

# HARNESSING OF TIDES, THE DREAM OF AGES, IS ACHIEVED AT LAST

## Inventor Succeeds in Generating Electricity by Utilizing Lifting Power of Water

By FRANCIS A. GOODALL, Central Press Special Correspondent.

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BOSTON, Mass., May 18.—That ages old problem of harnessing the tides of the ocean to assist in the work of man appears to have been solved at last.

The actual generation of electricity for heating, lighting and driving of industrial units by utilizing through the operation of a hydraulic motor, the tremendous lifting power of the tides, is now being accomplished at East Saugus, Mass.

The man who has made this possible is John A. Knowlton, friend of the late Dr. Charles P. Steinmetz, the clerical wizard. Knowlton was born in Rockland, Me., July 25, 1859. He began an intensive study of hydraulics 20 years ago. He first demonstrated the idea of utilizing the lifting power of the tidal waters by producing a working model. Then came the struggle to obtain funds with which to construct an experimental plant where tests might be made.

Capital fought shy of the proposition. Banks refused to do anything at all. In time Knowlton succeeded in organizing the Universal Tide Power Co., and the erection of an experimental plant was begun at East Saugus, Mass., five years ago.

Disasters Spell Success. Within the last six months so much more power has been developed than had been considered a possibility that some portions of the experimental plant have been wrecked and rebuilt to withstand greater strain. On one occasion cast-iron gears were stripped of their teeth before the power should be reduced, and a heavy iron shaft, four inches in diameter, was twisted in two. It was necessary to strengthen the

plant's equipment before completing the tests.

Steel gears and steel shafting replaced weaker metals. Then power was transmitted to a newly installed dynamo connected with an elaborate electric lighting system, when it was speedily learned that the load was far too light for the tremendous power developed. It was then discovered that one of the giant floats, weighted with 100 tons of granite boulders, had been weakened to the extent that disaster was threatened. It was decided to strengthen all the mechanism of the experimental station before attempting to again produce electric light, heat and power.

The inventor says he might have been thoroughly discouraged if every disaster had not spelled almost unlimited power possessed by the tidal water when properly stored and utilized through the operation of a specially designed hydraulic motor.

Knowlton's hydraulic motor makes use of the lifting power of water one cubic foot of salt water being able to lift 64 pounds. The mechanical idea involved is similar to the mechanism that drives a four-cylinder automobile by means of a gasoline engine, except that in the latter the power is derived by the downward stroke of the piston, forced by explosion, while the Knowlton method is based on power derived from the vertical motion of a large float, or piston, lifted by water. The larger the float the greater the power.

The experimental plant has three main divisions—the outer storage basin; a coffer dam, within which are the floats and all other generating mechanism, and the spillway into which the water emerges after having performed its work. The floats alternate in motion as do the pistons of a gasoline engine. By means of notched racks and units of gears the vertical motion of the floats is transformed into a rotary shaft

## WHERE TIDES HAVE BEEN HARNESSSED TO DYNAMOS



The ages old problem of harnessing the tides of the ocean to assist in the work of man appears to have been solved at last. In a plant at East Saugus, Mass., John A. Knowlton, after 20 years of experiment, is generating electricity by utilizing through a hydraulic motor the tremendous lifting power of the tides. He is shown above at right. Above at left is a general view of the experimental plant. At right the hydraulic motor is seen linked to a dynamo.

motion, turning the motor and giving forth the power derived from the tidal waters.

Tentative plans are in readiness for the creation of a 50,000 horsepower plant that would use Boston harbor and Quincy bay, with an area of 55 square miles, for a storage basin. Lynn harbor and the bays adjacent to Revere and Winthrop would form the spillway basin, with an area of 19 1/2 square miles.

Locks for Ocean Craft. If these plans are ever carried out it will be necessary to build a dam across the expanse of Broad Sound, from the estate of the late Senator Henry Cabot Lodge,

at East Point, Nahant, to the coast of Hull, a distance of 7 1/2 miles. The power units would be established between the dam and Deer Island, covering an area of 2 1/2 square miles.

There would be no interference with the arrival or departure of ocean craft, for vessels would pass

through giant locks similar to those at the Panama canal. It is estimated that there will be developed power sufficient for the operation of railroads, street car lines and many of the industries in this part of New England, in addition to heating and lighting cities and towns at minimum cost.

## BANKS OF OREGON GAIN RESOURCES OVER 9 MILLION

(Associated Press Local Wire.)

SALEM, Ore., May 18.—The resources of all Oregon banks at the close of business on April 6, 1925, the date of the last call, totaled \$330,251,561.09, an increase of \$9,601,529.91 over the total of March 31, 1924, which was the corresponding call of last year. The total resources of all banks in the city of Portland on April 6 was \$179,356,163.58, an increase of \$7,487,395.59 over March 31, last year. These figures are shown in the statement of Frank C. Dremwell, state superintendent of banks, made on the reports of the April 6 call.

On this call the 280 banks in the state showed loans and discounts of \$165,552,635.19; deposits excluding time and savings, \$172,750,083.23; time and savings deposits, \$104,976,294.27; total deposits, \$278,726,477.50; borrowed money, \$6,728,020.49.

Fifty one cities and towns in the state with a total of 150 banks show deposits of \$500,000 or more. The first five are: Salem, \$9,493,645.56; Eugene, \$7,362,621.79; Astoria, \$7,047,827.21; Pendleton, \$5,270,977.02.

Extra special prices on photographs to close out stock. McKean, Darby & Baldwin.

## LOCAL NEWS

Extra special prices on photographs to close out stock. McKean, Darby & Baldwin.

Former Resident Here.—Len McMullen, formerly of this city, motored from Myrtle Point Saturday and is spending a few days in Roseburg attending to business matters.

Leave for Ashland.—Mrs. A. J. Carman and Mrs. D. H. Moran, of this city, left this morning for Ashland, where they will spend the next several days visiting with friends.

Party on Way South.—Mr. and Mrs. E. M. Drew were guests overnight at the Umpqua Hotel Sunday. They are motoring to Ashland where they will attend the Odd Fellows convention this week.

Cummings Leave For South.—Mr. and Mrs. W. A. Cummings left for Ashland in their car this morning, and will attend the Odd Fellows convention at Ashland, Thursday.

People at Terminal.—Rube Tompsett, Hannah Beard, Mildred Hubbard and Helen Hubbard, all of Salem, were guests at the Terminal hotel last night. They are enroute to Ashland by motor to attend the Odd Fellows convention.

Leaves For South.—Mrs. M. L. Hullin, who has been visiting with old friends here for the past five or six weeks, left this afternoon for southern California, where she will make her future home. Mrs. Hullin formerly taught school in Douglas county, and plans to teach in the south.

Party Visit Here.—Mr. and Mrs. Robert Cowan stopped over in this city Saturday and visited with Mrs. Cora Claus a short time. They are from Montezuma, Wash., and have been on a motor trip through southern California. Mr. Cowan is the county agricultural agent for Grays Har-

## BRIEFS BEFORE STATE BOARD ON STUDY COURSES

(Continued from page 1.)

studies in two adjacent counties, with no difference in their services to the state excepting that one of them will have a monopoly of certain technical courses.

"If both institutions spread out then over the whole field of activity, instead of adhering to the lines of demarcation laid down by the board of higher curricula in 1913, instead of having one series of distinguished courses covering the full field of education, we shall have two parallel series both of which will be impaired in efficiency."

He held that the college is fully protected by the 1913 ruling in giving graduate work in its own lines, but that the graduate school itself with the principal elements of advanced work, was assigned to the university.

"It is in the graduate school that duplication is most expensive

and the injury done to the state the most severe."

"Our whole contention rests upon the ruling that the board has already handed down, and in the interpretation of which the college has shown a tendency to take an inch here and an inch there, until the effect begins to threaten the efficiency of higher education in the state."

MacPherson in his talk declared that of the 24 proposed members in the brief of the University many are blanket proposals and are not sufficiently specific to admit of accurate answer.

He spoke of the university as having shown "audacity" in presuming to dictate to the board of higher curricula and "handing down from its superior position of authority determinations as to just how much and what sort of learning is good for anyone?"

"Second, they wish to eliminate the course of industrial journalism and change its destination and function to department of publicity." If this were done the whole usefulness of the department which has been incalculably great

will be crippled and the state will be deprived of thousands of dollars of free service that can be given it through no other channel.

"Third, it demands an improvement of the agricultural college in all its cultural values."

He charged the university with having introduced undergraduate courses in commerce in duplication of the work of the college.

"However, when we saw this we did not presume to dictate to your board in the matter—until what I regard as a bad example was set us in the brief of the university."

He criticized the course in domestic sciences in the University of Oregon "as a paper course" and suggested its investigation by the board. The presentation of the university's position in relation to the school of music and general discussion by interested alumni and friends of either institution, were to occupy the afternoon session. The board will take the matter under advisement and announce its decision at a future date.

PORTLAND, Ore., May 18.—When the board of higher curricula

went into session here today, it had before it the brief of the University of Oregon of 67 pages in which the issues were raised, and the brief of the Oregon Agricultural College, of 212 pages, in which the college answered the charges advanced by the university.

The college's argument against the attitude of the university was that the latter aimed to reduce the college to the status of a trade school which no young man or woman of college caliber having capacity for leadership would care to attend."

The university's brief, as filed with the board last week, contended that the college had instituted courses beyond those assigned to it by the board including the offering of courses of advanced and semi-graduate character in fundamental subjects and by practically organizing a college of basic arts under a dean. It was also charged that the college by establishing non-technical majors had taken the most important steps in becoming a second state university.

The college in its brief, filed with the board late Saturday, specifically denies any intention of trying to become a second state university but declares that the courses as developed "are necessary and basic to modern work in higher technology which is the field of the Oregon Agricultural College."

Replying to the university's charge that in the field of business administration the college duplicates all the work of professional character assigned the university, the brief of the college argues that undergraduate school in commerce is far more advantageously located in a school of higher technology than it would be in a liberal university.

The university's brief declared that the college had recently included in its educational course an array of studies of value chiefly to non-vocational teachers and to educational administrators. The college replied to this by stating that it aims to prepare students for teaching in high schools, and that the great number of the schools cannot afford to hire a teacher to handle agriculture, home economics or manual training alone, consequently it is necessary for students who expect to teach to choose various cultural and technical subjects. "The university implies," said the college brief, "that a man training in agriculture for example cannot rise to the position of administrator of a rural high school, and therefore should have no training provided for such a position."

Charges by the university against the college's department of industrial journalism are answered in effect by saying that technical writers require the training which they receive at the college in order to make them efficient in their fields.

The university's charge that the college's school of music has been greatly expanded beyond the limits set by the settlement of 1913-14 is answered by the declaration that the music school of the college had been self supporting and has rendered valuable service not only to the college, but to the community.

The brief of Oregon Agricultural College takes several things at the University's brief, including this statement:

"With all the sublime assurance and vision of the 18th century classical training, the brief says

## NEW ATTORNEY ASKING FOR FURTHER DELAY

(Associated Press Local Wire.)

PORTLAND, Ore., May 18.

—Prior to the time set for the opening of the trial at 3 p. m. today of Horace Greeley Wilson of Roseburg, on a charge of violation of the federal Mann act, his new attorney notified Assistant United States Attorney Joseph Searns that a motion for six months' postponement would be made. Searns said he would oppose this motion.

down for you, gentlemen, the exact quality and quantity of economic, sociology, government, history, language literature, music and physical training which may safely and advantageously be entrusted to the rank and file of students attending the Oregon Agricultural College. Let them be taught agricultural economics, they say in effect, but cut out their public finance. Questions of taxation and expenditures of public funds are not for common farmers or farm leaders, give them the marketing of farm products, they tell you, but take away these courses on transportation, concentration and monopoly in business and the business cycle. Why should the farmer attempt to understand the reason that it frequently costs more to transport a box of apples to the point of consumption than he receives for it?

The college's brief charges the university brief furnishes insubstantial evidence supported by misleading quotations. "Almost every page," it contends "contains errors of fact."

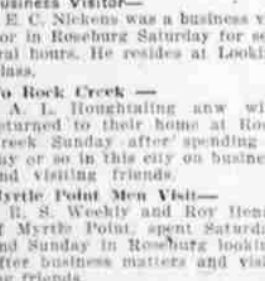
Dr. Smith, Joseph E. Hedger, Rabbi Jonah B. Wise, A. G. Beale, of Tillamook, and Charles A. Brand, of Roseburg, are members of the board of higher curricula.

Business Visitor.—E. C. Niekens was a business visitor in Roseburg Saturday for several hours. He resides at Looking Glass.

To Rock Creek.—A. L. Houghtaling and wife returned to their home at Rock Creek Sunday after spending a day or so in this city on business and visiting friends.

Myrtle Point Men Visit.—H. S. Weekly and Roy Henry of Myrtle Point, spent Saturday and Sunday in Roseburg looking after business matters and visiting friends.

## The Best Salesman in Town?

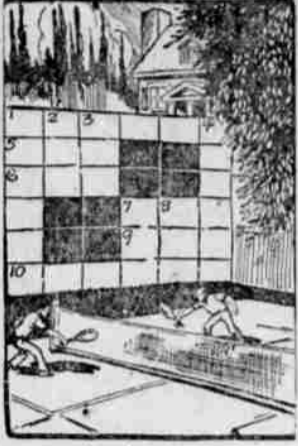


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## Children's Pictorial Cross Word Puzzle

HOW TO SOLVE PUZZLE.

The words start in the numbered squares and run either across or down. Only one letter is placed in each white square. If the proper words are found each combination of letters in the white squares will form words. The key to puzzle—the first word—is given in the drawing. Below are keys to the other words.



Running Across.  
Word 1. What the men in the picture are playing.  
Word 5. Wrath, anger.  
Word 6. Allow; permit.  
Word 7. A boy's name. Male cats are called by this name.  
Word 9. A feeling of wonder and reverence.

Running Down.  
Word 1. The name of the greatest player in the game shown above.  
Word 2. Before.  
Word 3. It's between the men in the picture.  
Word 4. One of the four seasons of the year.  
Word 7. A thick black liquid derived from coal.  
Word 8. To be indebted to.

Watch for the Congotium Pattern Sheets from McKean, Darby & Baldwin.

## LODGE DIRECTORY

United American—Meets in MacCabe hall first and third Thursdays. Visiting members always welcome.

HELEN WHITTAKER, M. A. MILDEED McCULLOCH, Treas. BELLE STEPHENSON, Sec.

O. E. S. Roseburg Chapter No. 3—Holds their regular meetings on the first and third Thursdays in each month. All sojourning brothers and sisters are respectfully invited to attend.

CORA B. SINGLETON, W. M. FRED JOHNSON, Secretary.

Union Encampment, No. 1, O. O. F.—Meets in Odd Fellows Temple on 2nd and 4th Wednesdays of each month. Visiting Patriarchs always welcome.

FRED MILLER, C. P. W. P. WETHERILL, Sec'y.

United Brotherhood of Carpenters and Joiners of America—Meets at 478 S. Main second and fourth Tuesday evenings of each month. All carpenters welcome.

T. F. HOLME, Rec. Sec. EMERY COLE, Pres.

Umpqua Klan No. 5.—Meet 2nd and 4th Mondays of each month. Address P. O. Box 885, Roseburg, Oregon.

Laurel Chapter No. 31, R. A. M.—Meets every third Tuesday of each month in Masonic Temple. All members requested to attend and visiting companions welcome.

A. A. WILDER, High Priest. W. F. HARRIS, Secretary.

Woodmen of the World, Camp No. 125.—Meets in the Odd Fellows Hall in Roseburg every first and third Monday evening. Visiting neighbors always welcome. JOHN DELL HESS, C. C. M. M. MILLER, Clerk.

B. P. O. Eika, Roseburg Lodge No. 226.—Hold regular communications at the Eika's Temple on each Thursday of every month. All members requested to attend regularly, and all visiting brothers are cordially invited to attend.

J. G. DAY, Jr., E. R. J. T. GOODMAN, Secretary.

A. F. & A. M., Laurel Lodge No. 13.—Regular communications second and fourth Wednesdays each month, at Masonic Temple Roseburg, Ore. Visitors welcome.

M. S. HAMM, W. M. W. F. HARRIS, Sec.

Pythian Sisters, Umpqua Temple No. 4.—Meets the second and fourth Monday evenings of each month, at the K. of P. hall. Visitors always welcome.

MARTHA CHRISTENSEN, M. E. C. EVA MARKS, M. of R. C. MAY E. PARKER, J. of P.

L. O. O. F., Philetarian Lodge No. 12.—Meets 4th Odd Fellows Temple every Friday evening. Visiting brethren are always welcome.

DONALD YOUNG, N. G. A. J. GEDDES, Rec. Sec. J. B. BAILEY, Fin. Sec.

Knights of Pythias, Alpha Lodge No. 47.—Meets every Wednesday in Knights of Pythias hall, 2nd Eads street. Visitors always welcome.

SAM CHRISTENSEN, C. C. ROY O. YOUNG, M. F. E. E. WIMPEPLY, K. R. S.

Eagles, Roseburg Aerie—Meets in MacCabe hall, on Cass street, on second and fourth Wednesday evenings of each month, at 8 o'clock. Visiting brethren to good standing always welcome.

RICHARD BUSCH, W. P. P. THEO. W. ALTHAUS, W. P. B. F. GOODMAN, Sec.

ROSEBURG LODGE NO. 107, L. O. O. F.—Meets every Wednesday night. Moose hall, 249 N. Jackson St. Club rooms open 7:30 to 10 p. m. Visiting brothers welcome.

W. A. BOGARD, Dictator. H. O. PARGETER, Secretary. JNO. M. THIRONE, Treasurer.

K. O. F. M.—Meets each second and fourth Thursday of each month, in MacCabe hall, corner Cass and Pine streets. Visiting Knights always welcome.

L. C. GOODMAN, C. M. G. W. RAPP, R. K.

Neighbors of Woodcraft, Litac Circle No. 49.—Meets on first and third Monday evenings, in K. of P. hall. Visiting neighbors invited to attend.

ALVIA WETHERILL, G. N. MARGARET WHITNEY, Clerk.

W. E. A. G. T. W.—Roseburg Review No. 11.—Holds regular meetings on second and fourth Thursdays at 7:30 p. m. Visiting sisters invited to attend reviews. MacCabe hall, Pine and Cass streets.

CLARA BONERAKE, Com. JESSIE RAPP, Co.

Roseburg Retenah Lodge No. 41, L. O. O. F.—Meets in Odd Fellows Temple every week on Tuesday evening. Visiting members in good standing are cordially invited to attend.

MRS. MARGARET ASHCRAFT, N. G.

TILLIE I. JOHNSON, Rec. Sec. ETHEL BAILEY, Fin. Sec.

## A HOSS APIECE!



## The Minute That Seems A Year.



WHEN YOU'RE WAITING AT THE DENTIST'S HOPING AGAINST HOPE THAT HE'S BEEN TAKEN ILL, OR GOT HIS APPOINTMENTS MIXED SO HE WON'T BE ABLE TO SEE YOU, THE NURSE SUDDENLY SHATTERS YOUR BRIGHT DREAMS BY ANNOUNCING CHEERILY "ALL READY"