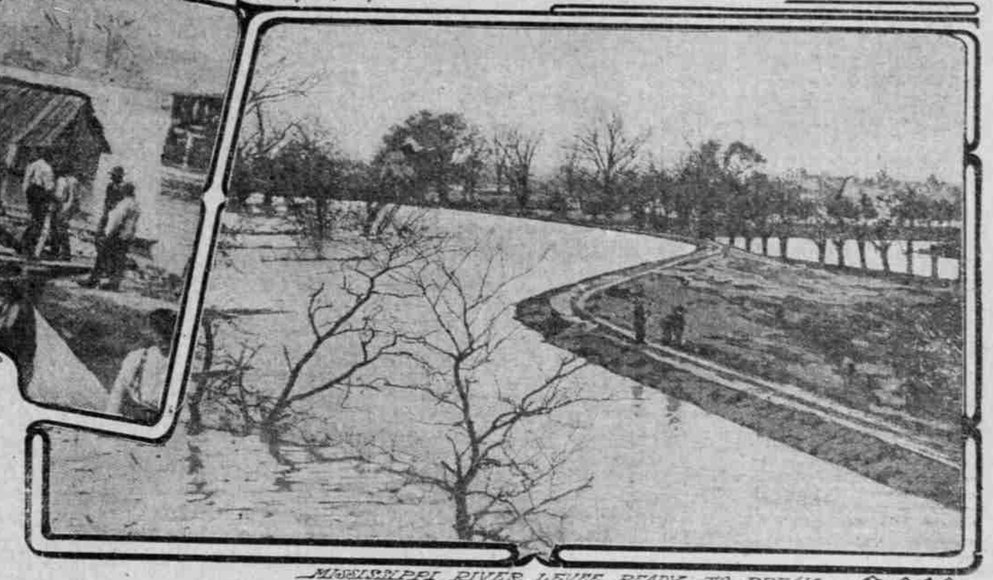
PROF. H. C. FRANKENFIELD, GOVERNMENT'S CHIEF FLOOD PROPHET



A FLOOD GAUGE

LEVEE BROKEN AND OVERFLOWN MISSISSIPPI RIVER

REFUGEES ON BROKEN LEVEE



MISSISSIPPI RIVER LEVEE READY TO BREAK

BY JOHN ELFRETH WATKINS.

AND now comes flood time. The Spring rains are swelling the streams which feed the great rivers. The sun, warming to renewed life, is thawing out the vast snowbanks on the high mountain tops. Everything is ripening for a Spring flood, if we are to have one.

Doubtless you have never heard that the Government has its flood prophets as well as its rain, hail, snow and blow prophets. Well, it is true, and I have just had a long chat with the chief of this official corps of flood prophets, Professor H. C. Frankenfield, in charge of the river and flood service of the Central Weather Bureau.

He spends upward of $50,000 a year—enough to pay President Taft's salary—in telegraph tolls on his flood warnings; but often a thousand dollars to the citizen is saved by each dollar spent on the entire flood service for telegrams, wages and everything. And its flood prophets are ashamed to look the world in the face if they don't predict the height of a river's rise within a foot, even in the rapid-running rivers of the mountain regions, where the least accuracy can be hoped for. In the case of the great slow streams, such as the Mississippi, Missouri and Ohio, they generally hit it within from one to three inches. Down at New Orleans sits a local prophet on Dr. Frankenfield's staff, who regularly tells, within about two inches, what the height of the Mississippi will be three weeks hence. If he rightly predicts a rise of 20 feet above low water, there will be 3,000,000 cubic feet of water, rushing past him per second. He can deal with such an enormous force and get it within two inches. And others do the same thing right along.

The Ways of the Prophet.

But how is it done?

In the first place, Professor Willis Moore, Chief of the Weather Bureau, has divided the country into 44 "river districts," containing sub-stations—500 in all—with river gauges whose readings are telegraphed to the district headquarters daily at 8 A. M. Along the Mississippi there are no less than ten such districts, each with a central station gathering daily reports from its subdistricts. Not only river gauge readings are daily wired to the district head; he gets also the rainfall and general state of weather for his whole district. He adds all of this information to a map from which is made a daily forecast of the flood probabilities.

The range of the forecast depends largely upon location. Generally speaking, the nearer the river's mouth, the longer the warning can be given. Thus dwellers along the Upper Mississippi can be given but little time to remove their property or themselves, whereas those near its mouth get ample warning. Thus the alarm is given one to two days ahead in the upper districts; three to four days ahead between Keokuk and St. Louis, and a week to ten days ahead from Memphis to New Orleans. But along the rapid-running rivers of the Atlantic and Pacific slopes one or two days' warning is all that can be attempted. Pittsburg is peculiarly unfortunate, especially inasmuch as it is the greatest coal, iron and steel center of the world. Eighteen hours is the longest range of flood warning that it can hope for. And yet not a bushel of coal goes out of this port except on one of these daily forecasts of the stage of the Ohio River. Two million trainloads of coal stood ready and waiting to take instaneous advantage of the notice that water was coming to end the tie-up last Summer caused by the drought which dried up that great stream.

Cincinnati holds the record for variation on a single river gauge—69 feet. These gauges are great measuring rods thrust down to the river bottoms and extending farther above the surface than any flood is likely to reach. The accompanying snapshot shows a "flood gauge" erected for measuring the water when it rises above the platform of the building where the man is standing. There are 30 gauges scattered along the Mississippi alone. In flood times they are read every hour or oftener.

New Forecasting Scheme.

Professor Frankenfield tells me that he is now working on a new forecast scheme by which he is able to take a river's height at a given point and from that work out a forecast even more accurate than formerly for another point a given distance away. Learning the amount of water passing one station, he can now more exactly estimate the percentage that will appear at the next station. The factors taken into consideration are the water in sight, the rain that has fallen and is running into the adjacent streams, the water equivalent of snow on the ground, the dryness of the soil, channel changes, etc. He has been carefully working the scheme out for the Ohio River for the past three years and it is now in operation on over 600 of the 966 miles of that stream. A separate scheme has been worked out for each district of this troublesome river, except that between Cincinnati and Parkersburg, wherein three district schemes are applied. He says that the forecasts on our big rivers cannot be much improved upon. Their every flood for the past ten years has been forecast with accuracy. Improvements are being continually striven for along our smaller rivers.

Measuring Snow on Ground.

Men with snow gauges are now upon the mountains of the Atlantic and Pacific Coasts measuring the water which this snow will throw off into the surrounding rivers when the later Winter thaw sets in. Each carries a two-and-a-half-inch tube 40 inches long which is jabbed down here and there in the snow crusts. When such a gauge is lifted its lower end is closed and the height of the column of snow remaining inside is next measured by a scale. It is then melted and the water compared with the original quantity of snow. Snow so varies in density that 14 inches taken in one place and only two inches in another will both yield one inch of water. One to ten is the average.

If we have a two-inch rainfall on top of four inches of snow with a two-inch water equivalent, we have a flood to deal with; whereas, if this four-inch crust of snow has a water equivalent of only two-tenths of an inch, the matter is not serious. The gaugers sound the snow where they think it is of mean depth and finally strike an average for all of the measurements. Thus the gallons of water in each square mile of snow is measured where a river will be effected. In the East this work is done in the Upper Alleghenies and along the New England rivers.

Snow gauges of new design have just been introduced in the Rocky Mountains, where they are being used all the way to the summits. This work, just being commenced, is in charge of Professor F. H. Bigelow, of the Weather Bureau, and is purposed to aid in forecasting not only floods, but the amount of water available each Spring for irrigation and water power in the arid southwest. Professor Bigelow will find out how much snow is stored in these mountain tops each year and how much water it gives off. He is designing some ingenious and complicated apparatus for the work.

Flood Season for Each Season.

There is a flood season for almost every region. Along the lower Mississippi it begins in February or March and often as early as January. But along the upper banks it does not come generally until May, reaching its height usually in the latter part or in June. Those of the Missouri are not due until still later; those of the Ohio anywhere from February to June; those of New England with the Spring rains that break up the ice crusts. On the Pacific Slope those of the Columbia River set in about the middle of May and last into June, because of the very late thaw on the mountains above. But the Sacramento is apt to rise earlier in the Spring and California's flood time is generally March, though this year the Sacramento got on its rampage in January and again in February, submerging 60,000 acres, some of it the finest land in the world. But the Sacramento is a peculiar stream. Its natural channel not being big enough to carry off over 25 feet of flood water. Floods of our Eastern and Southeastern rivers are apt to occur during any season except Autumn. Those of the Southern Appalachians seems to come without rhyme or reason, but are generally most apt to be serious in August.

How Warning Is Given.

As soon as a flood is foreseen warnings are wired to the 500 special substations of the flood service. Telegrams are sent also to representative citizens and newspapers. Every one in the threatened zone is given the alarm and nowadays there is no trouble in getting them out. When the exact date of the great Mississippi flood of 1897 was forecast by the service, in some places two weeks ahead of time, most of the inhabitants from Cairo to New Orelans sniffed contemptuously and refused to be scared by a "lot of fool scientists in Washington." They gazed upon the shrunken Father of Waters, flowing calmly and serenely below its banks, and refused to budge—all save a comparatively few people, generally ridiculed by their fellows as overtimid. Even the newspapers scolded the Government for frightening a lot of silly old women. Then came our worst flood of a half century, right on schedule time, bursting levees, submerging 13,000 square miles, including the malls streets of a hundred cities and towns. To the "timid ones" who took warning in time, however, $15,000,000 worth of movable property was saved and the total appropriation of the flood service that year was only $15,000. Each dollar of that saved a thousand.

Prophet Without Honor No Longer.

It was thus that the Mississippi Valley people learned their lesson. They learned it so well that when in 1903, 28 days in advance of its coming, the forecaster predicted the time of arrival of the crest of a 21-foot flood wave at New Orleans, they sat up and took notice. Men worked desperately to carry off movable property and to increase the height and strength of the levees; and when on the appointed day the flood rose to a height of 20 feet 7 inches, it was kept from flooding a large portion of New Orleans and other places as well.

Cairo was given four days' warning of a 50-foot rise; Memphis one week's warning of a 40-foot rise. All along the great stream the warning was acted upon, and although the rise all along was much greater than in 1897, it overflowed only one-half as much territory. This was the biggest Mississippi flood since 1844. The greatest of our history, however, was in 1785. Our greatest loss of life from a true flood in one locality was at Heppner, Or., June 14, 1903, when 200 people were killed. The Johnstown flood was not a true flood, but an accident, due to the breaking of a dam.

Professor Frankenfield does not anticipate any great floods this Spring, inasmuch as last year—when boys played ball in the bed of the Ohio—was abnormally dry, causing a loss of ten feet in the average ground water of the country. Since then our soil has been like a great dry sponge and it will take Spring rains much out of the ordinary to cause a flood. At present writing the Father of Waters is seven feet lower than he was a year ago.

When I asked the chief of the flood service how much damage these inundations are still causing us in spite of levees and warnings, he took his pencil off his ear and figured the loss for the last two years at from $90,000,000 to $70,000,000. But this, he explained, is an underestimate, since the service does not hear of all cases.

Washington, D. C., March 2.

ASHLAND'S VIEW OF THE NORMALS

What About the State's Obligation to Students Whose Tuition Money Has Been Taken?

BY F. D. WAGNER.

OBSERVING that The Oregonian, since the adjournment of the Legislature, has lifted the lid a trifle at least and has allowed an expression from one friend of the normal school grafts to be printed in its columns, I appeal for space for a few humble observations from this section of Oregon, the home of another one of these alleged grafts.

I want to emphasize to begin with that we are rather a simple country folk out here, humble, albeit honest as a rule, and have been taught dutifully to observe our political allegiance to the State of Oregon and pay our tribute to its commercial center, Portland.

In our humbleness and simplicity we read with satisfaction in The Oregonian two years ago that as a solution of the normal school question, which it was alleged had vexed Legislatures for years, it had been decided by our wise representatives assembled at Salem to constitute one board of regents for the state normal schools, these regents to be selected from counties not locally interested in these schools, and not only to administer them, but also to make report to the next Legislature after a careful study and investigation of the subject, of a permanent normal school policy. This board in its wisdom saw fit to recognize the need for providing each of the three natural geographical sections of Oregon with normal school facilities, and recommended the permanent maintenance of the three schools already established at Weston, Monmouth and Ashland, with appropriations for maintenance and buildings that would be commensurate with their needs and creditable to state institutions. These regents did not ask our opinion nor did we attempt to thrust it upon them. Our great Governor saw fit not only to approve this plan, but in his message read at the opening of our late lamented Legislature recommended it to favorable consideration in this august body.

As was hinted before, being simple folks but honest, we naturally felt very much gratified at the favor shown by the board of regents upon our section of the state, and took it for granted the action of this board would settle the matter in a general way at least. For the board was created by the Legislature, and we foolishly thought that the Legislature would heed the recommendations of its creatures.

And this impression seemed to prevail among most citizens of the state until toward the closing days of the recent session, when a sudden and terrific onslaught was made upon these schools. They were charged with being grafts, and everybody around Salem and Portland (at least those whose names got in the papers) seemed to forget that there was or ever had been a state board of regents of normal schools charged with the work of investigating this question carefully. For the reports or recommendations of this board were not called for and the Governor's recommendations were, also, it seemed, entirely forgotten. The newspapers ran amuck, and the mention of normal schools was to them like waving a red rag at a bull. The papers spread their infection and members of the Legislature echoed the grafting sentiments. When the battle reached the Senate fury seemed to reign. The chairman of the ways and means committee would lose his head at the mere suggestion of an appropriation for three normal schools, as recommended by the board of regents. The President of the Senate found himself called upon to leave his exalted chair and climb down to the level of common members of the Senate, where he denounced these schools and said in effect they were conceived in iniquity and born of Legislative logrolling.

We, as stated before, being simple folk but honest, were surprised and astounded at such declarations, and began to wonder. We thought these schools had been such great boons to the young and ambitious in all sections of the state, as we knew the school here had been to Southern Oregon. Our wonder grew when we investigated and found that this same President of the Senate as a member of previous sessions of the Legislature had voted for the support and maintenance of these institutions. What did his changed course mean? We were stunned with wonderment and could only watch in amazement the assassination in the Senate accomplished.

But our eyes are opening. We are still dutiful and have continued to read the Portland newspapers since the Legislature adjourned and are finding out some things. For instance, one of the bright young legislative reporters of the Evening Telegram, in the issue of February 22, tells how it all happened in a nutshell: "The breaking up of the Normal School combination was chiefly the work of President Jay Bowerman. He refused to appoint a normal man on the ways and means committee, and carefully organized other committees so that if the Senate really wanted to wipe out the schools the opportunity was present."

So you see we are not so simple-minded as we were before. We have learned that the Senate was "framed up," as they call it, against normal schools, all apparently in the interest of a one-normal-school-at-Portland plan, which was never broached to the people of the state generally until it came up in the Legislature, and was never suggested by any considerable number of people. Did Bowerman pay this price for his job as President, with its possible perquisites of the acting Governorship?

But, really now, isn't it a dirty shame and a disgrace the way the Legislature treated the normal schools and left them stranded as it were in the middle of a term, with forces of teachers employed and contracted with by the state's agents, the normal regents, for the full school year, and no money to pay them. With hundreds of students whose tuition money for the full term has been collected and put in the State Treasury, from which it cannot be extracted, clamoring for a fulfilment of the contract on the part of the state to give them instruction for the remainder of the year; with graduates who have spent three and a half years in study now threatened with the discrediting of their work in these schools, much of it done at a great sacrifice. Isn't it a shameful spectacle, even as the legislators themselves may view it in their sober senses?

Only three states in the Union, we are told, are now in the class with Oregon in not supporting state normal schools—Wyoming, Nevada and Delaware. With our bid for desirable immigration from the states further East, what kind of an impression will the news that Oregon has repudiated its normal schools make? What will Tom Richardson say to circumvent it?

And, honestly, besides, wasn't it a cowardly thing to do to assassinate the existing schools the way the State Senate did? If the people of Oregon want one normal school let them have a chance to express themselves upon it. But in fair play let them have a free rein to make the selection of the location. But let them also have a free rein to express themselves for or against the solution of the normal school question recommended by the state board of regents, calling for the support of the three existing schools at Ashland, Weston and Monmouth.

Ashland, March 2.

Ballade of the Prudent Sport.

Chicago News.

I'm not pugnacious, not a bit.
Before I'd fight I'd always run.
That I'm a liar I'll admit,
In fact, that's what I've often done.
I never could see any fun
In being wiped from off the map
By some big brute who weighs a ton.
But, oh, I love to see a scrap!

It is a pity that the pit—
That is an inadvertent pun—
Is frowned upon as most unfit
To patronize—a thing to shun.
But fighting cocks do take the bun
For force and fury, fire and snap.
My morals are most finely spun,
But, oh, I love to see a scrap!

I like to see a fellow hit
A blow with force enough to stun
And come up smiling, full of grit,
As if the thing had just begun.
Of all things underneath the sun
That is the one that warms a chap.
I'm not a Vandal, nor a Hun,
But, oh, I love to see a scrap!

L'ENVOI.

To safely sit and watch the one
The other's crimson claret tap!
In mildness I will yield to none.
But, oh, I love to see a scrap!

He's Young.

Chicago News.

About himself you'll notice he
Is voluble, exceedingly.
Our nods and winks he doesn't see,
But prattles on unheedingly.
The slightest sign of interest
Will loosen up his tongue
And show the secrets of his breast;
But then, he's young.

We listen to the little bore,
No doubt, he thinks, admiringly.
Opposed, he only talks the more,
Aggressively, untiringly.
He has opinions, he believes,
The which are freely sprung.
They make us snicker in our sleeves,
But then, he's young.

We once were full of bounce and brag,
We had not learned humility;
And pretty soon our heads we'll wag
In garrulous senility.
We wink and leer, and pooh and pish,
But there are few among
Us oldsters, after all, but wish
That we were young.

Brazil is larger than the United States; the grand total of the Pan-American trade for 1907 was $5,300,000,000; the foreign commerce of Argentina in 1907 exceeded that of Japan by nearly $150,000,000.

EDUCATIONAL LEGISLATION NEEDS

To Simplify Matters, Why Not a Strict Division of Three Fundamental Grades of Public Education?

BY JOHN S. HODGIN.

MANY of the people of the state are living in hope that all the time of the Legislature will not be taken up with "salary grabbing" on the part of county officials, elected to office at a certain salary and now are trying to use their official positions for the purpose of getting "more," and that yet something may be accomplished in the line of needed reforms. And nothing at the present time is more in need of careful consideration and a complete overhauling than the educational system of this state.

That the people of Oregon believe in and are desirous of having good schools, and are willing to pay for them, is without question. The fact that year after year the demands of localities with "pulls," and educational enthusiasts without judgment, have been met without protest by the people, is sufficient evidence of that fact. The thousands of dollars that the taxpayers of the state have paid for duplicate state institutions of low grade, born and maintained by logrolling legislators for local purposes mainly, on the plea that it is advancing education, attest this.

The school law of Oregon, if it be lawful to call the unsymmetrical conglomeration of acts passed and amended at different times without reference to the harmony of the whole a law, could be greatly simplified, in fact, revolutionized, to the betterment and economy of public education.

By a strict division of the three fundamental grades of public education—the grammar school, the high school and the college—requiring the districts and counties to maintain the first two, with such assistance from the state as is derived from the irreducible school fund, and leaving to the state at large the task of maintaining only schools of collegiate grade, the first step in simplicity would be obtained. There is no reason why the work done in the grade of the normal schools we have in Oregon should not be done in high schools with normal training courses, located in the larger cities and towns, or in a county high school. Neither is there any reason why elementary courses in agriculture and industrial science may not be incorporated in the high school curriculum, if the locality so desires. The move that has been inaugurated in some of the Eastern States in this direction is worthy of encouragement, and the discussions that have been carried on in the American Academy of Social and Political Science and other learned bodies show that this is not only feasible in the larger towns, but is rapidly becoming a feature of the school system of the more advanced communities. If this could be adopted, and such branches in those subjects be taught in the high school where their grade places them, and let the communities that wish them to be taught pay for them, much of the vexation and annoyance that confronts every Legislature would be done away with, and the inducement to attempt to force upon the state the task of maintaining three or four low-grade normal schools for the benefit of as many different localities, or for the benefit of some scheming, lobbying pedagogue with an "ax to grind," would be wanting. These schools not only duplicate each other, but also duplicate the different high schools in the state in all the essentials of education.

There is no reason why the State University should not have correlated with it both the Agricultural College and a normal college and all under the management of the same board of regents and without duplicate studies, and each requiring the equivalent of a high school education. This would economize and raise the standard of such institutions and would remove the necessity, or rather the excuse, for the constant demand for more buildings at every term of the Legislature. Every intelligent person knows that a large number of the students who go to these institutions do not do so for the purpose of pursuing the studies for which the school is maintained, but for the purpose of studying branches that should be taught in the high or grammar school, and this is one of the reasons that there is the constant demand for more buildings. Such an arrangement would at once place Oregon schools on a scholarly basis and the reflex action would be felt down the line and would be an incentive for each community to establish high schools of its own and encourage a local pride in educational matters and remove the constantly recurring "normal school question."

Another absurd and illogical feature of the present school law is the method of certification of teachers. We have state diplomas, state life diplomas, state certificates, state permits, three grades of county certificates, primary certificates, county permits and to these is added certificates issued by districts of the first class, with the qualifications therefor indefinite.

With the two divisions of schools into grammar school grades and high school grades the classes of the certificates should correspond, with perhaps different grades in each class according to scholastic standing and experience in teaching, and a diploma after a certain amount of experience in that class; and there is no reason under the sun why a license for a teacher should be different from that of a lawyer, doctor or dentist, so far as locality is concerned.

Why should a teacher who passes an examination in one county on the same questions as one in another county be required to take another examination in order to teach across the boundary line? Why should there be county certificates when the State Board prepares all the questions? Why should not the State Board of Examiners pass upon the questions they themselves prepare and issue public school certificates of grammar grade or high school grade, as the case may be, good in any county in the state, and thus do away with the unnecessary expense of maintaining a County Board of Examiners? By this system the grading would be uniform and the County School Superintendent could alone conduct the examination and forward all the work to headquarters, as is done in the State of Washington, thus relieving the Superintendent of often unpleasant duty.

The State of Oregon is entitled to the best, the people are willing to pay for a better State University, better high schools and better grammar schools.

La Grande, Or.