

WATER POWER SITES IN WESTERN OREGON

Scientific Study of the Clackamas River, Which Bears on All Streams in the Western Slopes of the Cascades

OREGONIAN NEWS BUREAU. Washington, Dec. 25.—In view of the recognized importance of the water-power sites along the western base of the Cascade Range from Feather River in California to the Columbia, Or., J. S. Diller, of the United States Geological Survey, who has made a general reconnaissance of the range, was recently sent to make a brief study of the canyon of the Clackamas River at a point near Cazadero, about 20 miles southeast of Oregon City.

He reports that the plain lying along the western base of the Cascade Range at an altitude of about 1000 feet is traversed by the Clackamas River in a canyon, and at a point about two miles west of Cazadero the canyon is approximately 500 feet deep, with moderately steep slopes of rock cliffs, soil and talus stretches, more gentle near the top, where there are land slides and also at the bottom, where there are local terraces capped with gravel.

The rocks of the canyon walls are of four volcanic breccia, lava sheets, volcanic dikes and terrace gravels. Of these, volcanic breccias are by far the most abundant and important.

Occurrence of Volcanic Breccias.
The volcanic breccia (hard rock) is made up of unsorted angular fragments of lava andesites and basaltic lava flows, ranging in size from dust particles and grains of sand to large rock fragments many feet in diameter. This fragmental material was blown by the largest eruption from the volcanic craters higher up on the range and fell upon the mountain slopes where it became so saturated with water from the eruptions that it flowed in great steaming sheets from the Cascade Range to the gentle slope of the plains. In much the same way the smaller material flowed down the old stream channels on the western slope of the Sierra Nevada in California, and covered the early and often rich deposits of auriferous gravels.

Nonfragmental Sheets of Lava.
Sheets of solid nonfragmental lava, forming part of the bed rock and outcropping on the slopes of the canyon, occur within and between the great sheets of volcanic breccia. Some of the lava sheets are basalt, others andesite and they are usually less than 100 feet in thickness. The basalts are generally very porous and gray or dark. The andesites are often reddish and porphyritic with the crystals of feldspar and hornblende. The largest lava sheets is well exposed by the water's edge on the right bank of the river, a short distance above the dam site. Another sheet outcrops above the dam, 500 feet or so from the water level, and at the proposed dam site, two miles above Cazadero, there are a number of thin lava sheeted cliffs on the canyon slopes. The depth to which the sheets of volcanic breccia and lava extend in the Clackamas region cannot be readily determined, but it is certainly hundreds of feet and may be, as it is along the Santiam and McKenzie River canyons, over 1000 feet.

Occurrence of Volcanic Dikes.
Nearly vertical dikes of basalt cut up through the sheets of volcanic breccia and lava and their outcrops on the surface have the direction of N. 35 degrees W. approximately parallel to the general course of the Cascade Range. A small group of dikes, about 15 feet in thickness, the only ones noted in the region, is well exposed along the



WEATHERED SLOPE OF VOLCANIC BRECCIA IN NORTHERN CALIFORNIA SIMILAR TO THAT OF THE CLACKAMAS CANYON, OREGON.

water's edge a few hundred yards above the proposed dam site.

Joint Cracks in the Rocks.
The dikes and sheets of lava in some places have a well developed columnar jointing, which divides the rock into columns. In the case of the dikes the columns lie horizontally and extend across the dikes. In the lava flows the columns are vertical, but in all cases the columnar joint cracks are limited to the dike or lava sheet and do not extend into the adjacent rock nor make an opening of great extent.

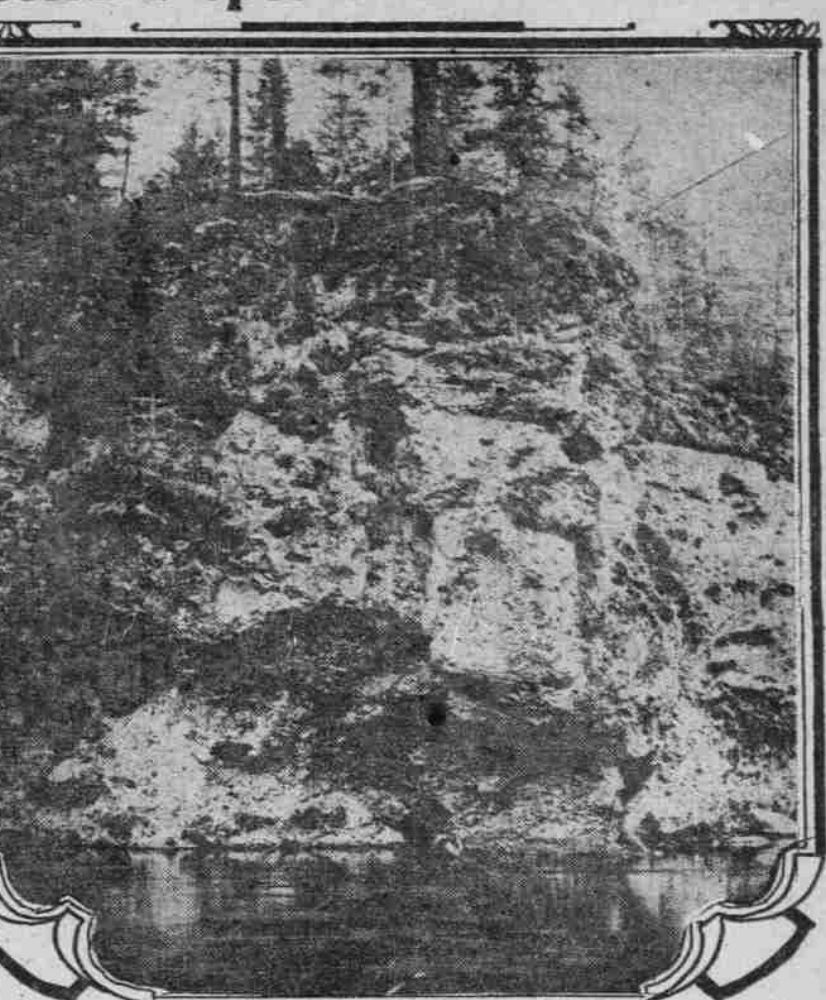
There is, however, another set of joints, parallel joints, the open cracks of which cut up through the volcanic breccias and sheets of lava about vertically in a direction approximately parallel to the course of the canyon. The most pronounced joint cracks of this type were noted along the southern brink of the canyon nearly opposite the proposed dam site. Such joints may be of considerable extent and form important openings for the circulation of water. Well developed joint cracks of this type were not seen in the exposed bed rock of the dam site, but they may be expected and should be carefully looked for where the bed rock is covered with soil or gravel. It is especially significant that the dikes are approximately parallel

to these joint cracks and suggest that these joint cracks may extend to great depths.

Importance of Land Slides.
The parallel joints have so weakened the canyon walls as to produce local land slides. This is especially the case on the left (south) side of the canyon opposite the proposed dam site, two miles north-east of Cazadero. A stream of rock fragments, broken from the jointed cliff at the top of the canyon slope comes down a shallow ravine to the river about a quarter of a mile above the dam site, while another slide from the top cliffs a short distance farther west reaches the

river below the dam site. The shoulder of the left bank that narrows the canyon for the dam site is bounded by these two slides east and west, and it is possible that this shoulder itself may have moved, thus rendering the proposed support of the dam on the left bank much less secure. No conclusive evidence was seen of such movement. If such slipping took place, the underlying slipping plane must be a water carrier, and should be found by the driller and test pits in the left bank that go below the river level. Along such a plane there would be more or less fine material, soft and slippery like clay when wet. Such material engineers often call "soapstone." It would form no core

of loose earth, and stones, are not to be expected in the volcanic breccia, but owing to the manner of accumulation of the material there may be small openings and the porosity of the rock is high. It is pervious to water, and for this reason similar material is used for making water-coolers.



VOLCANIC BRECCIA OF THE CLACKAMAS CANYON, OREGON, SHOWING UNASSORTED, ANGULAR FRAGMENTAL CHARACTER OF FORMATION.

In drilling and might be readily overlooked.

From the nature of the volcanic breccia which forms by far the greater part of the canyon walls it is evident that the drill cores will differ from one another very much when compared. When the drill goes through a sheet of lava or a large solid fragment it will yield a good core, but where it penetrates the finer material the volcanic ashes, in which the fragments of all sizes are embedded, the core falls, the material is pulverized by the drill and washed away, and yet the extent of this material that is washed away is of the greatest importance, for it is the weakest element in the structure and the one which, when saturated with water under pressure, is most likely to become engineer's "soapstone." Soapstone, properly so-called, does not occur in that region at all, but all of which when saturated with water may become slippery and would be called "soapstone" by Engineers, occurs locally in the volcanic breccia.

Large caverns and cavities, or pockets

The crushing strength of the volcanic breccia is, of course, small as compared with granite, limestone, and most other rocks, and this taken in connection with its porosity and the possible existence of undiscovered joint cracks seems to make a large reinforcement with concrete necessary, in order to furnish strength and prevent seepage as well as erosion.

Home Town Tales BY HELENA SMITH DAYTON

THE FEUD BETWEEN MABEL AND ETHEL

W AY back in dancing school days, when Professor Valentine was getting up a reception with featured specialties, he had learned that if Mabel Gibbs was given the Highland fling for a solo number, Ethel Prout must be made Queen of the Fairies or allowed to do the Spanish dance.

Mrs. Gibbs and Mrs. Prout never missed a Saturday afternoon during the course of seasons to be right on hand to look after the interests of their respective lambs. When they weren't telling the professor how to run his class or instructing their little daughters with whom—and with whom NOT—to dance, they'd sit in the front row and nod their heads in time to the music.

Mabel had black hair, more than she'd ever need, and plenty of features in conventional design, scattered prettily over a complexion whose bloom is rarely seen elsewhere than on the top row of peaches in a basket. But Mabel didn't have anything on Ethel—unless one preferred the matter. Mabel was at least in pale pink—Ethel in baby blue. Which do you think is the prettier of the two? was enough to start an argument whenever two or more persons were gathered. Of course the breach became wider between the Gibbesses and the Prouts after the two girls were graduated from high school. There couldn't be more than one MOST beautiful and MOST popular girl in such a small social pond.

Mabel's mother threw the first bomb into the clothes contest by marching Mabel off to the neighboring city for an expensive tailor-made suit and her first "real" evening gown. When they came on the rivalry ran into money for you don't think Mrs. Prout would let that Gibbs girl get ahead of her angel Ethel, do you?

Mr. Gibbs began to smoke a pipe and decided there wasn't anything the matter with his last winter's overcoat—if it had a new lining. Besides, business was booming.

was her own objection to him from the first.

"If any more of those silly boys come hanging around here to spend their evenings," said Mrs. Gibbs firmly, "some lemonade and sponge cake is quite enough to give them. The chaffing dish makes such a mess!"

"Ethel, I've decided to send you on a visit to your aunt's in Oswego, N. Y.," announced Mrs. Prout. "I think a change is what you need—and don't promise to correspond with any of these young men while you are gone."

Ethel hadn't been gone a week before Mabel was wearing her golf skirt and an old hat around town all the time, and actually allowing her nose to get sunburned. Just as poor Mabel was beginning to enjoy herself Mrs. Prout dropped something about the gay time Ethel was having at her aunt's and smiled significantly when she mentioned "a certain young man whose father is worth millions."

"Remember the sacrifice I'm making for you, Mabel," said the young woman's mother, as she said goodby down at the station. "Two weeks at a summer resort costs a lot of money—besides all those clothes you had to have! But if you are having a good time—(Mabel and her mother understood each other perfectly)—you may stay longer. I know Cousin Laura will be delighted to have you."

And the very first letter that Mabel wrote home to her anxious mother contained the sensational news that there was a real live count stopping at the same hotel! They weren't quite sure whether he was the tall one with the glasses or the short, fat man with the beard, but Cousin Laura thought the short.

"That evening it was all over town that Mabel Gibbs had become engaged to a count. By the next afternoon the count had become a duke—and outside of the town proper people weren't so sure but that it was a king.

"And all I said was: 'Stranger things

and prevels. Arriving unexpectedly, she walked up from the station alone.

"I thought you were having a grand time," said her mother reproachfully.

"Fair," said Mabel. "But what's all this talk about a Boston feller? Three people stopped me on the street to offer congratulations—one about the count and the other two about some Boston feller. I think I did write something about a chap I met from Boston; but he was engaged to a perfectly heavenly girl from New Orleans. Say, if Ethel Prout thinks she's good looking she ought to see that Miss—"

"Maybe the Prouts started those silly rumors about you," suggested Mrs. Gibbs miserably, "out of spite because Ethel's millionaire was a false alarm. I see she's going around a lot with that Mr. Searle, head bookkeeper for the Turners."

Mabel, listening for the front door bell, began to wonder "what had become of everybody." There wasn't any one she cared about seeing remarkably, though.

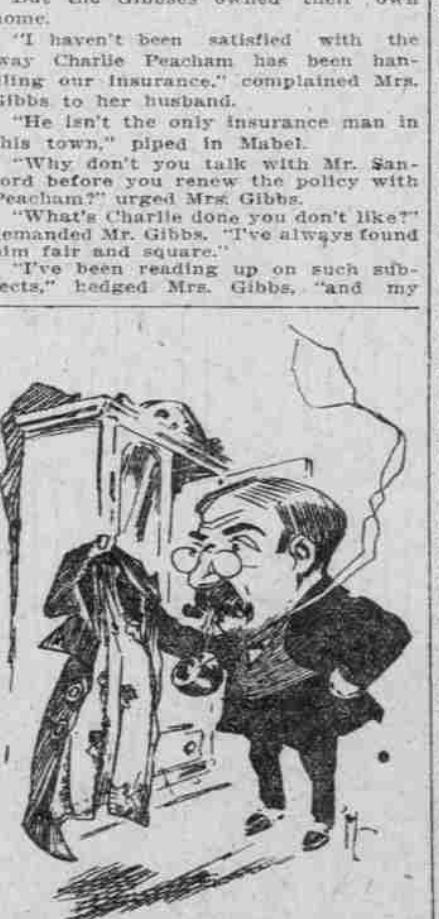
"They're out calling on Ethel," Mrs. Gibbs remarked consolingly, "because Mr. Searle seems to be frightening every one else away."

Ethel Prout happened to be passing the New Wazley block for the sixth time that afternoon—there are so few places in a small town to wear a brand new outfit!—when who was standing right in the entrance but that sweet Mr. Sanford, the new insurance agent! He was talking to Dr. Grant, the dentist, and Ethel just knew that Mr. Sanford asked who she was—because when she ventured to look back he was still looking.

Mabel Gibbs also had a romantic experience with Mr. Sanford which was almost identical with Ethel's.

"The idea was: Who would get the first introduction?"

"I haven't given a party for a long time," began Ethel to her mother, "and I was thinking if we had a crowd up—we might invite that poor Mr. Sanford



Mr. Gibbs began to smoke a pipe and decided there wasn't anything the matter with his last winter's overcoat—if it had a new lining.

But the Gibbesses owned their own home.

"I haven't been satisfied with the way Charlie Peacham has been handling our insurance," complained Mrs. Gibbs to her husband.

"He isn't the only insurance man in this town," piped in Mabel.

"Why don't you talk with Mr. Sanford before you renew the policy with Peacham?" urged Mrs. Gibbs.

"What's Charlie done you don't like?" demanded Mr. Gibbs. "I've always found him fair and square."

"I've been reading up on such subjects," hedged Mrs. Gibbs, "and my

Of course, the Prouts heard that Mr. Sanford had called on Mabel Gibbs.

"Never you mind, darling," said Mrs. Prout. "Any man with two eyes in his head can see through the Gibbesses. He'll see that you haven't broken your neck to meet him."

"If Mr. Searle calls, mommer, tell him I'm not at home," said Ethel crossly.

The next morning Ethel was on her way down to Waverly Hall to help the decorator put pink crepe paper over the electric light and to see that the floor had been waxed properly, when young Dr. Grant overtook her.

For a time Ethel lacked the courage to speak of the subject nearest her heart, but finally she ventured—when her interest wouldn't look suspicious—"How's your friend Mr. Sanford?"

"Why, that's one thing I wanted to tell you about," said the popular dentist. "He won't be able to come to the dance this evening—and he wanted me to express his regrets to you. The fact is, Mr. Sanford has gone away to be married! Yes, sir, what'd you know about that for a sudden fit? Of course, we all knew he was to be married soon, any affair in June. But he sent her a telegram, all of a sudden, that he was coming on and going to bring her back with her! Just fit right into the color scheme from the pictures don't blame him! Smart as chain lightning, he says. Oh—and Charlie Peacham has sold him the house on the corner—"

But Ethel, with a forced smile and abrupt word, washed into the Beehive. She bought a wisp of No. 9 white thread—and left the parcel and 5 cent change on the counter. That evening at the dance Ethel Prout's engagement to Mr. Searle was announced.

Mabel Gibbs is going to be one of Ethel's bridesmaids and the two girls are quite inseparable just now. Ethel is so glad that Mabel's color is pink—as she'll fit right into the color scheme, if Ethel does act a little superior because she's engaged first, Mabel overlooks it because she soon will have the field to herself—and the future always is so full of golden possibilities for a girl who is single!

Mrs. Gibbs and Mrs. Prout are becoming almost as good friends again as when the two girls were not particularly attractive infants.

Captain Vancouver Circled Isle First, Says Victorian

Dr. Newcombe Soon to Establish Right Which He Declares Belongs Rightfully to Canadian and Not American.

VICTORIA, B. C., Dec. 25.—To establish for all time the right of Captain George Vancouver to the honor of having been the first to completely circumnavigate Vancouver Island, effectively quieting those Americans who assert that Captain Kendrick, with the sloop Washington, was the earliest seaman to accomplish the feat, is the primary object of a volume containing a circumstantial account of years of research and its results that will be issued shortly by Dr. Newcombe of Victoria.

The author, it is said, has a more intimate knowledge of the Indians of the North Pacific, their outstanding characteristics, their tribal customs, the inner meaning of the mystical carving found on totem poles which stand before their topees and over the graves of their braves than any other man living. For years he has been the Pacific Coast representative of the Smithsonian Institution, and in that capacity, has traveled with the natives through the wide of the island, Northern British Columbia and Alaska. He will prove beyond peradventure that Captain Kendrick never sailed around the island, through the wide of the island, American historians who declare that Captain Vancouver's claim "should not be taken too seriously," are misleading themselves in the United States. The more important, that when the dispute between the United States and Great Britain over the Pacific Coast territory, was being settled in Washington, San Juan Island and British Columbia, was laid before the German Emperor there was a document or rather a letter held in the archives at Washington, D. C., which, had it been included in the evidence, might have made a material difference in the finding and, under any circumstances, would have most effectually set at rest any inclination to claim for Captain Kendrick the honor of having been the hardy seaman who had the temerity to attempt the exploration of the unknown.

Dr. Newcombe does not go so far as to set on the argument that Washington, Oregon, as well as San Juan Island, should be enjoying British rule. But he does think it very peculiar, and does not hesitate in the expression of the opinion, that one of the parts of an early American navigator's report concerning the North Pacific, which might be considered the most important, is that he said before the German Emperor, should have been withheld.

In the pursuit of his researches he has assembled in his studio the records of all the important navigators—British, Spanish and American. Some exceedingly rare Spanish memoirs, in the original, were secured in Paris after many weary months of search, among the dusty shelves of an ancient book exchange.

Dr. Newcombe said that he had the greater portion of the data necessary for his book for some years; in fact, he was ready to prepare it for publication at the time of the Alaska boundary dispute. Owing to the somewhat unsettled state of public opinion in the United States and Canada over that issue, and its outcome, he refrained lest that it might add fuel to the fire, with possible serious results. Now, he said, the people of the two great Anglo-Saxon countries were in a reasonable, rational frame of mind. It would

A Love of 57 Varieties.
Young's Magazine.
Ah, me! She had been telling him her love.
In fact, the recital of it has occupied her, according to his rolled-gold time-piece, exactly seventy-three minutes.
"How did she love him?"
Ah, she loved him in "57 varieties" of ways.
Why did she love him?
She loved him (1) because he possessed dark and fascinating eyes which, like red-hot coals burned into her young soul; (2) because his head was covered with a superabundance of brown, curly hair; (3) because a "dear of a mustache" adorned his "fine, sensitive lip"; (4) because—but why enumerate any further?
He opened his lips. No use! Nothing could stem the torrent of her ardor. He opened his lips again—
"Edgar," who cried in alarm, "you are yawning—you have yawned three times—there you go again—"
"Dearest," he broke in desperately, "I wasn't yawning; I was merely opening my mouth to speak—to tell you—"
"Yes, yes?"
"That your rat has fallen on the floor, dear!"

In the Way of Trade.
Athelton Globe.
Talk to any man five minutes, and he will tell you how much better business was last year.

The Pass Round Boy.
"Th' Pass Round Boy has come next door—"
He's been there two three times before. His pa that lives there ain't his pa. But his ma—she's his rilly ma.

His rilly pa, he don't live here. But his ma that lives here, it looks queer. But his ma—she's his rilly pa. The ma there ain't his rilly ma.

And so his got two homes, you see. An' not just one, like you an' me. He hafta stay one place a while. An' change then in a pass round style.

He say 'at once his rilly pa. An' him lived with his rilly ma. But they unmarried, an' at now He's just a Pass Round Boy somehow.

He says he want he was like me. An' things was like they use to be. An' they lived like they did before. So he won't pass round any more—
Th' Pass Round boy, his name is Jim. An' I think just a lot of him—
But I'm purt' nuff as glad as you. An' they'll hear a pass round, too!
—Harper's Weekly.



Mrs. Gibbs and Mrs. Prout are becoming almost as good friends again as when the two girls were not particularly attractive infants.

opinion is Mr. Sanford has the best company to be in."

"Maybe I'll drop in and talk to him," said Gibbs.

"As the house is in my name—I like to be posted, too," broke in his wife. "Let him come up here some evening and bring the pamphlet and we can both look them over."

Mr. Gibbs happened to look at Mabel just then, and reminded him of the dressmaker's bill that had come that afternoon. Well, perhaps it would be well to help the good work along. Sanford certainly seemed like a hustler.

The very next evening Mabel floated into the front room just as Mr. Sanford was taking out his fountain pen to write the policy. After some pleasant conversation and music, Mrs. Gibbs had the nicest little lunch, which made a great hit with Mr. Sanford, who was heading at the Mansion House.

"Come up to dinner Sunday," invited Mrs. Gibbs. "I certainly can sympathize with any one who has to board at the Mansion House."

"Maybe I'll have a place of my own," hinted Mr. Sanford, blushing. Mabel also blushed.

Mrs. Gibbs beamed.

Mr. Gibbs said, "My boy, I'll sound some of my friends and see if I can't put something in your way."

"Did you ever hear anything any more pointed," asked Mrs. Gibbs after the caller had taken his departure. She kissed Mabel very tenderly. There was no telling how soon she would be losing her