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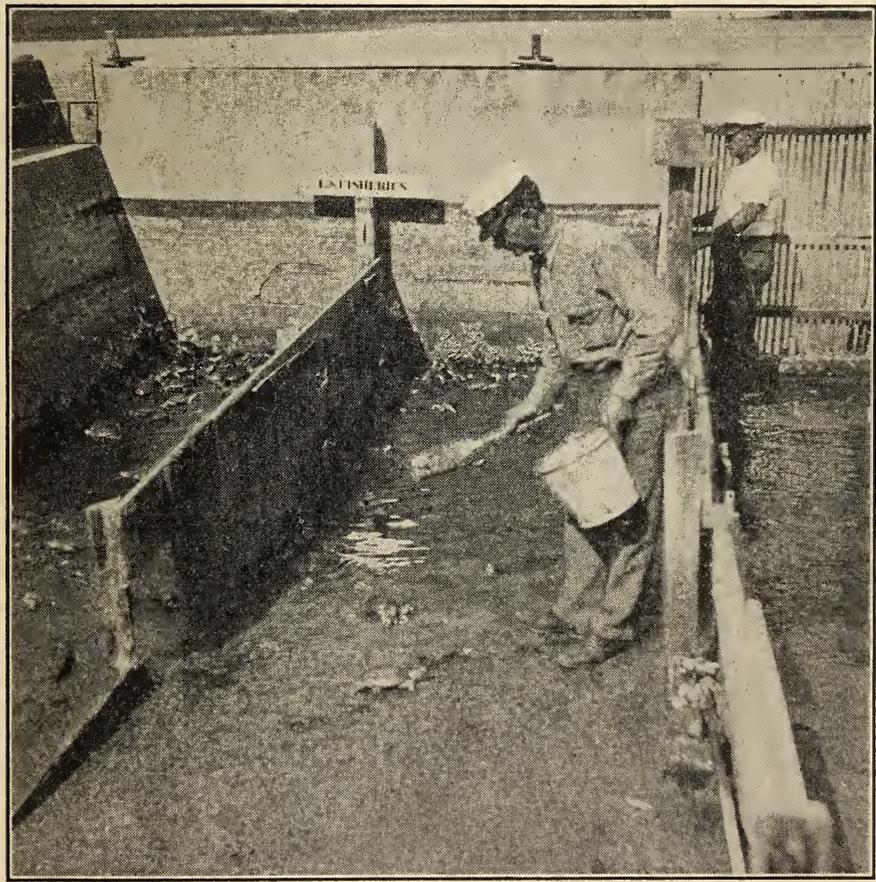
CONSERVATION AND INDUSTRY

*A Monthly Publication of the North Carolina
Department of Conservation and Development*

Vol. IX

RALEIGH, N. C., JANUARY, 1932

No. 1



FEEDING DIAMOND-BACK TERRAPINS

CLIMATIC DATA FOR CERTAIN NORTH CAROLINA TOWNS AND CITIES

(Data are from U. S. Weather Bureau records and cover periods of from 10 to 40 years)

CITY OR TOWN	PRECIPITATION IN INCHES		Average No. Days With .01 or More Precipitation	TEMPERATURE DATA IN DEGREES FAHRENHEIT		
	Average Annual Rainfall	Average Annual Snowfall		Average Maximum Temperature	Average Minimum Temperature	Average Annual Temperature
Albemarle.....	49.26	6.7	120	73.1	47.3	60.2
Altapass.....	49.06	23.8	94	.....	.....	.....
Asheville.....	39.86	11.0	133	65.0	43.8	57.3
Banners Elk.....	55.21	44.6	119	59.8	38.7	49.2
Beaufort.....	48.76	1.6	117	70.6	56.4	63.4
Belhaven.....	48.34	4.9	79	72.5	50.9	61.6
Brevard.....	65.20	10.1	115	67.9	42.2	55.0
Bryson City.....	53.57	14.2	122	.....	.....	.....
Chapel Hill.....	47.08	9.0	98	71.3	48.3	59.8
Charlotte.....	46.86	6.4	123	69.5	50.9	60.2
Chimney Rock.....	55.01	11.8	95	70.8	46.4	58.6
Cullowhee.....	47.12	10.6	131	69.3	42.7	55.9
Durham.....	43.26	.....	83	.....	.....	.....
Edenton.....	50.37	8.1	81	70.1	50.1	60.1
Elizabeth City.....	46.30	5.6	.....	.....	.....	.....
Elizabethtown.....	46.15	7.3	72	.....	.....	.....
Elkin.....	46.56	11.9	100	.....	.....	.....
Enfield.....	43.84	.....	.....	.....	.....	.....
Fayetteville.....	47.60	5.2	105	71.9	50.8	61.5
Goldsboro.....	50.58	4.5	113	71.7	49.6	61.1
Graham.....	46.75	9.2	108	.....	.....	.....
Greensboro.....	47.66	6.6	103	69.3	47.9	58.8
Greenville.....	49.42	.....	.....	.....	.....	.....
Hatteras.....	54.68	1.9	134	67.4	56.4	61.1
Henderson.....	48.16	11.2	112	68.5	48.9	58.7
Hendersonville.....	62.20	8.1	121	66.8	43.7	55.2
Hickory.....	51.94	9.8	112	69.9	47.4	58.7
Highland.....	82.75	18.1	121	61.2	40.2	50.5
Hot Springs.....	43.43	19.8	118	69.3	47.1	58.1
Jefferson.....	49.90	18.2	118	63.3	40.7	52.0
Kinston.....	49.08	6.3	91	73.9	50.1	61.9
Lenoir.....	50.97	9.8	95	68.4	45.4	56.4
Lincolnton.....	48.34	8.4	99	71.9	46.6	58.5
Linville.....	60.23	24.8	96	58.6	38.2	48.4
Louisburg.....	45.70	11.0	91	70.0	48.2	59.0
Lumberton.....	48.59	4.9	109	73.5	50.3	61.9
Marion.....	58.60	12.5	130	69.8	45.7	57.7
Marshall.....	40.67	13.0	117	67.5	44.6	56.0
Mocksville.....	45.59	7.8	104	69.8	48.1	58.9
Monroe.....	47.34	4.4	89	72.4	47.5	60.0
Morganton.....	50.83	11.3	106	69.2	47.0	57.9
Mount Airy.....	46.10	10.1	98	68.0	44.1	56.0
Mount Holly.....	50.75	4.8	101	.....	.....	.....
Mount Pleasant.....	47.28	8.6	107	70.1	48.6	59.0
Murphy.....	59.21	9.2	116	.....	.....	.....
New Bern.....	56.52	3.9	116	73.1	51.3	62.0
Patterson.....	56.39	9.0	108	.....	.....	.....
Pinehurst.....	45.76	4.8	89	73.1	49.9	61.4
Pittsboro.....	46.47	9.8	87	70.2	47.1	58.5
Raleigh.....	46.64	8.0	126	69.4	50.4	59.9
Ramseur.....	47.02	10.7	96	71.0	44.7	57.6
Reidsville.....	44.40	11.4	109	69.9	47.2	58.7
Rockhouse.....	84.26	11.2	131	63.3	45.6	54.5
Rockingham.....	48.24	5.9	79	73.1	49.7	61.5
Rocky Mount.....	43.20	.....	.....	.....	.....	.....
Roxboro.....	43.02	12.9	84	68.7	46.8	57.8
Salisbury.....	47.73	6.9	86	71.4	48.9	60.1
Sanatorium**.....	41.34	.....	89	73.1	49.8	61.4
Scotland Neck.....	42.66	7.8	109	70.2	49.0	59.6
Smithfield.....	49.35	7.8	90	71.5	48.9	60.2
Snow Hill*.....	49.59	6.4	113	73.1	49.0	61.3
Southern Pines.....	49.65	8.4	92	73.2	50.5	61.8
Southport.....	49.07	1.8	106	71.3	55.3	63.9
Statesville.....	50.76	7.6	86	71.5	46.2	58.6
Tryon.....	61.04	8.7	111	71.6	47.7	59.6
Washington.....	56.23	6.0	112	73.7	51.0	62.3
Waynesville.....	46.43	13.2	114	66.1	42.0	54.1
Willard.....	50.86	3.4	85	74.4	49.5	61.9
Wilmington.....	48.79	1.6	121	71.7	54.5	63.1
Winston-Salem.....	46.49	8.1	88	68.9	46.1	57.5

* 8 years. ** 7 years.

Table arranged by B. W. Sipe.

CONSERVATION AND INDUSTRY

RALEIGH, N. C., JANUARY, 1932

BURCHARD EMPHASIZES NEED OF CONTINUITY OF STREAM GAGING RECORD

Lack of desirable continuity in stream-flow records is one of the greatest handicaps in their use for the solution of increasingly diversified problems, according to E. D. Burchard, district engineer of the U. S. Geological Survey, with headquarters in Asheville, commenting on a review of existing records of this type in North Carolina by Chas. E. Ray, Jr., principal assistant hydraulic engineer of the Department of Conservation and Development.

"Our rapid industrial expansion has resulted in an ever-increasing use of water," says Mr. Burchard. "The supply of this in a general sense is an undetermined constant of wide annual variation. The increase in demand can be met only by conservation. This in ultimate form means regulation. Equitable administration of such must be based on an accurate inventory of available sources of supply. To say that this problem is too far distant to warrant our attention is but to close our eyes to conditions already present in the arid West and in our large centers of population in the East. . . .

"Despite favorable conditions, large expenditures have already been incurred in building storage reservoirs to augment the deficiencies of seasonal stream flow. Increasing resort is being made to the streams for additional water supplies and sewage disposal. This not infrequently involves a conflict of interests whose satisfactory adjudication must be based on the available stream-flow data. Vast hydroelectric developments have been financed on the basis of these records, while similar developments of the future will require the same basic information.

"Steam generation plants are equally dependent upon an adequate water supply, and must be located in regard thereto. Location of new processes in manufacture is largely governed by quantity and quality of available water. Flood regulation is of

growing importance with the increase in property values of the areas affected. Preventive measures are closely joined with navigation, water supply, and stream pollution interests. The coastal region with its wealth of shore line and sounds does not lie beyond the influence of the tributary rivers. Salt intrusion of drought flow and flood flow damage to fishing interests are of real importance. Changes in coastal inlets and their bearing on growing property investments are matters of present study which cannot be disassociated from the rivers whose waters they pass to the sea. . . .

"Stream flow is the residual rainfall on its way back to the sea. It varies widely from point to point, as might be expected of the resultant of as many factors. Knowledge of the flow at a gaging station does not insure a corresponding flow at another point. Relationship in flow between points can be established, however, so that a short-time record at a point desired may be properly analyzed by comparison with a nearby long-time record. The longer the record, the greater the assurance of the values of the mean and extremes. To maintain continuous records at all points where information may in future be needed is economically impossible. To maintain such records at representative points is essential for the future best interests of the State. Determination of the number of records to be maintained is a matter of present economies and future needs.

"The mortality of stream-flow records in general is high, due to shortsighted fiscal policies and to rapid development of the rivers. From past experience it is impossible to predict to what uses a given record will be placed. It is, therefore, essential that the data obtained have a general application and be not too closely identified with some immediate need. Water master is a term foreign to this section, but future demands may easily create such an office. Proper adjudication requires a knowledge of the available flow. As long as progress continues, North Carolina may well answer this question by insisting on continuous stream gaging. This will then serve as the basis on which the best utilization of its stream flow may be determined to meet future needs."

LARGEST DIAMOND-BACK PRODUCTION REPORTED AT CO-OPERATIVE FARM

With a hatch during the season of 1931 of diamond-back terrapins numbering 12,-152, Dr. H. F. Prytherch, director of the U. S. Bureau of Fisheries Station at Beaufort, reports the most successful year since the propagation of these animals was begun on a large scale with the cooperation of the Division of Commercial Fisheries of the Department of Conservation and Development.

Dr. Prytherch ascribes the pleasing result of operations during the season largely to the efforts of Charles Hatsel, who has been in immediate charge of the breeding of diamond-backs at the station since about 1906.

Previously the highest production was that obtained in 1928, when 8,931 young terrapins were propagated at the laboratory. However, the most encouraging feature of the results in 1931 was the fact that the breeding stock was much smaller than the previous year. A total of 1,700 adult terrapins was lost from the pens in the heavy storm of 1929. Since that time 600 diamond-backs were purchased to replenish the brood stock.

Bureau officials are much encouraged by the response to special chemical treatments of certain diseases which had been causing high mortality among the young terrapins. In the past the mortality has ranged as high as 17 to 35 per cent of the total brood from diseases known as "sore tail," "soft shell," and "limber neck." These diseases, according to Dr. Prytherch, appeared in epidemic proportion last fall, but have been brought under control by means of treatments devised at the station. The loss of young terrapins has been reduced by the treatments from 103 in September to 21 in November and about eight in December.

Describing some of the details of terrapin propagation, Dr. Prytherch says:

"Records of the laboratory show that a single female terrapin may lay during one season from eight to approximately 36 eggs. The number deposited also varies considerably from year to year, and does not seem to be attributable to variations in food, temperature, weather conditions, or the keeping of the terrapins in confinement.

SPECIAL ANNOUNCEMENT

In order to effect economies made necessary by reduced operating funds, the publication of CONSERVATION AND INDUSTRY will be suspended temporarily.

The Department of Conservation and Development takes this means of expressing its appreciation to every individual who has shown an interest in the bulletin, with the hope that conditions will soon be such that it can be continued.

"During the period from May to July the female terrapin deposits from one to four batches of eggs in specially prepared sandbeds in the breeding pens. After an average period of approximately sixty-five days the young terrapin hatches from the egg and may remain buried or crawls out on the sand. The length of time required for hatching of the eggs is being carefully studied by Dr. Bert Cunningham of Duke University.

"Accurate records of the temperature of the sand during this period were obtained by the use of several recording thermometers. It was found that eggs which were placed out of doors in the shade hatched after a period of fifty-six days, while those which were exposed to direct sunlight required sixty-six days and over. Other batches that were kept inside of the laboratory at a comparatively low even temperature hatched after a period of sixty-nine days. Further studies of the effect of temperature and other factors on the embryonic development of the terrapin are in progress and will be reported upon more fully by Dr. Cunningham in the near future.

"This year's large brood of young terrapins is being grown in the specially constructed rearing house, where special attention is paid to various factors, such as food, temperature, control of diseases, etc. The advantages of these propagation operations are that the terrapins are grown to a larger, more healthy size for distribution by the Conservation Department in the spring, and are protected from destruction during the winter months by their natural enemies and other adverse factors such as are found under natural conditions."

FALLOW DEER THRIVING IN WESTERN CAROLINA

Fallow deer which have been liberated on the Mount Mitchell State Game Refuge are reported to be thriving and multiplying at a rate giving promise of good hunting in surrounding areas from overflow from the refuge within a few years.

The deer were obtained by the Division of Game of the Department of Conservation and Development through J. Q. Gilkey, Marion member of the Board, from the New York Department of Conservation.

Original stock consisted of two bucks and five does, but ten young fawns have brought the total number of fallows to 17 on the refuge. According to reports, the new deer are fraternizing readily with the native or white-tails.

The fallow deer is somewhat larger than the native species; it has light spots sprinkled over its back and sides; and the antlers are larger than those of the Virginia or white-tail deer, being more like those of the elk.

RAY PRESENTS REVIEW STREAM-FLOW RECORDS

A paper on the subject, "Minimum Flow of North Carolina Streams," presented by Chas. E. Ray, Jr., principal assistant engineer of the Division of Water Resources and Engineering of the Department of Conservation and Development, before the N. C. Section, American Waterworks Association, at Greensboro, gives a comprehensive review of stream-gaging operations and their indications over the forty-two-year period during which this work has been prosecuted in the State.

The paper traces maximum and minimum flows over the period, and suggests uses to which this information may be applied in the interest of public economy and development of the State.

This paper probably gives the most comprehensive review and summarization of the stream-flow drought of 1930-31 yet issued. It will be run in its entirety in an early issue of the national journal of the American Waterworks Association, and also will probably be issued as an official document of the Department of Conservation and Development.



This group, pictured with wives, relatives, and friends, is largely responsible for the improved hunting being found around the edges of the State Game Refuges in Western North Carolina. Refuge keepers from the reservations in the mountain section are shown gathered for a picnic atop Mount Mitchell. C. N. Mease, chief refuge warden, is shown at the extreme left of the picture.

FORESTER'S INSPECTION IN PINE REGION OFFERS SUGGESTIONS TO STATE

An extensive trip of inspection through the pine regions of Georgia and Florida as a feature of the annual meeting of the National Association of State Foresters by State Forester J. S. Holmes during the middle of November revealed projects that should be interesting to Eastern North Carolina because of similarity of conditions with those viewed by Mr. Holmes.

One of the most interesting phases of a report made by the State Forester is the operation of a plant recovering by-products from the stumps of longleaf and slash pines.

The operating company, he says, contracts for stumps at a price of 50 cents per acre. They are removed by a caterpillar puller which takes hold of the stump by means of two parallel arms.

Approximately 25 per cent of the weight of the sound wood is taken out by steam process and the remaining chips are used as fuel for the plant. The products are resin, spirits of turpentine, pine oil, and a number of other more or less known chemical products separated by fractional distillation. Mr. Holmes was informed that 200 tons of stump wood yield about 1,200 gallons of turpentine.

The State forester inspected an interesting slash-pine planting experiment, showing a contrast between the setting of seedlings pulled from the woods and wild seedlings dug up carefully and carefully planted. Plantations following the first-named system, Mr. Holmes said, resulted in a loss of almost 98 per cent of the stand, while carefully dug and planted seedlings showed almost a unanimous survival. The successful plantation showed trees of a height of almost nine feet after two and one-half years growth.

Mr. Holmes went over a 225,000-acre forest in North Florida which furnishes an example of effective fire protection. Much of this area, he continued, is in second-growth longleaf pine, some of which is being chipped for turpentine. Through this region, Mr. Holmes averred, second-growth slash and longleaf pine is being chipped, the trees varying from four to twelve inches in diameter.

From experiments being conducted at Starke the State forester found it had been

pretty definitely decided that chipping two, three, or six times a week is much more profitable than the present general practice of chipping once a week. These experiments, he asserted, are being conducted on the Osceola National Forest.

SHARP CURTAILMENT IS EXPERIENCED IN LUMBER CUT OF NATION FOR 1930

A slump in the cut of lumber throughout the Nation in 1930 from the previous year is shown in U. S. Census reports. The drop is noticeable in the grand total of production for the entire country as well as for virtually every individual state.

A preliminary report from the U. S. Bureau of the Census gives the production of lumber, lath, and shingles for the United States as 26,051,473,000 feet, board measure, in 1930, in comparison with a total of 36,886,032,000 sawed in 1929.

North Carolina's lumber cut amounted to 814,835,000 board feet in 1930, while the total was 1,202,000,000 board feet during the previous year. In 1928 the cut amounted to 1,021,000,000 feet.

One of the most noticeable features of the reports of lumber cut for the past several years has been the steady decrease in the production of large mills. This is taken by State Forester J. S. Holmes to be occasioned by either smaller cutting by the large mills or the substitution of small units.

Census reports for 1928 showed that 14 mills cut more than ten million board feet each in the State, these having an aggregate cut for the year of 266 million feet; in 1929 the number of mills cutting this volume of lumber had been reduced to 10 and their total cut to 170 million feet; by 1930 only five mills were producing 10 million feet, and their aggregate output for that year was only 72 million feet.

Another interesting fact is that North Carolina stands first in the number of saw-mills with 1,612, more than three hundred above Alabama, which has the second largest number, or 1,303.

North Carolina dropped one place, from tenth to eleventh, in the total production of lumber between 1929 and 1930. Approximately 76 per cent of this cut is yellow pine.

WASHINGTON MEMORIAL TREE PLANTINGS GOING FORWARD OVER COUNTRY

Last year the American Tree Association set a goal of 10,000,000 trees to be planted in memory of George Washington on the two-hundredth anniversary of his birth. A recent check of the numbers of trees registered shows that over seven and one-half million have been planted in honor of the father of our country.

A North Carolina picture of one of the largest George Washington plantings was recently run in Nature magazine. This was a view of over seventy-five Boy Scouts planting trees in memory of George Washington on the Lake Johnson watershed near Raleigh. Much favorable comment was given to the Forestry Division of the Department of Conservation and Development for helping with this project, sponsored by the Wake County Chapter of the Izaak Walton League.

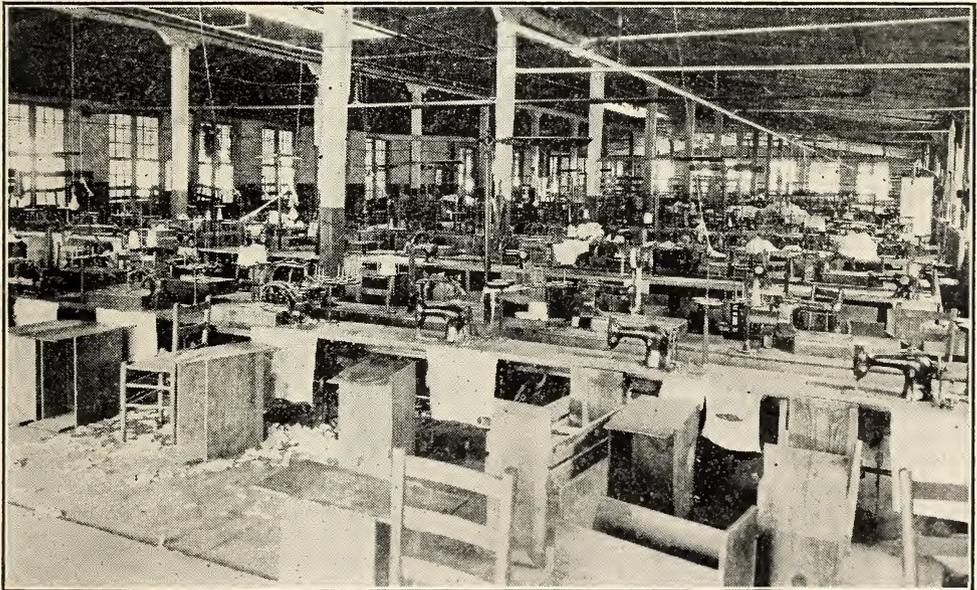
The figures are not available for the number of trees registered in North Caro-

lina, but indications are that it will reach a good number. Some thirty-one schools planted 17,600 trees which were registered under the bi-centennial program.

The Governor of North Carolina has planted a black walnut tree, secured from a nut which grew at Mount Vernon, on the Capitol grounds at Raleigh. The Boy Scouts and Girl Reserves took part in this ceremony. Another such tree was planted by high officials of the American Forestry Association on the Asheville Plaza last June at the annual meeting of the Association.

It is hoped that many North Carolinians will plant trees of all kinds this year and dedicate them to George Washington. An application for certificates may be secured by writing the Forestry Division, N. C. Department of Conservation and Development, or the American Tree Association of Washington, D. C.

George Washington, upon his retirement from active life in the Government of the United States, planted trees extensively on his estate at Mount Vernon, and many entries in his diary deal with shrubs and trees planted by him.



The garment-making trade is looked upon as having a promising future in North Carolina. Here is shown the finishing room of one of the newer plants of this kind in the State, manufacturer of men's cloth underwear. Growth in garment industries in North Carolina has been steady even during the last several years.

With the Wardens---and From the Field

Dr. H. H. Fries, owner of a private game farm at Tillery, according to C. T. Lawrence, Halifax County warden, has spent some \$1,200 on bounties for predatory animals and birds. Last year Dr. Fries, according to Warden Lawrence, raised about 500 quail, 350 pheasants, and 175 wild turkeys. The quail and pheasants are being used to stock the farm and the same disposition is being made of most of the turkeys, but the owner of the farm is reported as being willing to sell some of the stock for breeding purposes. The turkeys are reported to be of the purest wild strain obtainable.

Warden Alex Fields, of Moore County, furnishes this story: Owing to the dry weather, deer hunting in Moore County was not so good during the first of the season; and, therefore, a party of hunters in the eastern part of the county was unusually elated over jumping a fine buck. The deer gave the dogs a long chase and finally ran into a field surrounded by a wire fence. The deer became entangled in the fence. Two young ladies, seeing his predicament, ran to the rescue with a pine knot. The deer was dead and half dressed when the hunters arrived.

A set of deer antlers measuring 23½ inches across and containing six prongs was recently sent from Halifax County to Raleigh for mounting. This county also has the distinction of furnishing the only albino deer reported killed in the State this year.

Frustrated by dry marshes and smoke from forest fires on a goose-hunting trip at Lake Mattamuskeet, a party of West Virginians, according to Assistant State Game Warden Chas. J. Moore, of Washington, decided to hunt off the marshes in Pamlico Sound below Engelhard.

While sitting on the point of the marsh waiting for geese, the hunters forgot their expected quarry with the appearance of several deer. They succeeded in bagging three nice bucks and turned a disappointing trip into a happy ending.

The deer, according to Mr. Moore, were accustomed to coming out of the woods to the edge of the sound, and thus became targets for the expectant goose hunters.

an albino quail, killed on his farm near that place, to the office of State Warden Chas. H. England. The bird was entirely white with the exception of a few dark splotches around the head.

The specimen is being mounted by Curator H. H. Brimley, of the State Museum, where it will be on display. The bird will be available for future exhibitions of the Division of Game of the Department of Conservation and Development.

Mr. Baines is an enthusiastic conservationist, and he believes that the State Game Law has been the agency for a decided increase in useful bird life.

From Warden R. R. King, of Stokes County, comes an account of an unusual association between a gray fox and a large, spotted wild house-cat.

The pair was found by Warden King and a party of friends basking contentedly on a limb of a tree about thirty feet from the ground. Appearance of the hunters failed to frighten either of the animals, but the fox appeared to resent the intrusion by growling as if to show fight, while the cat gazed fixedly at the hunters.

Neither of the animals budged until a shot from one of the hunters brought the cat to the ground, and then the fox jumped from the limb and scampered through the brush.

Mr. King advocates protection for the fox, but believes that the wild house-cat is an enemy of wild life which should be killed when found roaming through the woods away from habitations. The warden has been a fox hunter of considerable prominence and at one time was owner of the famous Sauratown Mountain pack of fox hounds.

County Warden M. H. Haynes, of Edgecombe, believes his forest fire organization was responsible for preventing the burning of at least 2,041 acres of woodlands during November and the saving of some \$6,000 for the landowners.

Mr. Haynes reports eleven fires in his county in November, which burned over about 225 acres. Cost of suppression amounted to \$39.49, an average of about \$3.50 per fire.

Deputy Warden Dewey Price, of Rutherfordton, is one of the most active deputies in the State. His record shows 86 convictions for the past year.

A banded bird killed in Hoke County on November 26, about one and one-half miles southwest of Raeford, attracted quite a bit of interest, especially since its identification proved puzzling to those who inspected the carcass, according to H. R. McLean, Hoke County warden.

The bird was killed while flying with a flock of blackbirds, and it was described as being "similar to a starling."

Carcass and band were forwarded to the U. S. Biological Survey at Washington, which reported that it was a female red-wing blackbird which had been banded by Verdi Burch of Branchport, New York, September 6, 1931.

The women are very accommodating, thinks Warden D. M. Birchfield, of Cherokee. From a newspaper account of a hunt which was participated in by ten women and four men, Mr. Birchfield summoned fourteen persons for a hearing before a justice of the peace on charges of hunting without licenses. The women were dismissed after each had purchased a license.

E. H. Powell, Nash County game and fish warden, has suggested to members of the Rotary Club of Rocky Mount, of which he is a member, creation of a "Varmint Club." His idea, as expressed in the weekly bulletin of the club, is to rate crows, outlawed hawks, and other vermin at a certain number of points each. In a contest with another civic club of his city, he would total the points and have the low scorer feed the high. Bounties for killing the vermin would be turned over to some charitable organization.

Receipt of numerous albino specimens of North Carolina wildlife is reported during 1931 by the State Museum, according to Harry T. Davis, curator. The following birds and animals of this type were reported by Mr. Davis: gray squirrel, taken in Bertie County; buck deer, taken in Halifax County; gray squirrel, taken in Wake County, and partial albino quail, taken in Nash County. Other albinos or part albinos previously received by the museum include a white opossum, a white raccoon, two white crows, a yellow raccoon, a gray crow, a sparrow, and a robin.

County Warden E. F. Sorrels, of Buncombe County, and his deputies are making life hard for the violators of game and fish laws. During the last six months they have conducted about 200 prosecutions. For the last week in November there were eighteen convictions with fines and costs amounting to \$327.

FEDERAL GOVERNMENT ENLARGES GAME REFUGE

Acquisition of 3,600 acres of land contiguous to tracts previously approved for purchase in the Swanquarter Migratory Bird Refuge in Hyde County was authorized by the Migratory Bird Conservation Commission at a meeting in Washington on December 3, attended by Director J. W. Harrelson as a member of the Commission for the session.

The refuge area, according to a press notice from the U. S. Department of Agriculture, will be consolidated by the new areas authorized for purchase and its value as an inviolate sanctuary increased. Including water areas which will be taken within the reservation, the refuge now will total an administrative unit of about 25,000 acres.

Total authorized acquisition of lands at the December 3 meeting was 43,227 acres, which will cost the Government an average of \$5.74 an acre.

Since the initiation of the acquisition program by the Federal Government, 154,744 acres have been obtained throughout the country. In addition, 65,970 acres have been set aside by executive order, making a total of 220,713 acres established or in process of being established as inviolate Federal sanctuaries for migratory birds.

Refuges have been established in California, Nevada, Montana, Wyoming, North Dakota, Nebraska, Oklahoma, Florida, South Carolina, North Carolina, Maryland, and New York. The average price per acre of all lands approved for purchase under the new act is \$4.30.

Forty families out of every one hundred in the United States had radio sets in April, 1930, according to the preliminary count of families and families with radio sets made public by the Bureau of the Census. There were 29,980,146 families in the United States in April, 1930, of which 12,078,345, or 40.3 per cent, had radio sets.

Conservation and Industry

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A NEW YEAR—A NEW HOPE

Nineteen hundred and thirty-one, with its disappointments and discouragements, its shattered hopes and fortunes, has ended. And there are few who will mourn its passing.

With the beginning of the new year that is at hand, we shall naturally determine to profit by past mistakes and base our future course, as a normal people, on what we have in assets and a justified faith in opportunities ahead of us.

The year just over has been a period of increasing fear and lack of

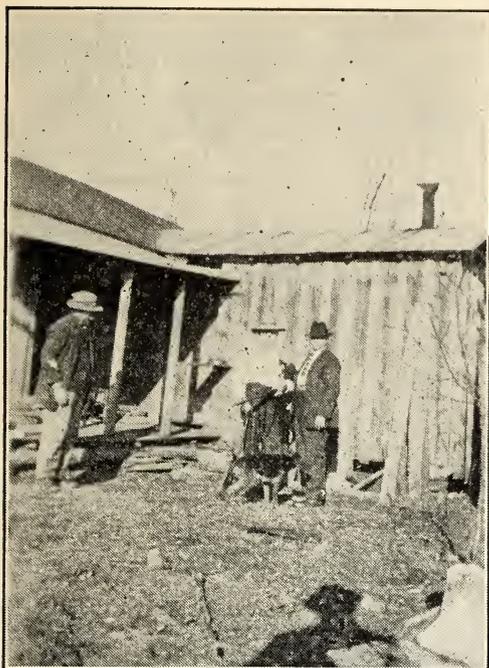
faith. And why? Financial difficulties of Europe? They are bad enough, but they do not answer the question of the normal American mind. This country may make some of its extra profit from exports, but even in the best of times from 85 to 90 per cent of its trade is domestic—buying and selling with our own people.

Unbalanced governmental budgets? Increasing taxes and extravagance? Bad enough, but no reason for a panic. No reason for closing our banks through the fear of depositors and refusal generally to recognize value in anything. Fear that has grown so completely unreasoning as to permit securities of some companies to sell on our exchanges at prices below the actual cash in their vaults. Fear that almost stopped buying and that brought about a cessation in manufacturing, with a consequent huge roll of unemployed.

We hardly can have lost faith in the recuperative power of a nation blessed with resources unequalled by any other country; with more actual and potential wealth per capita than exists elsewhere on earth. And yet we have been afraid not only to buy, but almost afraid to plan. The basis of the material wealth we counted in 1929 is still here. Save for some things that have worn out and other things that need repair, our resources are not impaired. And the things that should be replaced represent in a large part the great unfilled needs of 125,000,000 people.

Surely it is time to turn about; to face the year ahead in gratitude for our blessings and in confidence in our ability and our great opportunity to make the development of the past seem like a beginning only.

Nineteen hundred and thirty-two should be a better year.—*Manufacturers Record*.



Ninety-seven-year-old Edward ("Uncle Ned") Stewart, of Davie County, is shown here receiving a hunting license from County Warden A. E. Hendrix. "Uncle Ned" is said to be the oldest hunter in North Carolina, and perhaps in the Nation.

NINETY-SEVEN-YEAR-OLD HUNTER PURSUES SPORT

Davie County claims the distinction of having the oldest active hunter in North Carolina, and perhaps in the Nation, in the person of Edward ("Uncle Ned") Stewart, of Fulton Township, who has passed his ninety-seventh birthday.

The sale of a State hunting license to "Uncle Ned," as he is familiarly known among his friends, was attended by an informal ceremony staged by Warden A. E. Hendrix of Davie and Yadkin counties, who at that time set forth the claim of having the oldest hunter in his county.

"Uncle Ned" is a veteran of the War Between the States, having served under Capt. T. J. Brown, Company E, of the Forty-second Regiment. He celebrated his ninety-seventh birthday on August 5, 1931.

Purchase of a hunting license speaks for itself in the activity of the nonagenarian, but reports from Warden Hendrix reveal that he is spry considerably beyond

what might be expected of a man of his age. He has been a hunter for more than eighty years, and is said to be a good shot.

"Uncle Ned" is fond of hunting quail, following the hounds, sitting in a concealed place watching the tree-tops for squirrels, and of hunting rabbits. The cottontail is one of his favorite dishes.

TOPOGRAPHIC MAPPING OF SECTION COMPLETED

Announcement was recently made by the U. S. Geological Survey of the publication of a topographic map of the Stuart quadrangle, an area consisting of 240 square miles lying chiefly in Patrick County, Va., but including a small portion of Surry County and a larger area in Stokes County, North Carolina.

North Carolinians and others interested in this section will be pleased at the availability of the map, particularly because of the almost total absence of accurate maps of this section.

The map is an interesting example of modern topographic work, of preciseness in execution, and of first-class printing. The area covered by the map includes an extremely complicated drainage system of which the Dan River with its tributaries constitutes the principal feature. Within the North Carolina portion of the quadrangle there are included a number of power dam-sites.

These dam-sites have been surveyed in considerable detail and drawings have been made by the Division of Water Resources and Engineering, and are available for distribution at stated fees. Data for distribution include plan-profile sheets of the river, pond lines, and cross-sections of dam-sites, besides a general map of Stokes County on a scale of one inch to .7 of a mile.

North and South Carolina have the largest average families in the country, according to the 1930 census. The number of members in the average North Carolina family is 4.9.

There is a decided tendency toward smaller families in the country as a whole. The census of 1930 showed the average family for the country to be 4.1, as compared with 4.3 in 1920. The average population per family in 1910 was 4.5; in 1900, 4.7; and in 1890, 4.9.

HOLLY SHELTER PUBLIC HUNTING GROUND PROVES NEED OF MORE SUCH AREAS

Results of operation of the Holly Shelter public shooting ground, the first area of State-owned land in North Carolina set aside for that purpose, prove conclusively the value and need of publicly owned land open to all hunters, according to State Game Warden Chas. H. England.

All of the services of a refuge and public shooting grounds have been furnished, according to Mr. England, with virtually no expense to the game fund. Almost the entire expense of operation of the public shooting ground is represented by the salary of the refuge keeper and an original investment in a small building for headquarters for the keeper.

Total receipts from fees for the hunting ground amounted last year to \$757, Mr. England said. The major item of expense was the salary of the warden, which was \$600 for the year.

Holly Shelter refuge and public shooting ground consists of approximately 45,000 acres, the administration of which has been turned over to the Department of Conservation and Development by the State Board of Education. About 25,000 acres of the property have been set aside as a breeding or refuge area, and about 20,000 are used for public hunting during open seasons.

Last year, according to Warden England, more than one hundred persons from outside Pender County, some forty of whom were nonresidents of the State, hunted within the area.

"A number of nonresidents upon their return home wrote commendatory letters, expressing satisfaction with their success in hunting in the Holly Shelter area and calling attention to the courtesy shown by the county warden, Joe F. Johnson, his deputies, and the refuge warden, Oscar Chadwick," Mr. England said.

"As a result of several nonresidents hunting in this area, tracts of land have been purchased in Pender County and that section of the State for the establishment of lodges as well as for business purposes.

"Before the end of December of this season twenty nonresidents had been referred to the Holly Shelter grounds, and most of these had either visited the area or were planning to do so. These inquiries were from seventeen different states, and

JOHNSTON COUNTY SETS PACE IN POND BUILDING

Johnston County, largely through the efforts of Warden Wayland Jones, is setting a strong pace in the development of fish ponds on the farm, a program which has been pushed by the Department of Conservation and Development for years.

A survey recently made by Warden Jones reveals the construction of fifteen fish ponds in Johnston County last year, varying in size from three to ten acres. The warden found a total of forty ponds in the county.

Mr. Jones is a fish-pond enthusiast, and early last year started to boost such projects among the farmers of his county. He believes that the movement should result in the creation of at least twenty-five new ponds in his county this year, and has set this number as a goal.

Although the Johnston County warden has no means of estimating the total amount of fish taken from the ponds, he feels sure that a sufficient number has been taken to prove their value. He points out that farm fish ponds not only produce a ready source of appetizing food with which the ordinary farm menu can be varied, but also furnish a large amount of sport, the value of which cannot be figured in financial terms.

In addition to other advantages, farm fish ponds offer the possibility of income through the sale of game fish brood stock. This market may be limited at present, but with improved conditions the demands of an ever-increasing army of fishermen must be met.

Properly developed fish ponds are always an asset through an increase in value of the farm. Often unsightly and waste places are transformed into attractive areas by their construction.

Of the total budget for forest fire prevention and suppression in North Carolina for the fiscal year 1931-32 amounting to \$116,243, \$56,880 is being provided by the Federal Government, leaving \$59,363 to be furnished by the State, counties, and private coöperators. Georgia leads the South Atlantic States in provisions for forest fire protection with a total of \$150,699 from all sources, and is followed by Florida with \$131,478.

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more than half of them have been represented by hunters in Holly Shelter."

## MANUFACTURING PLANT GETS ORDER AS RESULT OF CAROLINA PROGRAM

Many of the results of the "Made-in-North Carolina" program, promoted by the N. C. Department of Conservation and Development to popularize the industrial products of the State, are intangible, but an instance where they were traced directly has come to the attention of the Department.

One of the large hosiery mills of the State has recently expressed publicly its appreciation to a large department store for its aid in obtaining an order for 120,000 pairs of hosiery from a buying group with which the store is associated.

This order, according to the president of the hosiery company, brought \$75,000 worth of business to the manufacturers that would have gone elsewhere but for the efforts extended by the merchant. As a result, according to the head of the firm, his factory had continued to run steadily and had kept its workers employed.

The department store, to which credit was given for landing the order for the manufacturer, featured North Carolina-made products on a large scale during the week set aside for this purpose and conducted a sale which attracted widespread attention over the State because of its many novel features.

The new order for North Carolina products is one of the results predicted by the Division of Commerce and Industry. Although this case furnishes only one example of direct expansion of business from the movement, it will continue to call attention of buyers throughout the Nation to industrial products of the State. The results are expected to be cumulative in effect, becoming more pronounced and more far-reaching as the movement continues to be stressed from year to year.

## NATIONAL FORESTS IN STATE ARE EXPANDED

Two areas in the same number of National Forests situated partly in North Carolina were among the 82,575 acres approved for purchase by the National Forest Reservation Commission in December.

A total of 5,450 acres was authorized to be added to the Cherokee and Nantahala National Forests; 2,329 acres of this being

for the Cherokee National Forest, situated in North Carolina, Georgia, and Tennessee, and 3,111 for the Nantahala National Forest in North Carolina, Georgia, and South Carolina. Purchase price for the Cherokee acreage was \$7,864.75, and for the Nantahala, \$11,761.80.

The acquisition program contemplates purchases in twenty-three existing units in more than a dozen states. It involves a total obligation of \$204,116.03.

## LEGION FORESTRY ESSAY CONTEST WON BY GIRLS

Miss Nell Stallings, of the Edward Best High School, was awarded first place, and Miss Lucille Hudson, of Louisburg High School, won second prize in an essay contest conducted last fall in Franklin County on the subject, "Protection and Development of Franklin County's Forest Resources," sponsored by the American Legion Post of Louisburg.

Miss Stallings, in the winning essay, contrasted forestry conditions in 1914 and 1928. In the former year, she pointed out, there was estimated to be a stand of 320,000,000 feet of merchantable timber in Franklin County, and in 1928, 90,000,000 feet, a decrease of 230,000,000 in fourteen years. In the absence of scientific forestry practice, she continued, this has resulted in unproductive or idle lands.

"The future of idle lands," the essayist said, "depends upon the growing of forests. By growing trees on idle land the soil will be enriched, the erosion reduced, the surroundings made more pleasant, not only by beauty, but by the fact that the general conditions are healthier. . . ."

"In the second place, the forest is a place of recreation. Hunters, campers, nature lovers, all have a place to forget their cares in a forest. It is a place where they may hunt, fish, camp, and rest to their hearts' delight.

"In the third place, the forest will pay for all the protection and development it has had by yielding a growth of timber which can be sold and the money pocketed for future use toward the development of the forests.

"Hand in hand with the development of forests goes their protection. Protection is over half the job, since the forest has to be saved from the ravages of fires, insects, diseases, hungry cattle and pigs, and destructive lumbering."

## FORESTRY ASSOCIATION MAKES ESSAY CONTEST POSSIBLE BY DONATION

Continuation of competition in the series of annual forestry essay contests among high school students of North Carolina, for which no funds for prizes are available in the Department of Conservation and Development, is made possible by the North Carolina Forestry Association, according to State Forester J. S. Holmes.

The association will furnish the necessary \$25 for prizes for the contest, Mr. Holmes has been notified by K. Clyde Council, of Wananish, president, and Col. Joseph Hyde Pratt, of Chapel Hill, chairman of its executive committee.

Although detailed plans of the essay contest have not yet been worked out, the subject, "The Forest in Relation to Hunting and Fishing," has been chosen.

The American Forestry Association, as for the two previous contests, will offer medals to the boy and girl submitting the best essays. The association will also present a bronze plaque to the school which furnishes the winning essayist. This plaque is now in possession of the Raeford High School, after remaining in possession of the Cullowhee High School the first year.

A new feature of the contest announced by State Forester Holmes is the coöperation of the North Carolina Council of the Izaak Walton League through David Lindsey, president. The council has agreed to secure so far as possible prizes in each county in which a chapter of the league is organized. These will be awarded to the two or three best essayists in the counties, making it possible for contestants to win a county award, even though they fail to land a State prize.

Further details of the contest will be announced later by State Forester Holmes, who will send out detailed instructions to principals of high schools in January. It is expected that the rules will be virtually the same as last year.

## WARDEN SERVICE SHOWS WORTH ON STATE LAKE

Besides regulating the use of natural resources in and around Lake Waccamaw, one of the State-owned lakes in the southeastern part of North Carolina, in the interest of the public, the special warden service which was provided during a

seven-months period last year proved worth while from the standpoint of collections.

Sale of licenses and permits of all kinds, including hunting and fishing, according to a report from A. L. Hendren, lake warden, for the seven months amounted to \$458. This included a total of \$347 from fishing and hunting licenses, \$319 of which was from fishing licenses, \$25 from combination hunting and fishing, and \$6 from minnow permits. The rest of the collections was for various types of privileges in using the lake.

In addition to the revenues from fees, Warden Hendren conducted twenty-six prosecutions on charges of violations of the law. Fines and court costs in these cases amounted to \$238.40. The fines went into the school fund of Columbus County, in which the lake is located.

Regulation of the privileges of the lake is necessary to preserve its facilities for the entire public. Without some form of restriction, as with other public property, the major share of enjoyment of the lake would probably be preëmpted by the few or the area would probably be spoiled for the many. The lake regulations include rules for improvements, licensing of boats, and sanitary restrictions.

The lake should have an all-year warden service to prevent the undoing in less than half a year work requiring the rest of the year to accomplish.

More than 2,500 persons saw forestry, game, and fisheries pictures shown by the educational truck of the Department of Conservation and Development during the latter part of November. Of the total, 1,099 were adults and 2,455 were children. Literature numbering 1,930 pieces was distributed by W. L. Moore, operator in charge of the truck. Showings during this period were given in Jackson and Yancey counties.

Mecklenburg County ranks forty-ninth among the fifty-seven leading counties in the United States having the greatest wholesale trade in 1929, as revealed by the recent census of distribution. These fifty-seven leading counties sold \$52,164,523,-321 worth of goods at wholesale, or 75.3 per cent of the total wholesale volume of the United States. Mecklenburg's share of this business was \$185,358,137 for the year.

## SALT-WATER ANGLERS ASSISTED IN BUILDING STATE SHRIMP FISHERY

Salt-water anglers gave a large part of the initial impetus leading to the development of shrimping as one of the most important branches of the commercial fisheries of North Carolina, according to Capt. John A. Nelson, fisheries commissioner.

From the start which the demand of the anglers gave to the industry, coupled with local trade, canning of the fishery product, and improved facilities for handling the product, the shrimp industry has expanded in recent years to a high position among North Carolina fisheries.

Another factor leading to the growth of the shrimp industry is the use of improved gear which has evolved from the skim and cast nets of early days to long seines and finally to trawling.

The growth of shrimping on the North Carolina coast may be traced from statistics of the catch kept by the Division of Commercial Fisheries of the Department of Conservation and Development. The yield for the fiscal years of 1919-1920 was 684,616 pounds; for 1921-1922, 1,160,000. From this point the increase was steady through the biennium of 1929 and 1930, which showed a total catch of 1,207,108 pounds. Last year the output established a record of 1,548,900 pounds, or more than for any previous two-year period.

This year, however, presents a different picture, with a yield estimated at only about 325,000 pounds. The decrease is ascribed to two factors—a smaller supply and a cause usually looked upon as being remote to commercial fisheries, forest fires. The smoke from the flames along the coast, which have been particularly heavy in the principal shrimp areas of Brunswick and Carteret counties, has often prevented the shrimpers and other fishermen from working.

Studies are being undertaken by the U. S. Bureau of Fisheries to add to the knowledge of the life and habits of this crustacea, which should give information on measures necessary to perpetuate the supply of this natural resource.

Some of the phases being considered in these studies include the rate of growth and age of maturity of the shrimp, according to Captain Nelson. Whether the shrimp matures in one year or more than one is of importance to the industry, Captain Nelson

believes, since excessive fishing for a crop maturing in one year would present more danger of depletion than would be the case if more than one year were required, since, in the latter case, young shrimp would be in process of maturation while the crop of adults is being taken.

The problem of migration is also being investigated. Scientists are seeking to solve whether the movement of the crustacea is principally inshore and offshore or an extensive north and south oceanic migration. If the former is the case, maintenance of the industry is chiefly a State problem; but in the latter event conservation will largely be a matter of mutual concern of those states sharing in the income of the fishery.

## NORTH CAROLINA-MADE SHOP IS CONTEMPLATED

A shop in which articles manufactured in North Carolina would be the only stock is the latest suggestion in connection with the "Made-in-North Carolina" program which has been promoted for the past two years by the Department of Conservation and Development with the coöperation of numerous other agencies.

The Division of Commerce and Industry recently received a communication from a firm contemplating the establishment of such a shop in one of the resort centers of the State, requesting ideas and coöperation from the Department. A list of producers of consumers' goods was furnished.

If the venture proves profitable, it was also indicated that the same company might establish a shop to handle North Carolina products at some eastern resort.

The Department of Conservation and Development is particularly interested in this project because of its possibilities in advertising products made in this State. With hundreds of visitors, many of whom would doubtless be interested in sending or carrying home some souvenir, a resort center should add to the attractiveness of such a business.

The life of a game warden is not one of a bed of roses, as an experience of Warden A. E. Hendrix of Davie and Deputy Sheriff Charles Foster of that county proves. Warden Hendrix attempted to arrest a Negro on a charge of hunting without a license. The Negro fled. Later, the deputy sheriff, attempting to take the Negro into custody, barely escaped injury from an axe in his hands by quick dodging.

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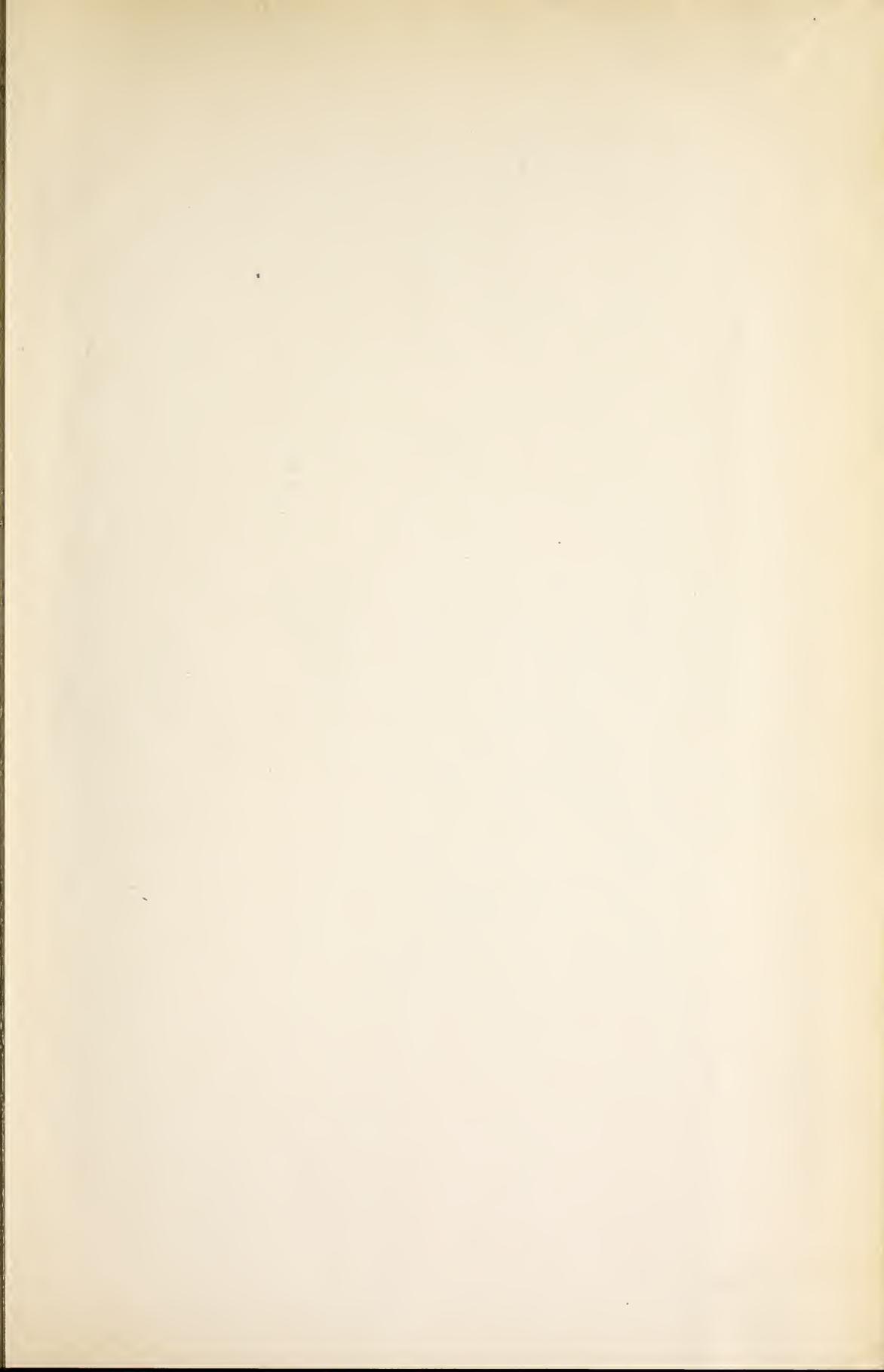
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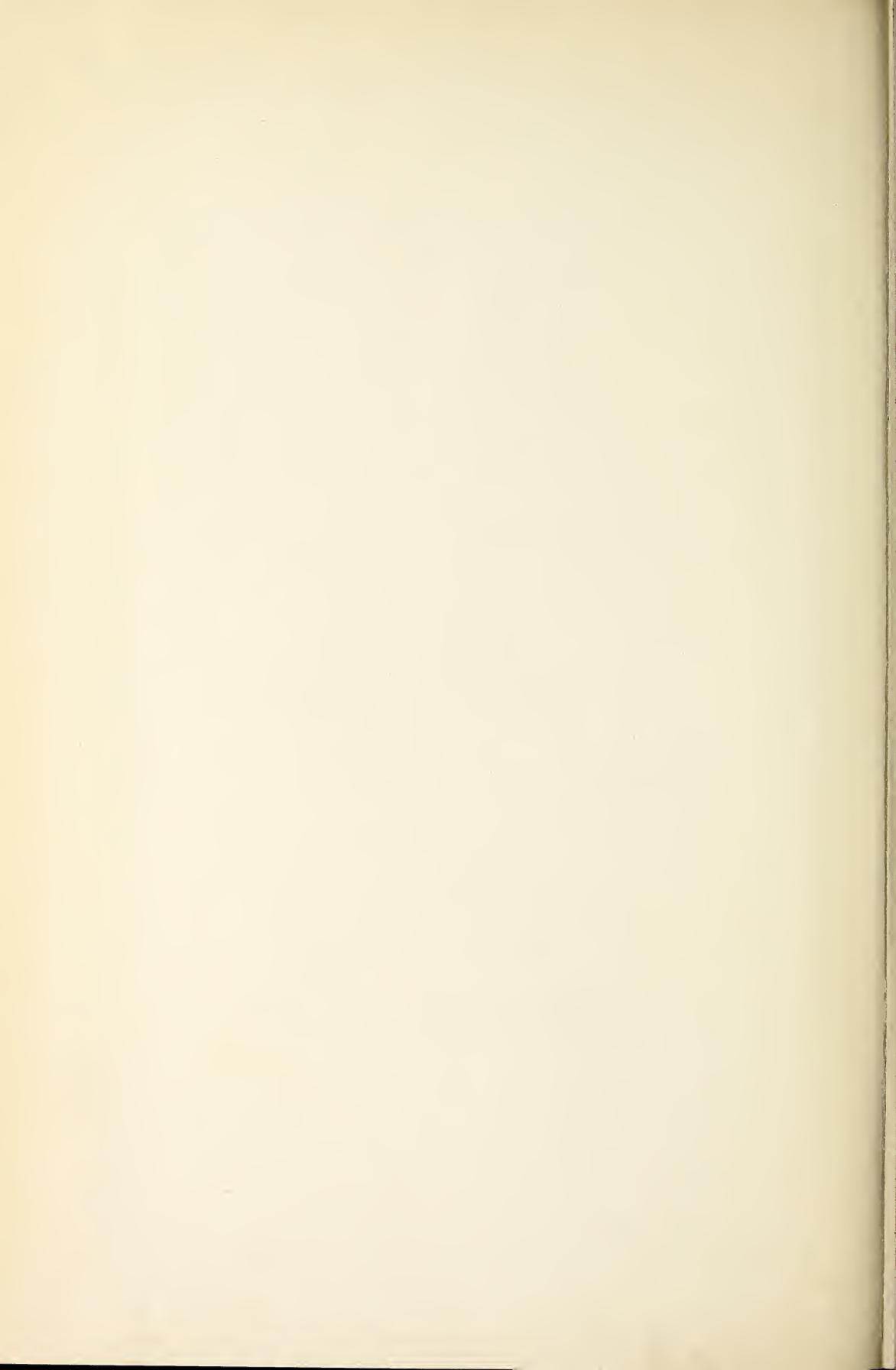
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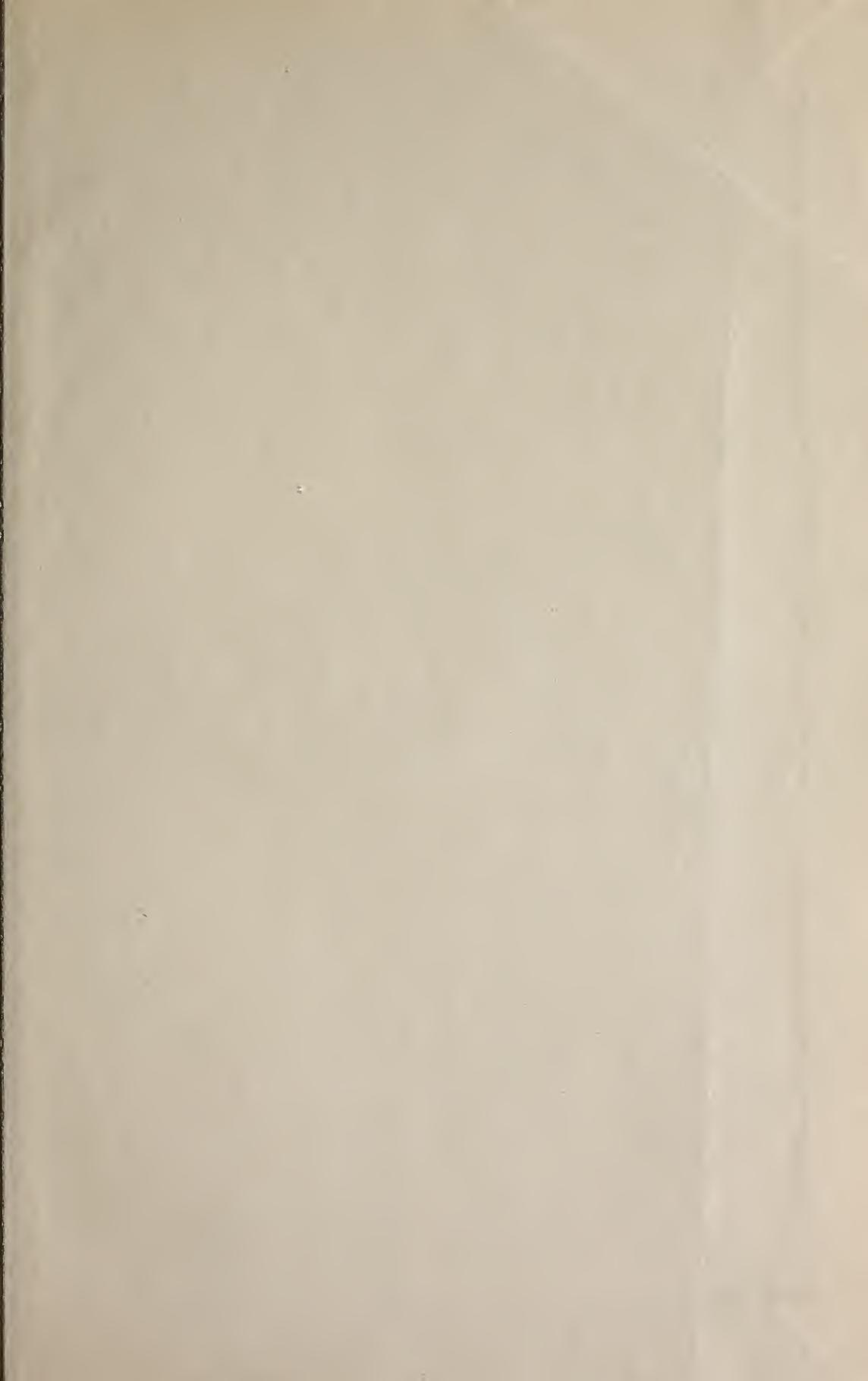
SIZE OF NORTH CAROLINA FAMILIES AND THOSE EQUIPPED WITH RADIOS

(From U. S. Bureau of Census Report)

| AREA              | Number of families |           | Persons per family |      | Families having radio sets, 1930 |          | Per Ct. of total |
|-------------------|--------------------|-----------|--------------------|------|----------------------------------|----------|------------------|
|                   | 1930               | 1920      | 1930               | 1920 | Number                           | Per Ct.  |                  |
|                   | 1930               | 1920      | 1930               | 1920 | Number                           | of total |                  |
| The State.....    | 6,452,245          | 5,133,377 | 4.9                | 5.0  | 72,329                           | 11.2     | 5.0              |
| COUNTIES.....     |                    |           |                    |      |                                  |          |                  |
| Alamance.....     | 8,666              | 6,538     | 4.9                | 5.0  | 1,373                            | 15.8     | 5.7              |
| Alexander.....    | 2,515              | 2,460     | 5.1                | 5.0  | 106                              | 4.2      | 2.5              |
| Alleghany.....    | 1,601              | 1,503     | 4.5                | 4.9  | 31                               | 1.9      | 3.0              |
| Anson.....        | 5,718              | 5,479     | 5.1                | 5.2  | 304                              | 5.3      | 8.7              |
| Ashe.....         | 4,238              | 4,071     | 5.0                | 5.2  | 146                              | 2.2      | 4.0              |
| Avery.....        | 2,245              | 1,914     | 5.3                | 5.3  | 92                               | 6.5      | 7.2              |
| Beaufort.....     | 7,438              | 6,626     | 4.7                | 4.7  | 574                              | 7.7      | 4.7              |
| Bertie.....       | 4,347              | 4,690     | 5.2                | 5.2  | 257                              | 5.2      | 4.3              |
| Bladen.....       | 4,448              | 3,693     | 5.1                | 4.6  | 147                              | 3.3      | 5.4              |
| Brunswick.....    | 3,023              | 3,023     | 4.7                | 4.8  | 92                               | 2.8      | 28.0             |
| Buncombe.....     | 21,633             | 13,323    | 4.5                | 4.8  | 5,881                            | 23.5     | 7.8              |
| Burke.....        | 5,323              | 4,179     | 5.5                | 5.6  | 1,362                            | 10.2     | 7.8              |
| Cabarrus.....     | 8,629              | 6,463     | 5.1                | 5.2  | 1,309                            | 13.2     | 11.0             |
| Caldwell.....     | 5,397              | 3,933     | 5.2                | 5.1  | 651                              | 8.8      | 8.5              |
| Camden.....       | 1,172              | 1,151     | 4.7                | 4.7  | 45                               | 3.5      | 17.0             |
| Carteret.....     | 3,685              | 3,413     | 4.6                | 4.6  | 300                              | 8.1      | 4.5              |
| Catawba.....      | 8,848              | 6,612     | 5.0                | 5.1  | 1,342                            | 15.2     | 2.6              |
| Caswell.....      | 4,877              | 4,865     | 5.1                | 5.0  | 186                              | 5.9      | 3.7              |
| Chatham.....      | 3,140              | 3,029     | 4.8                | 4.8  | 191                              | 8.1      | 4.0              |
| Cherokee.....     | 2,350              | 2,203     | 5.0                | 4.9  | 37                               | 3.4      | 6.5              |
| Chowan.....       | 1,085              | 941       | 5.0                | 4.9  | 1,231                            | 12.1     | 7.3              |
| Clay.....         | 10,208             | 6,644     | 5.1                | 5.2  | 1,231                            | 12.1     | 5.1              |
| Cleveland.....    | 7,556              | 6,007     | 5.0                | 5.0  | 286                              | 3.8      | 9.5              |
| Columbus.....     | 6,629              | 6,697     | 4.6                | 4.3  | 576                              | 8.7      | 209              |
| Craven.....       | 8,871              | 7,061     | 5.1                | 5.0  | 870                              | 9.8      | 4.7              |
| Cumberland.....   | 1,518              | 1,588     | 4.4                | 4.6  | 121                              | 8.0      | 222              |
| Currituck.....    | 1,171              | 1,156     | 4.4                | 4.4  | 117                              | 10.0     | 9.4              |
| Dare.....         | 9,671              | 7,197     | 5.0                | 4.9  | 1,101                            | 11.4     | 9.2              |
| Davidson.....     | 2,982              | 2,814     | 4.8                | 4.8  | 189                              | 6.3      | 5.0              |
| Davidson.....     | 7,149              | 6,112     | 4.9                | 4.9  | 296                              | 4.1      | 8.7              |
| Duplin.....       | 14,569             | 8,951     | 4.6                | 4.7  | 2,402                            | 16.5     | 7.1              |
| Durham.....       | 9,560              | 7,637     | 5.0                | 5.0  | 884                              | 9.3      | 3.0              |
| Edgecombe.....    | 24,578             | 15,743    | 4.5                | 4.9  | 3,543                            | 14.4     | 13.1             |
| Forsyth.....      | 5,836              | 5,239     | 5.1                | 5.1  | 343                              | 5.9      | 7.5              |
| Franklin.....     | 15,692             | 9,781     | 5.0                | 5.2  | 2,882                            | 18.4     | 8.4              |
| Gaston.....       | 2,067              | 2,014     | 5.1                | 5.2  | 54                               | 2.6      | 2.6              |
| Gates.....        | 997                | 987       | 5.3                | 5.2  | 43                               | 3.9      | 8.8              |
| Graham.....       | 5,585              | 5,149     | 5.1                | 5.2  | 446                              | 8.0      | 219              |
| Greene.....       | 3,448              | 3,154     | 5.4                | 5.1  | 233                              | 6.8      | 7.7              |
| Guilford.....     | 27,387             | 16,201    | 4.9                | 4.9  | 5,901                            | 21.6     | 11.2             |
| Halifax.....      | 7,313              | 5,375     | 5.2                | 5.1  | 477                              | 6.6      | 7.6              |
| Harnett.....      | 8,523              | 8,523     | 5.2                | 5.1  | 1,301                            | 15.1     | 5.3              |
| Haywood.....      | 5,832              | 4,729     | 4.6                | 4.7  | 634                              | 8.7      | 9.4              |
| Henderson.....    | 5,101              | 3,877     | 4.9                | 4.7  | 591                              | 10.7     | 9.9              |
| Hertford.....     | 3,851              | 3,157     | 5.2                | 5.2  | 800                              | 15.7     | 9.4              |
| Hoke.....         | 2,651              | 2,159     | 5.4                | 5.4  | 221                              | 6.6      | 4.7              |
| Hyde.....         | 1,739              | 1,744     | 4.9                | 4.8  | 70                               | 2.6      | 9.1              |
| Iredell.....      | 9,605              | 7,473     | 4.9                | 5.1  | 57                               | 3.3      | 5.1              |
| Iredell.....      |                    |           |                    |      | 1,197                            | 12.5     | 2.6              |
| AREA              |                    |           |                    |      |                                  |          |                  |
| Jackson.....      | 3,445              | 2,572     | 5.1                | 5.2  | 1,373                            | 15.8     | 5.0              |
| Jackson.....      | 11,350             | 9,878     | 5.1                | 5.0  | 1,373                            | 15.8     | 1.73             |
| Jones.....        | 1,920              | 1,848     | 5.4                | 5.4  | 106                              | 4.2      | 645              |
| Lee.....          | 3,443              | 2,658     | 4.9                | 5.0  | 31                               | 1.9      | 2.5              |
| Lenoir.....       | 7,274              | 6,187     | 4.9                | 4.8  | 304                              | 5.3      | 9.0              |
| Lincolin.....     | 4,175              | 4,40      | 5.1                | 5.3  | 146                              | 2.2      | 8.7              |
| Madison.....      | 3,987              | 3,352     | 5.1                | 5.0  | 92                               | 6.5      | 9.8              |
| Macon.....        | 2,770              | 2,468     | 4.9                | 5.2  | 257                              | 7.7      | 7.2              |
| Madison.....      | 4,093              | 3,982     | 5.0                | 5.1  | 574                              | 7.7      | 4.7              |
| Martin.....       | 4,486              | 4,135     | 5.2                | 5.0  | 257                              | 5.2      | 4.3              |
| Mecklenburg.....  | 28,463             | 17,322    | 4.5                | 5.0  | 1,47                             | 3.3      | 5.4              |
| Mitchell.....     | 9,771              | 2,175     | 5.0                | 5.2  | 92                               | 2.8      | 28.0             |
| Montgomery.....   | 3,277              | 2,872     | 5.0                | 5.1  | 106                              | 4.2      | 7.8              |
| Moore.....        | 5,777              | 4,293     | 4.9                | 5.1  | 5,881                            | 23.5     | 7.8              |
| Nash.....         | 10,551             | 8,116     | 5.0                | 5.1  | 1,362                            | 10.2     | 11.0             |
| Nash.....         | 10,104             | 9,364     | 4.3                | 4.3  | 651                              | 8.8      | 8.5              |
| New Hanover.....  | 5,240              | 4,590     | 5.2                | 5.1  | 1,309                            | 13.2     | 17.0             |
| Onslow.....       | 3,649              | 2,936     | 5.0                | 5.0  | 45                               | 3.5      | 4.5              |
| Orange.....       | 4,559              | 3,695     | 4.9                | 4.9  | 300                              | 8.1      | 2.6              |
| Orange.....       | 2,014              | 1,895     | 4.6                | 4.6  | 124                              | 3.7      | 3.7              |
| Fasquodank.....   | 4,209              | 3,841     | 4.6                | 4.6  | 186                              | 5.9      | 14.2             |
| Fender.....       | 3,181              | 2,395     | 4.9                | 4.9  | 121                              | 8.0      | 4.0              |
| Ferquimans.....   | 2,248              | 2,227     | 4.8                | 5.0  | 191                              | 8.1      | 6.9              |
| Person.....       | 4,071              | 3,603     | 5.4                | 5.3  | 37                               | 3.4      | 6.5              |
| Pitt.....         | 10,891             | 9,013     | 5.0                | 5.1  | 1,231                            | 12.1     | 7.3              |
| Polk.....         | 2,199              | 1,809     | 4.7                | 4.9  | 209                              | 9.5      | 5.1              |
| Randolph.....     | 7,649              | 6,309     | 4.7                | 4.9  | 286                              | 3.8      | 209              |
| Richmond.....     | 6,844              | 5,070     | 5.0                | 5.0  | 576                              | 8.7      | 9.4              |
| Robeson.....      | 13,112             | 10,835    | 5.1                | 5.1  | 870                              | 9.8      | 9.2              |
| Rockingham.....   | 10,226             | 8,293     | 5.0                | 5.3  | 1,21                             | 8.0      | 5.0              |
| Rowan.....        | 12,112             | 9,217     | 4.7                | 4.8  | 117                              | 10.0     | 10.6             |
| Rutherford.....   | 8,033              | 6,127     | 5.0                | 5.1  | 1,101                            | 11.4     | 15.4             |
| Sampson.....      | 7,980              | 6,977     | 5.0                | 5.2  | 189                              | 6.3      | 8.7              |
| Scotland.....     | 4,043              | 3,077     | 5.0                | 5.1  | 296                              | 4.1      | 3.0              |
| Stanly.....       | 6,128              | 5,298     | 4.9                | 5.2  | 288                              | 3.0      | 288              |
| Stokes.....       | 4,420              | 3,887     | 5.0                | 5.3  | 121                              | 2.7      | 7.5              |
| Surry.....        | 7,982              | 6,468     | 5.0                | 5.3  | 54                               | 2.6      | 8.4              |
| Swain.....        | 2,274              | 2,515     | 5.1                | 5.3  | 43                               | 3.9      | 2.6              |
| Transylvania..... | 2,100              | 1,905     | 4.6                | 4.9  | 262                              | 12.5     | 12.5             |
| Tyrrell.....      | 1,055              | 1,033     | 4.9                | 4.7  | 43                               | 3.9      | 8.8              |
| Union.....        | 8,215              | 6,812     | 5.0                | 5.3  | 446                              | 8.0      | 7.7              |
| Vance.....        | 19,453             | 14,429    | 5.1                | 5.2  | 5,901                            | 21.6     | 11.2             |
| Wake.....         | 4,303              | 4,158     | 4.9                | 4.9  | 477                              | 6.6      | 7.6              |
| Washington.....   | 2,297              | 2,329     | 5.4                | 5.2  | 1,301                            | 15.1     | 5.3              |
| Watauga.....      | 3,049              | 2,630     | 5.0                | 5.1  | 634                              | 8.7      | 9.4              |
| Wayne.....        | 10,534             | 9,002     | 5.0                | 4.9  | 591                              | 10.7     | 9.9              |
| Wilkes.....       | 9,922              | 6,368     | 5.2                | 5.1  | 221                              | 6.6      | 4.7              |
| Wilson.....       | 9,061              | 7,605     | 5.0                | 4.8  | 70                               | 2.6      | 9.1              |
| Yadkin.....       | 3,697              | 3,296     | 4.9                | 5.0  | 57                               | 3.3      | 5.1              |
| Yancey.....       | 2,854              | 2,984     | 5.1                | 5.1  | 1,197                            | 12.5     | 2.6              |







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