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OUR WATER RESOURCES

5. DEEP RIVER SURVEY

In the last week's issue there were presented certain unfavorable conditions which exist on a number of rather small streams in the state, on which are located individual water power developments. It was shown that these inefficient conditions could be greatly improved by giving thought to the development of the stream as a whole, instead of piecemeal. This week we are to consider a thorough investigation recently made by the state to indicate what actually could be done on a typical stream of the class under consideration.

The Deep River rises in Guilford county, the two chief forks coming together just above Jamestown. The river flows in a general southeasterly direction through Guilford and Randolph counties to the Moore county line. From there it flows nearly due east to Carabonton, and thence in a northeasterly direction to Moncure, where it unites with the Haw River to form the Cape Fear. The total length is about 114 miles, and the total drainage area about 1,340 square miles. The river is typical of a number of Piedmont streams.

Surveying a River

Late in 1922 nine of the mill and power interests on the river agreed to contribute one-half the expense of a water power investigation of the stream, to be carried on by the Geological and Economic Survey, now the Department of Conservation and Development. Field work was carried on during the summer of 1923, and a detailed report issued in 1924. Free copies of the report may be obtained from the Department.

First a complete plan and profile of the river was made, showing the location of all existing developments, and the amount of fall at each. All of the undeveloped fall was measured, and possible dam sites capable of economic development were investigated. Accurate levels were run along the river, and in many instances were the first authentic elevations to be established in various towns. The investigation brought out the following points.

1. The total fall from the crest of a proposed 40-foot dam near Jamestown to the mouth of Deep River near Moncure is 612 feet in a distance of 114 miles. The fall now developed is 302 feet. Of the 310 feet now undeveloped the investigation indicates how 247 feet may be economically developed, utilizing 90 percent of the total fall on the river. The river would then be just a succession of ponds for almost its entire length.

Storing Flood Waters

2. Stream flow studies indicated a very low discharge during the low-water months of each year. Many existing plants had to shut down at these times, or depend wholly on steam power. Yet large quantities of water flowed over the present dams in times of flood, and produced no power. Investigation showed that most of the dams were from 15 to 20 feet high, and were nearly filled with silt, so as to be able to store little or no water. Three economical undeveloped dam sites were found where dams of 40-, 50-, and 60-foot height respectively could be built, creating large storage reservoirs where excess flood waters could be retained for use during dry periods. By means of these reservoirs the dependable low-water stream flow could be increased three times, which would increase the low-water power at all present plants by the same amount. Moreover, the destructive effect of floods would be lessened, and the erosion occasioned thereby reduced.

3. Silting at present power dams was investigated, and indicated that at many plants nearly half the available power is lost through inability to store the night flow because the ponds are filled up. Methods for removing silt were studied, and this part of the investigation especially has been widely quoted in national engineering periodicals.

Primary and Secondary Power

4. By primary power is meant that power which can be produced for practically all the year, even in the driest

periods. Secondary power is power which can be produced for shorter periods. The investigation showed that at present plants in operation there is developed 279 feet fall on Deep and Rocky Rivers, with 1,147 twenty-four-hour primary horsepower and 4,597 secondary seven-months horsepower theoretically available. If the rivers are fully developed in accordance with the scheme recommended, 604 feet fall will be developed, and there can be produced 8,160 primary twenty-four-hour horsepower, and 6,774 twenty-four-hour secondary horsepower. If the power is used only during a ten-hour day and the total flow can be used, this is equivalent to 19,400 primary and 16,370 secondary horsepower.

Super-Power on Small Scale

5. It happens that at the lower end of the river are located the Deep River coal fields. These are admirably situated for supplying cheap fuel to a large auxiliary steam power station, which could supply power during those parts of the year when the stream flow was low. Such a station would enable the secondary power to be used as primary power, and would permit the development of 15,000 primary twenty-four-hour horsepower available all the time during an average year. This steam power would be far cheaper than that now produced at the small local plants, both because it would be made from cheaper coal, and because the plant would be more efficient. One such mouth-of-mine steam plant is already located near Gulf.

6. An interesting illustration of the value of the proposed storage reservoirs is in their effect upon existing plants. If the storage projects were developed these plants could produce on a twenty-four-hour basis over 1,700 primary horsepower more than they now produce.

7. In order to make the scheme for complete development of the river effective, it is necessary that all of the plants should be interconnected by transmission lines, so that surplus power at one plant might be sent to another plant, and the power from the mouth-of-mine steam plant at the bottom of the river could be transmitted up stream. Moreover, the new developments on the river would then only have to be power plants pure and simple, the output being transmitted to the existing mills which are in need of more power or to new industries which might locate where there were good railroad facilities, and at some distance from the river. In short, under the scheme proposed, there would be created along Deep River a small-scale super-power district, with existing and potential capacity to meet the power needs of the region for a long time in the future.

The best test of an investigation of the sort outlined is whether business interests regard it feasible to carry out. In this particular case the two small power companies located on the river, and which would normally have become the nucleus of the expansion of the scheme, were bought out by one of the largest power companies in the state as soon as the results of the investigation began to develop. It will be interesting to note whether these purchases were consummated with the idea of helping to develop Deep River as a power asset to the state under some such plan as outlined, or whether they were made to gain control of a vital link in the carrying out of the scheme and prohibit or greatly hinder the competition which might have developed from more efficient utilization of the power producing capacities of the river. Whatever the outcome of this aspect of the matter it is a fact that several of the mill interests which cooperated in the investigation are going forward with plans based upon the results of the investigation.—Thorndike Saville.

WOMEN'S MAGAZINES

In the last issue of the News Letter there was carried a table showing the rank of the states as readers of the 47 prominent magazines with nation-wide circulation. After glancing over the study the reader might ask two ques-

THE PRINTED PAGE

It is not my purpose to emphasize the importance of reading, the influence of the printed page upon modern life—it is so evident that emphasis is superfluous—it would be arguing the obvious. Civilization as a process must have a medium through which to express itself. Since the invention of printing, the printed page has been the main medium through which the collective experience of the human race is recorded and passed on to society.

Lack of communication, or a result of the lack of reading, is one of the outstanding causes of the origin, or at least of the duration, of the Dark Age. In that age the collective experience of the race in the past could not be added to the personal experience of the individual. The individual is not only a member of his family or group, but also of a larger unit which runs back to primitive man, and if the line of connection is cut or clogged, we have a low ebb in civilization.

Reading by presenting to us the past and the present, by revealing to us what others are doing and what they have done, throws light upon our present problems and future difficulties. It has on the one hand the potential power to develop breadth of citizenship, fullness of life. It renders the individual's vocation more profitable and illuminating, his leisure time more enjoyable, his understanding of public questions more adequate, his conception of life more versatile—in fact in every way it renders him more capable to adapt himself to an ever-changing social environment and more susceptible to the needs of a multifold society. On the other hand, by fostering an adequate understanding, it renders the social structure able to cope with social complexes and to meet adequately the demands of a diversified life, and to prepare the individual to live—not merely to exist. Only in this way is society able to present to the individual an opportunity for an harmonious development equal to his natural ability and to insure a democracy co-extensive with the demands of a complex life.—Orlando Stone.

tions: (1) What is the status of the various divisions of the country in reading? and (2) to what extent do the circulations of different types of magazines coincide?

Forty-Seven Magazines

The answer to the first question is given in the following table which shows how the various geographic areas rank as readers of the 47 leading magazines with a nation-wide circulation.

Rank Group	Inhabitants per Magazine
1 Far West:	
California, Oregon, Washington	1.99
2 New England:	
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	3.11
3 Mountain:	
Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, Wyoming	3.46
4 Middle West:	
Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin	3.54
5 Middle Atlantic:	
Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania	3.64
6 Southern:	
Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia	7.36
United States average	3.97

The South Ranks Low

The states on the Pacific, with one magazine for every 1.99 persons, easily outrank other sections, reading about 60 percent more than the New England states, and three and seven-tenths

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times as much as the Southern states, which occupy the cellar position.

The table brings out some interesting facts. Puritanic New England is the most conspicuous rival of the unconventional far West. The Rocky Mountain states—and mountains generally make contacts difficult—rank high in reading. Broadly speaking the agricultural Middle-West and the industrial Middle-Atlantic states occupy almost the same position, whereas the Middle West and the farming South refuse to be classed together, the former reading more than twice as much as the latter. The South reads less than half as much as all other sections of the United States combined.

Our Women Read Little

The second question, to what extent do the circulations of the different types of magazines vary, is answered in part by the accompanying table which shows the rank of the states in the reading of women's magazines. This table shows the circulation of a group of eleven women's magazines that had in 1924 a combined circulation

of 12,721,760. By comparing this table with the one showing the distribution of 47 general magazines it will be seen that the states rank almost exactly the same in each case. California ranks first with one copy of the women's magazines for every 4.6 persons. Oregon and Washington follow in close succession; whereas North Carolina ranks forty-third, the same rank that she occupied in the table carried last week which showed the rank of the states as readers of the 47 leading magazines of all types.

One women's magazine comes into North Carolina for every 18.06 inhabitants, while the average for the United States is one copy for every 8.31 inhabitants. In other words, the women of North Carolina read less than half as much as the women the country over, just as the state reads less than half as much, all magazines considered, as the average for the entire nation. Does North Carolina read? As a reader of magazines only five states of the Union make a poorer showing. The rank of the states in the circulation of newspapers will be considered in a future study.—Orlando Stone.

THE CIRCULATION OF "CLASS" MAGAZINES IN 1924

The following table shows the rank of the states in the circulation of "class" magazines, magazines that appeal to a particular class of people. The seven "class" magazines considered are as follows: Field and Stream, Forest and Stream, House Beautiful, Physical Culture, Popular Science, Scientific American, and System.

United States average, one magazine for every 86.24 inhabitants.

Orlando Stone, Research Fellow

Institute for Research in Social Science, University of North Carolina

Rank States	Inhabitants per Magazine	Rank States	Inhabitants per Magazine
1 California	39.92	25 Nebraska	111.37
2 Oregon	48.96	26 Rhode Island	115.29
3 Washington	54.04	27 Wisconsin	116.40
4 Nevada	56.41	28 Iowa	117.53
5 Wyoming	58.16	29 Missouri	124.91
6 Montana	74.06	30 South Dakota	125.37
7 Michigan	74.09	31 Maryland	128.16
8 Arizona	74.30	32 Kansas	129.66
9 Florida	75.93	33 West Virginia	130.87
10 Connecticut	80.46	34 Delaware	132.34
11 New York	80.81	35 Oklahoma	136.63
12 Colorado	81.48	36 Texas	142.66
13 Idaho	81.85	37 New Mexico	142.88
14 Utah	83.17	38 North Dakota	148.12
15 Ohio	84.71	39 Louisiana	192.41
16 Maine	86.46	40 Virginia	220.91
17 Massachusetts	86.89	41 North Carolina	244.00
18 Illinois	88.34	42 Tennessee	244.31
19 New Hampshire	91.33	43 Arkansas	258.89
20 Minnesota	98.23	44 Georgia	280.08
21 Pennsylvania	102.85	45 Kentucky	317.72
22 New Jersey	103.44	46 Alabama	322.28
23 Vermont	106.04	47 South Carolina	337.82
24 Indiana	106.93	48 Mississippi	411.63

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The Circulation of Women's Magazines in 1924

The following table shows the rank of the states as readers of women's magazines. The table is derived by dividing the total circulation of women's magazines by the population.

California ranks first with 4.60 inhabitants per women's magazine, and Mississippi ranks last with 24.89 inhabitants per women's magazines in circulation in the state. Only five states rank below North Carolina.

United States average, one women's magazine for every 8.31 inhabitants.

The magazines whose circulation this table concerns are: Delineator, Designer and Women's Magazine, Good Housekeeping, Ladies' Home Journal, McCall's Magazine, Modern Priscilla, People's Home Journal, People's Popular Monthly, Pictorial Review, Vogue, and Woman's Home Companion.

Orlando Stone, Research Fellow

Institute for Research in the Social Sciences, University of North Carolina

Rank States	Inhabitants per Magazine	Rank States	Inhabitants per Magazine
1 California	4.60	25 New York	7.97
2 Oregon	4.67	26 Florida	7.97
3 Washington	5.37	27 Wisconsin	8.03
4 New Hampshire	5.46	28 Delaware	8.18
5 Wyoming	5.69	29 Idaho	8.20
6 Vermont	5.94	30 Missouri	8.21
7 Iowa	6.19	31 North Dakota	9.05
8 Ohio	6.26	32 Maryland	9.64
9 Michigan	6.31	33 Utah	9.65
10 Connecticut	6.35	34 West Virginia	9.86
11 Massachusetts	6.38	35 Arizona	9.93
12 Maine	6.39	36 Oklahoma	11.17
13 Colorado	6.52	37 Texas	11.80
14 Nebraska	6.53	38 Virginia	13.49
15 Nevada	6.83	39 New Mexico	14.32
16 Indiana	7.08	40 Kentucky	14.41
17 New Jersey	7.21	41 Tennessee	15.88
18 Minnesota	7.23	42 Arkansas	18.01
19 Montana	7.40	43 North Carolina	18.06
20 Kansas	7.41	44 Louisiana	18.44
21 Rhode Island	7.60	45 Georgia	21.64
22 Illinois	7.78	46 Alabama	22.01
23 South Dakota	7.81	47 South Carolina	22.83
24 Pennsylvania	7.85	48 Mississippi	24.89