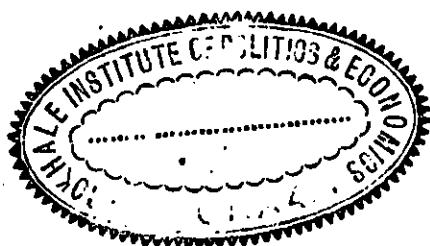
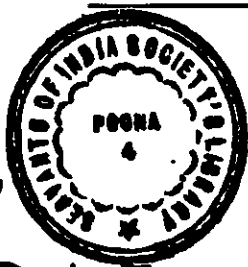


RURAL MEDICAL
SERVICE.

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1937

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Rural Medical Service.

Are rural sections of the United States suffering from a lack of available medical service? If so, where are they and what are the conditions responsible for such deficiencies?

The Bureau of Medical Economics of the American Medical Association, with the assistance of the state medical associations, has undertaken an investigation to obtain the facts needed to answer these questions. The first step was to locate the counties with the largest population per physician. While making all possible allowance for the fact that a county is by no means a social or medical unit, it is the unit of nearly all available statistical compilations. It is also recognized that the ratio of population to physician is far from being an exact measure of medical service available. The most that can be claimed for such a ratio is that it is an indication of the extent to which such services are available.

According to the Medical Directory for 1934 there were sixteen counties in the United States having no physicians; in 1936 there were nineteen. Since nearly all these counties were in isolated districts having an average population of about one person per square mile they do not present any general or typical problem. They are therefore considered only incidentally in this discussion. There were 300 counties located in thirty states in 1934 in which the population was 2,000 or more per physician. It is not assumed that this arbitrary figure necessarily marks the point at which medical service is insufficient but only that if any insufficiency does exist it might be found in the localities included in these counties. There was a total of 1,679 physicians in such counties in 1934 and 1,812 in 1936. This

was an increase of nearly 8 per cent in the number of physicians in these counties during a period when the increase in the total number of physicians in the United States was but a little over 2 per cent.

A study was made of the social and economic conditions in these 300 counties which might

TABLE 1.—*Counties with More Than 2,000 Persons per Physician in 1918**

State	1918 Counties	1917 Estimated Population	1918 Physicians
Alabama.....	2	68,251	23
California.....	2	22,914	8
Colorado.....		17,013	5
Florida.....		21,034	10
Georgia.....	3	53,010	20
Idaho.....	3	28,868	6
Kansas.....	4	92,181	37
Kentucky.....	5	59,407	40
Louisiana.....	7	134,033	60
Michigan.....	1	2,627	1
Minnesota.....	4	43,895	18
Mississippi.....	5	95,475	39
Montana.....	5	57,450	27
Nebraska.....	4	13,226	5
Nevada.....	1	3,045	1
New Mexico.....	1	12,824	4
North Carolina.....	15	278,366	118
North Dakota.....	7	54,600	17
Oklahoma.....	2	20,135	9
Oregon.....	1	21,169	10
South Carolina.....	10	354,603	123
South Dakota.....	7	41,462	21
Tennessee.....	3	18,362	7
Texas.....	11	100,425	45
Utah.....	2	12,126	5
Virginia.....	6	80,028	30
Wisconsin.....	3	30,455	13
Total.....	123	1,736,982	702

* The War Service of the Medical Profession, J. A. M. A. 70:1646-1731 (June 1) 1918.

furnish some information on the question of the extent and availability of medical service. This included the assembly of information concerning income, retail sales, farm values, relief granted, and such vital statistics as could be found.

Because the county is not always a practical unit for the supply of medical services, the general hospital facilities in the adjoining counties were compiled with the rate of bed occupancy. The quantity of such facilities and

TABLE 2.—Counties Having No Physicians According to American Medical Association Directories

State	1934			1936		
	Popula- tion	No. Coun- ties	Land Area per Sq. Mi.	Popula- tion	No. Coun- ties	Land Area per Sq. Mi.
California.....	241	1	776	241	1	776
Colorado.....	449	1	971	1,861	2	2,001
Idaho.....	.....	..	.....	4,103	1	7,066
Nebraska.....	4,838	3	2,039	9,505	4	4,004
North Dakota...	11,552	3	3,111	8,412	2	1,943
South Dakota...	3,660	2	3,212	3,669	2	3,212
Texas.....	4,857	5	3,729	6,120	6	5,505
Utah.....	411	1	850	411	1	850
Total.....	26,017	16	15,688	34,322	19	26,427

1930 census for population figures.

TABLE 3.—Counties with More Than 2,000 Persons per Physician—1934-1936

States	1934 Coun- ties	1930 Popula- tion	1934 Physi- cians	1936 Coun- ties	1936 Physi- cians	Same Counties* 1918-1936
Alabama.....	16	410,781	180	14	181	1
Arkansas.....	4	81,657	85	3	36	..
Colorado.....	1	20,245	9	1	9	..
Florida.....	13	95,935	37	10	41	1
Georgia.....	38	317,748	129	27	136	6
Idaho.....	6	38,830	17	1	20	..
Kansas.....	6	28,366	12	4	13	1
Kentucky.....	10	294,286	120	15	121	4
Louisiana.....	9	181,640	59	7	74	4
Michigan.....	6	56,239	24	3	28	..
Minnesota.....	9	123,369	46	6	56	2
Mississippi.....	18	249,025	103	13	98	3
Missouri.....	5	59,891	20	5	20	..
Montana.....	18	56,058	21	10	22	2
Nebraska.....	8	36,568	13	7	11	3
New Mexico.....	7	76,457	31	5	30	1
North Carolina.....	31	761,026	305	27	314	13
North Dakota.....	14	133,460	50	12	51	4
Ohio.....	1	16,057	8	1	9	..
Oklahoma.....	5	78,491	30	4	29	1
Oregon.....	1	4,941	2	1	2	..
Pennsylvania.....	1	7,453	3	1	4	..
South Carolina.....	10	249,835	108	9	106	3
South Dakota.....	14	106,402	44	11	47	4
Tennessee.....	9	99,310	38	9	42	3
Texas.....	12	113,771	48	7	55	3
Virginia.....	18	317,077	120	12	136	3
Washington.....	5	29,220	10	3	14	..
West Virginia.....	6	37,911	35	4	40	..
Wisconsin.....	3	44,622	22	8	50	..
Wyoming.....	3	10,835	5	1	8	..
Totals.....	300	4,182,561	1,679	241	1,812	62

* This column shows the number of counties having more than 2,000 population per physician in 1918 (table 1) which had the same ratio in 1936. Population for 1934 counties.

the degree of their use gives a rough idea of the extent to which physicians in neighboring counties are available.

These facts have been assembled for all states containing four or more counties with 2,000 or more population per physician. Such a factual foundation is a first step to any intelligent consideration of the question of the existence of localities without adequate medical service. Because of the wide local variations in the problems presented in different sections, the conditions in each state will first be presented to form a factual foundation for a general discussion of rural medical service, which will follow the discussion of individual states.

ALABAMA

There are sixteen counties in Alabama in which, according to the 1934 Medical Directory, there were 2,000 or more population per physician. In the next two years the number of physicians in these counties increased from 180 to 181. This increase and a redistribution in several localities reduced the number of persons per physician to less than 2,000 in two of the sixteen counties. Every one of the sixteen counties is in what the Federal Emergency Relief Administration designates as the "Eastern Cotton Problem Area."¹

Cotton is raised in this area under the "share cropper" or tenant system, concerning which the report¹ says (p.22) "Obviously, the system was merely a variation of the old slave relationship and kept the cropper on the margin of economic existence." Between 1910 and 1916 this area was invaded by the boll weevil, which caused a reduction in the amount of cotton raised and still further lowered the average standard of living. The United States Census of Agriculture

1. Federal Emergency Relief Administration Division of Research, Statistics and Finance, 1935, pp. 20-23.

for 1935 indicates that the depression is producing another important change in this situation. All these sixteen counties have shown a tendency, since 1930, toward a more diversified farming system. The amount of cotton raised has decreased while corn, hay and other general purpose crops and the amount of livestock have increased.

All the information available indicates that by every standard that can be applied the economic condition of the population is below the average for the state. While the average per capita retail sales for the state is \$95 there is only one of the sixteen counties studied in which the per capita is as high as \$80. The median is between \$48 and \$50, with the lowest \$33 per capita. In the whole state 7.7 persons per thousand made an income tax return. In these sixteen counties the highest number per thousand is 3.8, the lowest 0.5.

The average value per farm for the entire state is \$1,347 and the value per acre is \$18.73. This is much below the average for the whole United States, yet in only four of these counties does the value per farm reach the state average. In one county it is \$1,987 per farm and \$36.81 per acre. The median is between \$14.65 and \$14.69 per acre, and the value per farm centers around a little over \$1,000.

Resources are not available within these counties with which to maintain on a self-sustaining basis a decent standard of life as to housing, food, clothing or other necessities of life, including medical service.

Manifestly, the county is not a social or medical unit. If one is to determine the extent of medical facilities available it is necessary to include a wider area. These counties do not make up a contiguous group although they are located in the sections of the state with the poorest farming land and other economic disabilities. All of them have adjoining counties

in which, by standards commonly accepted, there appear to be adequate medical facilities. Only one of the sixteen counties has a hospital. This hospital has twenty beds with an average occupancy of ten patients. The counties adjoining the sixteen counties studied have seventy-three hospitals, including duplications where one county adjoins more than one of the sixteen counties. These seventy-three hospitals have 7,851 beds and had an average patient occupancy in 1935 of 4,873, almost exactly a 62 per cent occupancy.²

Of the 181 physicians in these sixteen counties there were but twenty-three less than 40 years of age in 1934, and there were twenty-six under that age in 1936. The average age in rural communities has always been greater than in the cities.³ While 79 per cent of all the physicians in the state of Alabama were under 60 years of age in 1934, only 58 per cent of those in these sixteen counties are below this age. This would seem to indicate that while younger physicians are entering these counties the age of the majority is still much above the average for the state.

Death rates by counties are notoriously unreliable. Deaths are reported in the locality where they took place and not where the deceased had made his home. Moreover, it is quite probable that statistics will be less accurate in localities such as are being studied than in other communities. Yet, since the death rate is one of the best tests of the efficiency of medical service it may be worth while to note the fact that the recorded rate is actually lower in the majority of these counties than in the state as a whole. The death rate in 1933 for the state of Alabama was 10 per thousand for the entire population; 8.4 for the white and 13.1 for the Negro popula-

2. Alabama Hospitals Registered by the American Medical Association, J. A. M. A. 106:798 (March 7) 1936.

3. Distribution of Physicians in the United States (Revised), Bureau of Medical Economics, American Medical Association, Chicago, 1936, pp. 56-57, 60-61.

tion. A better comparison is probably that between the death rate in the rural districts of the state, which is 8.9 per thousand for the total population; 7.4 for the white and 11.6 for the Negro. There are only six out of the sixteen counties where the death rate is as high as that for the entire rural communities of the state.

So far as these figures have any value, they would seem to indicate that if there is any lack of medical service in these counties it is not reflected in the death rate.

ARKANSAS

Only four counties in Arkansas in 1934 had more than 2,000 population per physician. One of these is so close to Memphis, Tenn., as to be able to make use of its ample medical facilities. Moreover, in 1936 an additional physician moved into this county, which reduced the number of persons per physician to less than 2,000. For these reasons the discussion will be confined almost exclusively to the three additional counties. Two of these counties are in the "Eastern Cotton Problem Area"; the other is in the "Appalachian-Ozark Area," another "problem area." The cotton counties are in localities where the "share cropper" problem has been so acute as to attract national attention in recent years.

The average retail sales per capita for the state of Arkansas amounts to \$97. In these three counties it is only \$52, \$37 and \$25 per capita annually. This is a rough measure of the "spendable income" and is manifestly too small to permit of any system of sickness insurance, since the estimates of the cost of good medical service, under such systems, vary between \$25 and \$30 per person annually.

The average value per farm for the state of Arkansas is \$1,486. For these counties the value is respectively \$1,003, \$1,050 and \$755. The average value per acre for the state is \$21.20 and

for these three counties it is \$23.00, \$10.62 and \$8.59.

The total population of these three counties in 1930 was 39,690, and of these an average of 6,605 were on relief in the year ended June 1, 1935.

In the adjoining counties there are six hospitals with 635 beds in which the average occupancy in 1935 was 251, or 39 per cent. The other two counties have no hospitals in adjoining counties.

In 1934 there were twenty out of thirty-five physicians, whose ages can be determined, who were under 60 years of age. In 1936 this had increased to twenty-two out of thirty-six physicians, but it still shows a large percentage of physicians over 60 years of age as compared with the rural districts throughout the country.

The death rate for the state of Arkansas in 1933 was 8.9 per thousand, the rate for white persons being 8.3 and for Negroes 10.5. In these three counties the rate for the total population was respectively 7.3, 4.2 and 8.3.

FLORIDA

In the thirteen Florida counties with more than 2,000 population per physician, nearly all the standards of economic conditions are below the general level of the state as a whole. The counties themselves are located principally in the northern section of the state, where the soil is least productive and where the income from tourists is lowest. Two counties are in the Everglades, the other region of least satisfactory industrial conditions. The state Planning Board has recommended the complete withdrawal of seven of these counties from "arable land" districts; the partial withdrawal of three additional counties is also recommended, and one is included in a forest preserve.

The average retail sales per capita for the state of Florida is \$197. The average for nine

of the thirteen counties in 1933 was less than \$100 and in four counties slightly more than \$100. In the state as a whole, 20.8 persons out of a thousand made a federal income tax return in 1933. There were but two of these thirteen counties where the number making such a return exceeded 7 per thousand. The mean of the thirteen counties is slightly above 3 per thousand.

The average value per farm for land and buildings in Florida was \$4,407 in 1933. The average value per acre was \$53.08. Only one of the thirteen counties reached this average. Only two of the remaining counties had a total value per farm as high as \$2,000 and only three counties had a value per acre as high as \$20. In four counties the value per acre was less than \$10.

Many of these counties have an extremely scanty population. The average population per square mile for the state is 26.8; only three of the thirteen counties reach this average, while there are seven in which the population per square mile is 9 or less. These facts suggest that in the majority of these counties it is impossible under present conditions for the existing population to make a living. As was mentioned before, this is also the opinion of the State Planning Board.

Neighboring counties had within a distance of 50 miles thirty-four hospitals with 2,633 beds. Of these only 1,433, or 54 per cent, were occupied in 1935. All these thirteen counties are rather small in area. It would appear that, even considering unfortunate economic conditions, medical services are available to a much greater extent than the fundamental necessities such as food, clothing and shelter.

The average age of physicians in sixteen states and the District of Columbia in 1933 shows that 20.26 per cent were over 60 years of age.⁴ In

4. Distribution of Physicians in the United States, Bureau of Medical Economics, American Medical Association, Chicago, 1935. pp. 62-63.

the eleven counties of Florida in 1934, 25 per cent of the physicians were 60 years of age or older; in 1936, 31 per cent of the physicians were 60 or more years of age. It is significant that four physicians moved into these communities between 1934 and 1936 and thereby reduced the number of counties having a population of more than 2,000 per physician from thirteen to ten.

In 1933 the death rate for the state of Florida was 12.1 per thousand; 10.5 per thousand for the white and 15.9 per thousand for the Negro population. The rate in the rural districts was 9.4 per thousand for the total population; 8 per thousand for whites and 12.4 per thousand for Negroes. In only two of these thirteen counties was the death rate higher than the average for the state. In nine the death rate was lower than for the average of other rural communities in the state. Without claiming any high degree of accuracy for these figures, the fact that they are uniformly below the state average would seem to indicate that there is not a sufficient lack of medical service to increase mortality.

GEORGIA

There were thirty-three counties in Georgia which in 1934 had more than 2,000 population per physician. Between 1934 and 1936 seven additional physicians moved into these counties and thereby reduced the number of persons per physician in six counties to less than 2,000. These thirty-three counties are located in the poorest agricultural sections of Georgia. Nearly all of them are in either the "Eastern Cotton Problem Area" or the "Ozark-Appalachian Area." The average value per farm in the state of Georgia in 1935 was \$1,715. In only ten of these thirty-three counties was this average attained. The value per acre in the state as a whole was \$16.99, but in only seven of the counties studied was the value per acre as high as the state average.

Throughout the state eleven persons out of a thousand made an income tax return. The highest number of persons per thousand making an income tax return in any of these thirty-three counties was 3.5; in fourteen, less than one person per thousand made such a return.

The average per capita retail sales in the state in 1933 was \$121. The highest average per capita in any of these thirty-three counties in the same year was \$72, and in only ten of them was it above \$50.

The total population of the thirty-three counties was 317,748; of these 31,475 were on relief during the year ended June 1, 1935, and were paid \$1,701,000 in relief.

One of these counties has a hospital. An additional physician moved into this county between 1934 and 1936, thus reducing the number of persons per physician below 2,000. There are three counties in which the adjoining counties have no hospitals, one of which is a county containing a hospital. The counties adjoining the remaining thirty contain ninety-two hospitals with 6,156 beds, of which 3,361, or 54 per cent, were occupied in 1935.

The death rate for the state of Georgia in 1933 was 10.7 per thousand for the total population; 9.1 for the white and 13.7 for the Negro population. In the rural districts the corresponding figures for 1933 were 9.2 for the total rural population, 8.1 for the white and 11.2 for the Negro population. Of the thirty-three counties having the fewest physicians per population there were only three in which the total death rate exceeded the state average. There were only seven that exceeded the rural average. It would appear that, in spite of poverty and all the other handicaps which exist in these districts, medical care has not been lacking to an extent that has affected mortality. In this case the number of counties included would seem to be

large enough to smooth out the inaccuracies that might be expected to exist in reporting deaths from such counties, and the uniformity of the figures seem to bear out this suggestion.

IDAHO

Whatever problem of lack of medical service exists in the six counties of Idaho, which in 1934 had 2,000 or more persons per physician, is due to the scarcity of population. These counties were nearly all mountainous and had an average population of 3 per square mile.

There is, primarily, no question of especially impoverished districts, although the number per thousand making an income tax return in all these counties is less than the state average of 14.3 per thousand. Farm values and the average per capita retail sales show no striking peculiarities. As a matter of fact, whatever problem existed is a changing and apparently a disappearing one. The increase from seventeen to twenty physicians in these counties between 1934 and 1936, together with the changes of residence of physicians, reduced the number of counties with 2,000 population per physician by four and left one mountainous county with a population of but 0.5 person per square mile with no physician.

Every one of these counties adjoins a county having one or more hospitals. In these adjoining counties there is a total of nineteen hospitals with 1,115 beds, of which the average occupancy was but 639 in 1935.

KANSAS

There are six counties in Kansas which in 1934 had more than 2,000 population per physician. By 1936 the number of physicians living in this territory had been increased from twelve to thirteen, leaving only four counties with this ratio of population per physician. All these counties were so close to the margin that in 1936

the average population per physician in these six counties was 2,182

These counties are all on or beyond the hundredth meridian, which is usually accepted as the margin of sufficient rainfall to maintain successful farming. They are all in what is called the "Winter Wheat Problem Area."⁵ This is an area where wind and water erosion have created what has come to be known as the "dust bowl." The rainfall varies widely from year to year and only within recent years has grazing been supplanted by farming with the tractor, gang-plow and combine.

These conditions create a situation very different from that existing in the Southern states previously discussed. The per capita income, retail sales and number of income tax returns per thousand, while lower in these counties than in the state average, present no such wide difference as has been found in other states.

Owing to the large size of the farms, the value per farm is higher than in the remainder of the state, although the acre value is but one-half to two-thirds that of the state average.

Relief and AAA subsidies have been of special importance in this area. In the year ended June 1, 1935, 6,720 persons received \$841,000 in federal relief while the AAA paid out \$2,185,000 in these six counties. The total of these two sums, \$3,026,000, was paid to a total population of 28,366, or an average of \$106 per capita during this year.

The number of physicians appears to be adequate to the widely scattered population, which amounts to only 5.6 persons per square mile. This presumption is strengthened by the further fact that, while all these counties are in the same section of the state, in no case do their boundaries touch. Therefore the medical facilities available in adjoining counties are,

5. Six Rural Problem Areas, Federal Emergency Relief Administration Division of Research, Statistics and Finance, pp. 17-20.

because of the level character of the country and consequent ease of automobile transportation, more accessible than in many other sections of the country.

The counties adjoining these six counties have fourteen hospitals with 393 beds, of which 186, or less than one half, were occupied on the average during 1935. These adjoining counties appear also to have sufficient physicians to be able to supply any extra demand from the six counties.

Neither are the physicians in these counties beyond the average age of physicians in rural communities throughout the country. Only two of the twelve physicians in 1934 or of the thirteen in 1936 were beyond 60 years of age.

Even allowing for the inaccuracies of mortality reports in these counties, they would seem not to present any excessive sickness. The average death rate for Kansas is 10.3; the death rate for these counties is 7.4, 3.8, 4.5, 4.9, 6.6 and 5 per thousand.

KENTUCKY

The problem of rural medical care in Kentucky differs in many respects from that in a majority of the states. There were in 1934 nineteen counties with 2,000 or more population per physician. There is no question of scanty population in these counties; there is an average of 43.7 persons per square mile. More than in any of the states previously discussed, the problem is almost entirely one of extreme poverty. Nearly all these counties are located in the "Appalachian-Ozark Problem Area," and most of them are in the southeastern section of the state in a largely contiguous group.

Throughout the state of Kentucky there was an average of 12.6 persons per thousand who made an income tax return in 1933. In these nineteen counties the highest number was 5.3 per thousand. There were nine of these counties

in which less than one person per thousand made an income tax return, and three in which there were no returns.

There were 100,308 persons on relief in these nineteen counties during the year ended June 1935. This is 34 per cent of the total population of 294,286 and is one of the highest rates of relief in any section studied. Although \$2,539,000 was expended, this amounts to only a trifle over \$25 per person and indicates that even relief standards were lower than in most sections of the United States.

There were twenty-nine counties in the United States in which over 35 per cent of the population was on relief in 1930. Six of these counties are included in the nineteen here discussed.⁶

The average per capita retail sales in 1933 throughout the state was \$117; the highest amount of per capita sales in any of these counties was \$73, and there were thirteen of the nineteen counties in which the per capita sales were under \$40.

The value per farm for the state in 1935 was \$2,229. The highest average value in these nineteen counties was \$1,555, and there were fourteen counties in which the average value per farm was under \$1,000. The average value per acre for the state was \$29.97. In fourteen of the nineteen counties the value per acre was under \$15.

Much local attention in Kentucky in recent years has been given to the problem of rural medical service. A study published by the University of Kentucky in 1931 permits a comparison with present conditions and suggests the appearance of certain lines of development.⁷ This study lists twenty-one counties in

6. Goodrich, C. L.; Allin, B. W., and Hayes, Marion: *Migration and Planes of Living, 1920-1934*, Philadelphia, University of Pennsylvania Press, 1935, pp. 43-45.

7. Chambers, J. S., and Lynn, H. R.: *Medical Service in Kentucky*, Lexington, University of Kentucky, 1931, vol. 1, No. 1.

1931 with more than 2,000 population per physician, as compared with three such counties in 1914. The investigators were somewhat alarmed by this situation and predicted that "in the near future Kentucky may expect to have an ever-growing area in which even the rudiments of good medical service are lacking."⁸ It appears from the present study that these forebodings were not wholly justified. The twenty-one counties of 1929 were reduced by the entrance of additional physicians to nineteen by 1934, and by 1936 only fifteen of the twenty-one counties were within this ratio.

The makers of this previous study also noted the disproportion of aged physicians and observed that this had also increased between 1914 and 1929. They concluded, concerning the twenty-one counties, that "these counties will suffer a net loss of about forty physicians within the next ten years." However, the subsequent developments again belied these predictions, although to a certain extent the predictions as to the increase in age appears to be justified. There were 117 physicians in the nineteen counties of this study in 1929, of which eighty-five were under 60 years of age. In 1934 there were 120 physicians in these counties, of whom eighty-one were under 60 years of age, and by 1936 the number of physicians had increased to 121, of whom only eighty were under 60 years of age. There were three physicians in 1934 and two in 1936 whose ages could not be determined. It would seem, therefore, that the increasing ages of those previously practicing has caused the average age to continue to increase. Nevertheless, the total picture presented by these facts would seem to indicate that the number of physicians available per unit of population began to increase at about the year 1929.

8. Chambers and Lynn,⁷ p. 26.

More than in any other state previously discussed, Kentucky presents a compact group of counties with a large population per physician, and extreme poverty. For this reason less hospital facilities may be expected to be found in contiguous counties. Four of the nineteen counties contain one general hospital each. These four hospitals have 106 beds, of which an average of but fifty-two were occupied in 1935. In the adjoining counties there are forty-three general hospitals with 1,633 beds, of which but 664, or a little over 40 per cent, were occupied.

All these facts would seem to indicate that, while medical facilities in some localities may be insufficient to meet the need, they are fully equal to the effective demand based on the economic condition of the population.

The Kentucky State Medical Association cooperated very effectively in the present study. The state secretary sent a questionnaire to the secretary of every county society. All the secretaries who replied stated that there were no complaints as to lack of necessary medical service. The two most frequent suggestions were with regard to some better method of supplying medical service to the indigent and the need of better roads. One county secretary stated that nurses were needed.

The average death rate for the state of Kentucky was 10.8 in 1933. The rate in the rural districts was 9.8. In only two of the nineteen counties did the death rate exceed the average for the entire state, and in only five did it exceed the average for rural districts of the entire state.

LOUISIANA

Louisiana presents some peculiar situations. There were nine parishes in 1934 in which there were 2,000 or more population per physician. The density of population varies widely, being 94 per square mile in the mostly thickly settled

and 4 per square mile in the most thinly settled parish. Two of these parishes, in one of which the ratio of population to physicians is the highest in the state, adjoin the parish containing New Orleans, in which it is generally agreed that there is a plethora of physicians and medical services in relation to population. A third parish is a rather long and narrow parish running parallel to a similar parish containing another large city.

There were fifty-nine physicians in these nine parishes in 1934 and seventy-four in 1936. Of these physicians in 1934 twenty-four were under 50 years of age but by 1936 the number under 50 had increased to thirty-eight. Physicians were well distributed throughout the nine parishes, being located in thirty different towns and villages. This increase in physicians removed two parishes from the list of those with more than 2,000 persons per physician.

An average of 16.6 persons per thousand made an income tax return in 1933 in the state of Louisiana. In all but one of these parishes less than nine persons per thousand made such a return.

The average per capita retail sales for the state in 1933 was \$126; the highest in any of these parishes was \$93; the lowest, \$22. The differences in the value of farms is less striking as compared with the state average.

None of these parishes contain any hospitals but, as has been mentioned, two of them adjoin Orleans Parish, in which there are nine hospitals with 3,400 beds with an average occupancy of 3,757. The New Orleans hospitals have been sharply criticized for the lavishness with which free medical service has been given not only to residents of that city but to the people of the entire state. Without entering into the question of whether this criticism is justified, it may be recognized that such a situation does affect the

extent to which medical facilities are available throughout the state.

The death rate in the state was 10.7 per thousand in 1933 and 7.8 for the rural districts. One of these parishes had an average death rate of 10.8; all the others were below the state average and five were below the rural average. Owing to the hospital situation in New Orleans, these figures are probably even less significant than in the majority of states.

The New Orleans Medical Society has made a very thorough study of the problem of medical service in Louisiana.⁹ Concerning the situation in New Orleans this study¹⁰ says:

The recent report of Dr. Fossier, chairman of the Orleans Parish and State Committee on Hospital Abuse, shows conclusively that in Louisiana, with New Orleans as a striking example, paid medical service has enormously decreased through the encroachments of the free clinics and hospitals established by the state, the municipal, the federal government and private institutions. According to his estimate, 1 out of every 3.50 residents of the city is a beneficiary of medical charity.

In the survey which was made at that time, sixteen parishes were found in which there were more than 2,000 population per physician. Concerning the tendencies that had previously prevailed, the survey¹¹ says:

In comparing the medical population of the state as it has been registered annually in the reports for the last ten years (1923-1932 inclusive), we find that in twenty-one parishes the number of physicians has

9. Rudolph Matas, M.D., chairman of the Committee on History, Louisiana State Medical Society, New Orleans: *A Glance at the Status of Medical Organization in Louisiana, with Remarks on the Problems Confronting the Profession of the State and an Appeal to the Regular Physicians of Louisiana for a 100 per Cent Membership in the Louisiana State Medical Society for the Promotion and Greater Protection of their Vital Professional Interests*, reprinted from *New Orleans Medical and Surgical Journal* 85:929-933 (June), 86:26-33 (July) 1933. (An introduction to a "Statistical Survey of the Medical Profession of Louisiana," presented as a supplement to the report of the chairman of the Committee on History and adopted by the House of Delegates on April 24, 1933.)

10. Matas,⁹ p. 4.

11. Matas,⁹ p. 24.

remained stationary and in twenty-five it has actually decreased despite the increase of population in many of them.

However, it ¹² also concludes that:

This awkward situation has been well recognized and serious efforts have been made to relieve it and there is good reason to believe that the problem of securing satisfactory medical service for most rural districts is gradually being solved.

That this prediction was justified seems to be shown by the facts as noted that the number of parishes with a ratio of 2,000 persons or more per physician has decreased from sixteen in 1932 to nine in 1934 and seven in 1936.

MICHIGAN

There were five counties in Michigan that in 1934 had more than 2,000 population per physician. The margin was fairly close; the combined population was 56,289 and there were twenty-four physicians in the territory, or an average of 2,345 persons per physician. The 1936 Medical Directory shows that four additional physicians have moved into these five counties, which reduces the average number of persons per physician to 2,010 and leaves only three counties with more than 2,000 population per physician.

The five counties are in the "Lake States Cut-Over Problem Area," concerning which the report of the Federal Emergency Relief Administration says: ¹³ "The area, therefore, presents the spectacle of decadent lumber, woodworking and mining industries in a region where recourse to agricultural pursuits is unprofitable because of climatic and soil conditions."

While emigration and the remnants of subsidiary employments have kept the total level of living above that to be found in the

12. *Notas*,⁹ p. 25.

13. *Six Rural Problem Areas*, Federal Emergency Relief Administration, Division of Research, Statistics and Finance, Washington, D. C., 1935, p. 11.

Appalachian-Ozarks and the "Cotton Problem Area," it is still much below that for the remainder of the state. The average value per farm for the state in 1935 was \$4,205 and per acre was \$44.76. The highest value per farm in these five counties was \$3,395 and the value per acre \$39.93; the lowest is \$2,397 per farm and \$24.44 per acre. Throughout the state an average of 24.9 per thousand persons made an income tax return. In these five counties the corresponding numbers per thousand were 13.9, 12.6, 12.2, 6.1 and 5.9. The average per capita retail sales for the state in 1933 was \$196. In these five counties the amount varied from \$165 to \$80.

The actual extent of poverty in this section is shown by the fact that it is among the sections that had the highest percentage of relief in 1933 and 1934.¹⁴ These five counties had 18,948 persons on cash relief during the year ended June 1935.¹⁵ This is 33.3 per cent of the population. During this year \$1,763,000 of federal relief was expended.

This is a section that numerous investigators during the last ten years have recommended for reforestation and recreation. Nevertheless, as has been noted, physicians have pushed into this territory in recent years until the supply is now fully equal to that which most European nations having systems of sickness insurance consider adequate to care for the population.

These physicians do not show an extreme age. Of the twenty-four physicians in 1934 the ages of twenty-three are given; only four of these were over 60 years of age; out of the twenty-eight in 1936, five had passed the age of 60. This percentage is a little lower than the average for rural districts throughout the country, and the older physicians are being replaced with younger ones. There are three

14. Goodrich, Allin and Hayes,⁶ pp. 42-45.

15. Consumer Market Data Handbook, 1936, Department of Commerce, Bureau of Foreign and Domestic Commerce, June 1936, pp. 301-303.

hospitals with sixty-one beds with an average of twenty-nine patients during 1935 in these counties. The adjoining counties have thirty-seven hospitals with 1,422 beds and an average patient occupancy of 893. These figures would seem to show that there is no shortage of medical facilities in these counties.

The death rate in Michigan differs somewhat from the death rate of any other state in that the rate for cities of 10,000 or more is lower than the rate in rural districts. The total death rate for the state is 9.6 per thousand and the average death rate in the rural districts is 11.3. In only one of these five counties is the death rate higher than the average rural rate. This county has a rate of 12.4. In two other counties the death rate is 9.8 and 10.1 respectively, which is higher than the average for the entire state but lower than for the rural districts. In the two other counties it is 8.1 and 8.4, which is lower than even the rate of 8.5 for the cities or for the state as a whole.

MINNESOTA

There were nine counties in Minnesota in 1934 that had more than 2,000 population per physician. There were forty-six physicians in these nine counties at this time, and in the succeeding two years ten additional physicians moved in. This reduced the number of counties with 2,000 population per physician to six and made the average population in the nine counties 2,203 per physician. All these counties are in the "Lake States Cut-Over Problem Area." They are on the whole rather scantily populated, there being an average of only 11.9 persons per square mile. Their industrial development moved rather quickly through the stage of lumbering to that of subsistence farming on land that is at the margin of cultivation. Superficial comparison of many of the standards of living and

income does not at first give a true indication of the poverty that prevails.

The value of the average farm for the state in 1935 was \$6,803 and per acre, \$42.14. In these counties there was one that exceeded this value and the remainder had an average value between \$2,216 and \$5,180. The average value per acre in these nine counties varies from \$35.69 to \$12.99. Throughout the state 24.6 persons per thousand filed an income tax return. The highest number per thousand in any of these nine counties was 8.1 and the lowest 2.4, with one county on which no information appears to be available.

During the year ended June 1935, 25,876 persons, or a little over 20 per cent of the population, were on relief, and they received during that year \$1,868,000, or \$72.15 per person on relief.

That these counties have exhausted their resources in the way of taxation is shown by some data accumulated by the Minnesota State Planning Board.¹⁶ Of the 1932 taxes only one of these counties had a delinquency of less than 20 per cent in 1934. In three between 20 and 30 per cent of these taxes remained unpaid and in five counties over 40 per cent were still delinquent. Three out of these five exceeded 50 per cent and one over 70 per cent.

The Minnesota State Planning Board also adopted a system of "financial ratings by counties." This standard was based on an index that included such features as per capita assessed valuation, per capita debt percentage, all uncollected tax levies, personal income, and several other items. It was assumed that 100 constituted a "perfect financial rating." On this scale three of these nine counties were rated between 40 and 60 per cent, five under 20 and one between 20 and 40.¹⁷

16. Report of the Minnesota State Planning Board, November 1934, p. 66.

17. Report of the Minnesota State Planning Board, November 1934, pp. 28, 70.

The age of physicians is not especially higher in these counties than in the average rural counties throughout the country. In 1934, when there were forty-six physicians in these counties, eleven out of forty-five whose ages were given were over 60. In 1936, with ten more physicians, there were fourteen out of fifty-six over 60.

There seems to be no real scarcity of hospital accommodations. There were in 1935 four hospitals in these counties with sixty-seven beds, with an average occupancy of twenty-six. The adjoining counties contain forty-five hospitals with 1,819 beds, with an average occupancy of 1,016.

Minnesota has an exceptionally low death rate. The average for the state in 1933 was 9.8. In none of these counties did the death rate reach the state average.

The fact that ten new physicians in the period between 1934 and 1936 moved into what has been generally recognized to be a submarginal territory would indicate that the supply of physicians has at least pressed hard on the marginal demand.

MISSISSIPPI

Mississippi has the largest percentage of Negro population of any state in the Union. In eight of the thirteen counties having more than 2,000 persons per physician, more than half of the population is Negro. Illiteracy is high and a large percentage of the population has received little education in the need of medical care. Only one other state has a higher ratio of population to physician. According to the 1931 Medical Directory there were 1,343 persons per physician in the state and 1,658 in towns of less than 5,000.¹⁸ The ratio according to size of

18. Distribution of Physicians in the United States (Revised), Bureau of Medical Economics, Chicago, American Medical Association, p. 27.

towns has not been calculated since 1931, but according to the 1936 Medical Directory there were 1,358 persons per physician in the entire state. Mississippi would appear to be one of the few states in which the population per physician has increased in recent years.

There certainly has been an increase in the population per physician in the thirteen counties that had more than 2,000 population per physician in 1934, since there were 103 physicians in these counties in that year and only ninety-eight in 1936. Moreover, the age appears to be increasing, since twenty-seven of those whose ages could be ascertained in 1934 were over 60 years of age while in 1936 there were thirty-one beyond that age.

Extreme poverty has long been recognized as characteristic of the agricultural sections of Mississippi. Practically all these counties are in the "Eastern Cotton Problem Area," where the fall in the price of cotton and changes in agricultural relations have recently tended to aggravate that poverty. The average per capita money income in the state on the latest date for which figures are obtainable was \$195, which is one of the lowest rates to be found in any state. The per capita income in all these counties was lower than the state average and was less than \$100 in two counties. The per capita retail sales in 1933 in the entire state average \$70 and in but one of the counties analyzed was it as high as \$51. The lowest amount expended in any one of these counties was \$18, and the remaining counties are distributed between these two figures, with seven counties under \$40. These amounts, which are a rough measure of the "spendable income" available, testify to the impossibility of any further expenditures for medical service.

The average value per farm in the state in 1935 was \$1,190 and per acre was \$18.87. There is not so wide a difference between this state

average (which is one of the lowest state averages in the United States) and that found in these thirteen counties, since five of the latter have an average value per farm of over \$1,000, but in ten the value is less than \$15 per acre.

There were 5.8 persons per thousand in the state who in 1933 made an income tax return. This also is one of the lowest rates found in any state. There were two of these thirteen counties in which 3.5 persons per thousand made an income tax return, two in which there were between two and three persons per thousand and nine in which there were less than two per thousand.

It is generally recognized that owing to the low standards of living, climatic conditions and local arrangements there was less liberality of relief than in the Northern states.¹⁹ Relief was given to 25,776 families, or a little over 10 per cent of the population, in the year ended June 1935. These were given \$1,529,000, or about \$57.30 per person.

Four of these counties contain a total of five hospitals with 135 beds, in which there was an average occupancy of but fifty-seven during the year 1935. The adjoining counties contain fifty hospitals with 2,425 beds and an average occupancy of but 945. Judged by the ordinary standards of the number of beds required for the population, the supply seems low; but it is evident from the small percentage of beds occupied that the demand is greatly limited by economic and social conditions.

The death rate for the entire state in 1933 was 10.6 for the total population, 8.8 for the white and 12.4 for the Negro population. In the rural districts the corresponding rates were 9.5 for the total population; 7.6 for the white and 11.2 for the Negro. While it is probable that the

19. Six Rural Problem Areas, Federal Emergency Relief Administration, Division of Research, Statistics and Finance, Washington, D. C., 1935, p. 41.

mortality statistics in these counties are even less reliable than in many other sections of the country, it may perhaps be worthy of notice that in only two of these counties was the average death rate as high as for the state and that in the majority it was not as high as for the total rural section of the state.

MISSOURI

There are but five counties in Missouri with a population of more than 2,000 per physician. Four of these are located in the "Appalachian-Ozark Problem Area." According to the Missouri State Planning Board the soil in all these counties is placed in what this board calls class III and class IV.²⁰ Concerning this soil the report of the board says of class III:

Excepting where land of this type is grazed in large blocks or kept in large areas of forest, the standard of living of its occupants is very low. . . .

None of this land will maintain a permanent system of field crop production on a practically constant level. No system of cultivation will maintain the fertility. In order for occupants of this land to maintain any decent standard of living it is practically necessary that their income be supplemented with part-time labor as in state or national forests. . . .

It is on this soil class that human problems become too difficult for the community to solve and it is necessary to provide outside help. . . .

Class IV soil areas should all properly be included in State or National Forests. It is in this area that land tax delinquencies are greatest and the rural relief loads the heaviest. . . . Its only agricultural value is for the scant pasture it affords. . . .

The solving of the human problem of soils of this type definitely requires outside help.

These counties appear to be types of continuously declining social standards. According to the foregoing report the population has been declining in three of these counties since 1910 and in another one since 1900 and has been stationary in the remaining one.

20. A State Plan for Missouri, Preliminary Report, 1934, Missouri State Planning Board, pp. 17-19.

The total number of physicians in these counties has remained constant at twenty between 1934 and 1936. In the meantime the physicians have grown older, so that, while in 1934 there were only seven physicians over 60, in 1936 ten, or one half, had reached this age.

In the entire state in 1933 an average of 26.9 persons per thousand made an income tax return. In three of these counties less than one person per thousand made such a return and in the other two counties less than three. The per capita retail sales for the state averaged \$209 in 1933, while in these counties it varied from \$47 to \$79. The average value of a farm throughout the state was \$3,948 and per acre was \$31.36. In none of these counties did the value per farm reach \$3,000, and the value per acre varied from \$10.78 to \$18.10.

All these counties had a very heavy relief load. During the year ended June 1935 there was an average of 16,563 on relief. This is 28 per cent, which is far above the average relief load throughout the nation.

There were no hospitals in any of these five counties. In the adjoining counties there were seven hospitals with 181 beds and an average occupancy in 1935 of eighty-eight. The extent of occupancy in these counties does not encourage the idea that additional hospital facilities would be utilized to anything like capacity.

The death rate for the entire state in 1933 was 11.6 per thousand and in rural districts, 10.1. In none of these did the death rate reach the rural average but varied from 4.1 to 7.7

MONTANA

Montana is famous as the state of the "great open spaces." So far as there is a medical problem in any section of this state it is primarily due to scarcity of population. There are thirteen counties in which the population is

more than 2,000 per physician. The average population per square mile in these thirteen counties is 1.9. In only six do more than two persons live in the average square mile. There are fourteen towns in these counties containing physicians, of which six have a population of 500 or less, six are between 500 and 1,000, and two are a little over 1,000.

There were twenty-one physicians in these counties in 1934 and twenty-two in 1936. The average population per physician was 2,669 in 1934 and 2,548 in 1936. The entrance of one more physician into almost any of these counties would have taken it out of the class being studied. It may be worthy of note in considering the supply of physicians in such sparsely settled districts that in the whole of Sweden, which is often held up as a model in the distribution of medical services, there is but one physician for every 2,660 persons. The Montana Planning Commission classifies most of the territory included in these counties as suitable only for grazing and says that the supply of grass, even for this purpose, has been largely exhausted in recent years.

Twenty-three persons out of every thousand in this state made an income tax return in 1933; in one of these counties 26.4 persons per thousand made such a return, and in another there were thirteen. In none of the remainder were there as many as ten per thousand. The per capita retail sales in the state averaged \$209 in 1933. One of these thirteen counties shows average retail sales of \$181, and five are below \$100.

The statistics as to value of farms is of less value in this state, as most of the "farms," especially in these thirteen counties, are extensive ranches so that the value per farm differs very little from that in the entire state. However, the average valuation per acre for the state

is \$7.91. In ten of these thirteen counties the value per acre was below the state level.

The extent of the poverty in recent years is better measured by relief statistics. In the year ended June 1935 the average number on relief was 13,759, or 24.5 per cent of the population. These received \$1,043,000, or a little over \$75 per person, from federal relief.

One of these counties has a general hospital with ten beds and an average occupancy of five during 1935. The adjoining counties have thirty-eight general hospitals with 3,343 beds and an average occupancy of 1,956 during the same year. The death rate in the state as a whole was 9.7 per thousand, and in the rural districts it was 7.8. In only one of these counties was the death rate as high as the average for the rural districts of the state.

NEBRASKA

Of the eight counties in Nebraska having a population of 2,000 or more per physician, all but one are near or west of the ninety-ninth meridian. This one is close to a large city in an adjoining state and has a large Indian population, which makes it so exceptional that it requires little if any separate discussion. There are also three counties in Nebraska all west of the ninety-ninth meridian in which there are no physicians. In the seven counties in the western part of the state and the three in which there are no physicians, the problem is to a large extent one of scanty population. The average population per square mile in these ten counties is 3.6. Excluding the three counties having no physicians and the one with a large Indian population, previously mentioned, the average population is still only 4.1 per square mile in the seven counties in this study. Only in the exceptional county is there any town with as much as 1,000 population. There are eight towns in the remaining counties, the largest of

which has a population of 798, the average population of the towns being 475.

All of these seven counties are located in the Wheat Problem Areas. All have been greatly affected by drought and dust storms in recent years. A reflection of this condition is seen in the fact that whereas there were thirteen physicians in the eight counties in 1931 there were but eleven in 1936. Apparently some of the younger men have left the district, since there were in 1934 eleven under 60 years of age and in 1936 only nine.

The contrast as to income and the value per farm is not as sharp as in some other localities, although while the per capita income for the state was \$454 the average income reached \$200 in only four of the eight counties. While the average value per acre for the state was \$33.53, there were four out of eight counties in which the value per acre was nearly as much and in the other four counties the value per acre was less than \$10. In the entire state 18.7 persons per thousand made income tax returns in 1933. In four of these eight counties less than four per thousand made such returns. This is the section in which agricultural relief was extensive. In the year ended June 1935 the AAA distributed \$1,882,000, and \$347,000 was expended for direct relief in these eight counties. This gives a total of \$2,229,000, or an average of over \$43 per person, from federal sources.

There is one general hospital for Indians in the county near the eastern border. There are no hospitals in the seven western counties but the adjoining counties have thirteen general hospitals with 369 beds and an average occupancy during 1935 of 170. The death rate for the state was 9.3. In these eight counties, excepting the one eastern county, the total death rate was uniformly below 7. There would seem to be little possibility that conditions as to medical

service in these counties will improve unless there is a decided change in economic conditions. Neither does there appear to be any serious lack of medical services that could be removed without fundamental economic changes.

NEW MEXICO

The seven counties of New Mexico with a population of more than 2,000 per physician are all scantily populated areas. They have an average population of but 2.8 per square mile and an average population per physician in 1934 of 2,466. There has been considerable redistribution of physicians, although the total number has declined from thirty-one to thirty. In this redistribution two counties dropped below 2,000 population per physician. The soil of all these counties is classified in the map entitled "Type of Farming Areas; in the United States, 1930," prepared by the Bureau of Census, Department of Commerce, in cooperation with the Bureau of Agricultural Economics, Department of Agriculture, as "Grazing, Semi-Desert, Ranch, Semi-Grazing, etc."

Nineteen out of thirty-one physicians in 1934 were under 60, but in 1936 twenty-one out of thirty had not yet reached the age of 60.

The entire cultural and economic level of the state is low in comparison with most of the United States. Illiteracy is high, 13.3 per cent of the adults, and the large Mexican element in the population introduces important cultural differences.

The income differences between these seven counties and the remainder of the state are not as great as in many other states. Only 13.7 persons per thousand in the state made an income tax return in 1933. In five of these seven counties less than four persons per thousand made a return, and in the other two counties the proportion was 8.7 and 5.5.

The retail per capita sales in the state for 1933 averaged \$127; the highest of these counties had \$112, another \$94 and the rest were all below \$60 per capita. The average value of farms in the state for 1935 was \$4,113; two of these counties were above this amount and the remainder were below \$3,000. The high value per farm is due to the large acreage of land used as ranches and for grazing. The average value per acre for the entire state is but \$4.95, which is one of the lowest to be found for any state in the Union, notwithstanding the fact that some irrigated sections have a high valuation per acre.

Thirty per cent of the population of these counties was on relief, but even with this high percentage the average amount given in relief per capita, for the entire population, was \$17 and for those on relief \$58. The fact that this per capita rate is lower than elsewhere is a recognition of the lower standards of living that generally prevail.

There is one county having a general hospital with nineteen beds, in which there was an average occupancy of sixteen in the year ended June 1935. The adjoining counties have thirty-five general hospitals with 2,264 beds and an average occupancy of 1,209.

The death rate for the state in 1933 was 13.4 per thousand and for the rural districts 11.3, which is a higher rate than the average for the United States. In four of these counties the death rate was above 14. In the other three it was 10.8, 10.7 and 9 respectively. There is little reason to believe that until economic and cultural conditions are changed these sections will demand and pay for much better medical service than they are now receiving.

NORTH CAROLINA

The condition in North Carolina is much the same as in some of the other Southeastern states.

The proportion of physicians for the entire state is one of the lowest in the United States, there being but one physician per 1,372 of population and in the rural districts with cities having less than 5,000 population there is an average of 2,218 persons per physician.²¹ There were thirty-one counties in 1934 with more than 2,000 persons per physician; in 1936 this had been reduced by four counties. There is no question here of scanty population, since there is an average of forty-four persons living in each square mile of the counties studied. The physicians are quite evenly distributed throughout these counties, with an average of 2,495 persons per physician. There were ninety-five towns with less than 1,000 population having physicians in 1934 and thirty-three with more than 1,000 population, but only one of these has a little over 5,000 population. There is a large percentage of Negro population. In fourteen counties more than 40 per cent are Negroes. Illiteracy is high. Of the voting population, 14.2 per cent of all males and 12 per cent of females are illiterate, as are 20.6 per cent of all Negroes over 10 years of age.

There were 305 physicians in these counties in 1934 and 314 in 1936. The average age of these physicians is not excessive. Seventy-six per cent were under 60 in 1934 and 77 per cent in 1936. This might appear to indicate that there had been little change; but when it is noted that in 1934, seventy-two were under 40 and in 1936 this had increased to eighty-four it becomes evident that a number of younger physicians have recently moved into these counties. The large number of counties and physicians makes it possible to analyze some of the changes that have taken place. Eleven counties gained nineteen physicians between 1934 and 1936,

21. *Distribution of Physicians in the United States (Revised) 1936*, Bureau of Medical Economics, American Medical Association, Chicago, p. 28.

while six counties lost ten during this period. This rate of movement seems to indicate that physicians are constantly trying to locate in these counties and that in a fairly large percentage of cases they are unable to make a living.

Many of these counties are in either the Appalachian or the "Eastern Cotton Problem Area" and in all the economic and cultural conditions appear to be below the level of the average for the state, which in turn is much below the average for the United States. In the state as a whole only 9.7 persons out of 1,000 made an income tax return in 1933. This is much below the average for the United States, yet only thirteen counties of the thirty-one contained more than two persons per thousand who made an income tax return. The highest rate was 5.8 in one county. There were eight counties in which the rate was between one and two persons per thousand and ten in which less than one person per thousand made such a return.

The average per capita retail sales for the state was \$115; none of these counties reached this average. There were twelve counties in which this per capita was under \$50. The average value of farms in the state was \$2,069 and \$31.24 per acre. In twenty-one of these thirty-one counties the average value of a farm was less than \$2,000; in twenty-six the average value per acre was less than the state average.

Six general hospitals in these counties had 251 beds, with an average occupancy of 115 in 1935. In the adjoining counties there were 133 hospitals with 8,619 beds and an average occupancy of 5,311. Hospital facilities appear to be as great as the patronage would seem to justify.

The death rate for the state is 9.3 for the total population; 8.3 for the white and 11.8 for the Negro. The rural death rate is 8.1, with 7.4 for the white and 9.8 for the Negro population. In only eight of these thirty-one counties is the

total death rate above 9.3, and in fourteen counties the death rate is below the rural rate.

The condition with regard to the extent of medical facilities in North Carolina is of long standing. Apparently there has been an improvement in recent years; but so long as the economic and cultural handicaps, which have been mentioned, exist there is little reason to believe that more extensive and expensive services can be provided from local resources or would be justified by the local demand.

NORTH DAKOTA

There were fourteen counties in North Dakota with a population of over 2,000 per physician in 1934. An increase of physicians in 1936 lowered the population per physician below this ratio in two counties. These counties have an average population of only 6.6 persons per square mile. The physicians are fairly well distributed, the average for all the counties combined being 2,669 persons per physician. Physicians are located at more than one town within every county. The towns are all small, there being only four counties with towns having more than 1,000 population and none with 2,000.

There were fifty physicians in these counties in 1934 and fifty-one in 1936. The number of physicians declined in four counties and increased in three between 1934 and 1936, indicating considerable movement and experiment as to the ability of the community to support a physician. Twelve of the fifty physicians in 1934 and fifteen of the fifty-one in 1936 were under 50 years of age, which would seem to indicate the entrance of younger men in recent years.

Most of these counties are in the drought stricken "Spring Wheat Problem Area." Standards of living have not hitherto been low, although the income of the scanty population is somewhat below that of the average for the

state. In the state as a whole, 13.1 persons per thousand made an income tax return in 1933. The highest rate in any of these counties was 7.2 and the lowest was 1.3 per thousand. Out of a population of 133,460 in these counties an average of 48,251, or 36 per cent, were on relief during the year ended June 1935 and received an average of \$65 per person. In these counties the AAA spent \$4,224,000 during the same year. If to this is added \$3,150,000 for relief, it gives a total of \$7,374,000, which means that the average for each person in the total population of these counties was a little over \$55 from these two federal sources.

The per capita retail sales in the state in 1933 averaged \$159. In one of these counties the per capita retail sales reached \$135; in ten it was less than \$100. Nevertheless, it will be noted that the difference between these counties and the state as a whole was not as great as has been noted in other states. The average value per farm in the state was \$8,358 and the average value per acre was \$18.08. Again there is no sharp difference in these counties and the remainder of the state, although in eight the value per farm and in eleven the value per acre is somewhat lower.

There were no hospitals in these fourteen counties. In adjoining counties there were forty-six general hospitals with 3,230 beds, with an average occupancy of 2,161, or 68 per cent. This is a somewhat higher occupancy than has been found in similar counties and possibly indicates that additional hospitalization is needed and would be utilized.

The death rate for the state is 8 per thousand, one of the lowest in the country. Only one of the fourteen counties has a higher death rate, and this is due to a large Indian population. The next highest county has a rate of 7 per thousand, and all the other counties are considerably less than this figure.

SOUTH CAROLINA

The state of South Carolina has the largest average population per physician in the United States, 1,400. In the cities under 5,000 there is an average of 2,252 persons per physician.²² The state also has a high percentage of illiteracy, which in 1930 amounted to 14.9 per cent of the population over 10 years of age, 26.9 of the Negro population and 18.8 per cent for males and 18.4 per cent for females of voting age. The percentage of Negro population is very high in all the ten counties that have over 2,000 population per physician. In only three is 50 per cent of the population white. The physicians are evenly distributed throughout these ten counties, there being an average of 2,425 persons per physician. There are numerous small towns containing a physician in most of these counties, so that such service as exists is quite evenly distributed. There is no question of a scanty population; the lowest rate found in any county was 18.5 persons per square mile and this rises to 46.9 in the highest.

There were 103 physicians in these ten counties in 1934 and 106 in 1936. This increase of physicians reduced one county to below the 2,000 limit. Only three out of these ten counties had the same number of physicians in 1934 and 1936, there being a decrease in three counties and an increase in four. There is no significant change in the ages, practically 25 per cent being over 60 in both years.

Seven of these counties are in the "Eastern Cotton Problem Area," and in all poverty is extreme. There was an average of 7.6 persons per thousand who made an income tax return in the state in 1933. The highest number in any of these counties making such a return was 3.6, and in the others there were less than three per

22. *Distribution of Physicians in the United States (Revised) 1936*. Bureau of Medical Economics, American Medical Association, Chicago, p. 29.

thousand. The per capita retail sales for the state averaged \$107 and in the ten counties it varied from \$73 to \$38.

Superficially there is no very significant difference between the average value of farms in the state, which is \$1,725, and the value per acre, \$23.16, and the corresponding values in these counties, although the value in the latter is uniformly somewhat less. When one comes to analyze these values in relation to the high degree of tenantry one gets a different picture. In 1935 there were 11,422 farms operated by full owners and 20,508 by tenants. The average value of farms operated by full owners was \$2,082, while the value of the farms operated by the tenants was \$955.

One of these ten counties contains a hospital with fifty-two beds, which had an average occupancy of twenty-four in 1935. The adjoining counties have forty-seven hospitals with 3,639 beds, of which 2,320 were occupied. This percentage of occupancy indicates that while there might be a need for more hospitals in some of these counties there is some doubt whether, in view of the economic and cultural situation, very extensive use would be made of additional accommodations.

The death rate for the state is 11.1 per thousand for the entire population; 8.9 for the whites and 13.8 for the Negro population. In the rural districts it is 9.5 for the total population; 7.6 for the white and 11.8 for the Negro. Three of these counties exceed the state average for the entire population. These counties have about a 70 per cent Negro population and the death rate for Negroes also exceeds that for the state as a whole. The rate in the other seven counties is below the state average as a whole but mostly above the average for rural districts. It seems possible that this apparently high death rate may be due to the extreme poverty and general low social condition for a large per-

centage of the population rather than to any absence of medical service which it is within the economic power of this population to provide.

South Carolina is an extreme illustration of the effects of long-time economic, cultural and social conditions on the supply of medical service. Local resources seem insufficient to alter these conditions, and without such alteration it is difficult to bring about any important increase in either the demand for or supply of medical services.

SOUTH DAKOTA

Of the fourteen counties in South Dakota in which the population exceeds 2,000 per physician, nine are in the "Spring Wheat Problem Area." Three of these fourteen counties had an increase in the number of physicians between 1934 and 1936 sufficient to reduce the ratio below 2,000 persons per physician. Only four are in the eastern part of the state, and in two of these one or more physicians moved in since 1934 and thereby reduced the ratio below 2,000 persons per physician. All but four counties are west of the ninety-ninth meridian and most are west of the hundredth, which marks the line of rainfall sufficient for agriculture. Indian reservations are located in some of these counties. The average population per square mile is 6.3; if the four eastern counties are omitted, the population per square mile is but 4.5

Physicians are evenly distributed among this scanty population, so that the average population per physician for the whole fourteen counties was 2,418 in 1934 and 2,264 in 1936. An increase of one physician in most of these counties would remove it from consideration in this study. The total number of physicians in these counties increased from forty-four to forty-seven between 1934 and 1936. There was a

decrease of physicians in two counties and an increase in three. The age is rather excessive; twelve of forty-four in 1934 and fifteen of forty-seven in 1936 were over 60 years of age.

In the state as a whole, 11.7 persons per thousand made an income tax return in 1933. In nine of these counties there were less than four persons per thousand, and the highest number in any county was 7.1 per thousand. Per capita retail sales in 1933 were \$153 for the state. They were lower than this in all these fourteen counties and were below \$100 in ten.

The average value per farm in the state was \$8,305 and per acre was \$18.65. In two of the fourteen counties the value per farm was higher (perhaps owing to more than average size) and in four the value per acre was higher than the state average. On the other hand, there were seven counties in which the value was less than \$10 per acre.

The standard of living has not been continuously low, but drought and crop failures and low prices have reduced that standard in recent years. In the year ended June 1935, 45,741, or 43 per cent of a total population of 106,402, were on relief and received a total of \$3,853,000, or \$84.23 per capita. During this year the AAA distributed \$3,463,000, or \$32.54 per capita, for the total population.

Four hospitals in these fourteen counties had ninety-three beds and an average occupancy of fifty-four in 1935. In the adjoining counties there were forty-five hospitals with 1,903 beds and an average occupancy of 1,026. There are some duplications in this count, as in several cases different counties are classified as adjoining one or more of the same counties with hospitals. That only 53 per cent of the available beds were occupied would seem to indicate that there would be little demand for additional facilities.

The death rate in the state as a whole is 8.7. In two counties, one of which has a large Indian population, this rate is exceeded; in the other counties it is somewhat lower.

OKLAHOMA

The five counties in Oklahoma with 2,000 or more population per physician, which were reduced to four in 1936, scarcely constitutes a problem, especially as the distribution of physicians is such as to make them accessible to the population. One of the counties with eleven physicians in 1934 and ten in 1936 touches three counties with fairly large cities and ample medical services. There were thirty physicians in these five counties in 1934 and twenty-nine in 1936. Of the four counties having any significance, one lost two physicians and another gained two between 1934 and 1936, which would seem to indicate sufficient movement of physicians to test out the ability of any locality to support medical services.

The age problem is apparently growing somewhat worse; sixteen out of the twenty-eight, whose ages could be determined in 1934 were 60 or over, while by 1936 there were twenty-one above this age.

One of these counties is in the Appalachian-Ozarks and two are in the "Winter Wheat Problem Area." All show the same inferiority with regard to income and farm values that have been noted in other states. The average per capita retail sales for the state in 1933 was \$143, while in these counties it ranged from \$97 to \$28. Sixty-eight per cent of the farms were operated by tenants in 1935. The most significant evidence regarding general economic conditions is that 32,366 out of a total population of 73,491, or 44 per cent, were on relief during the year ended June 1935.

There are no hospitals in any of these counties, but there are twenty-four hospitals in adjoining

counties, with 1,618 beds and an average occupancy of 933.

TENNESSEE

Of the nine counties averaging more than 2,000 persons per physician in Tennessee, five are in the "Appalachian-Ozarks" and one is in the "Eastern Cotton Problem Area." There is no question of a scanty population; there is an average of about thirty-three persons per square mile in these counties, and one county has a 73 per cent Negro population. There were thirty-eight physicians in these counties in 1934 and forty-two in 1936. There was an increase in the number of physicians in four counties and a decrease in one. Twenty-four of the thirty-eight in 1934 and twenty-seven of the forty-two in 1936 were under 60 years of age.

In the state as a whole, 13.2 persons per thousand made an income tax return in 1933. In one of these counties the number making such a return was 9.9; in four it was between one and two per thousand, while in the remaining four counties no income tax returns were made. The retail sales per capita for the state averaged \$126; the highest per capita in any of the ten counties was \$85, seven were below \$50 and the lowest was \$21. Such a low rate of income that can be used for purchases of necessities, not self provided, means that there is very little income available for medical care.

The average value per farm in the state was \$2,030, and the average value per acre was \$29.12. None of the nine counties reached this average value per farm and in two counties the value was less than \$1,000 per farm. In five the value per acre was less than \$20.

These are sections in which poverty and illiteracy are of long standing: The State Planning Board analyzed each county as to its economic

condition.²³ This board found that all these nine counties were low in educational facilities, most were lacking in good roads, and in four the public credit was so low as to make the raising of more money difficult or impossible. All the counties in Tennessee were rated by the Planning Board on a scale which included such factors as per capita net worth, assessed valuation, county taxes collected, total revenue received, and the "inverse ratio per capita cost of government." All these counties were rated on this scale in the two lowest of the six grades. These two grades are characterized as follows: "seems to be burdened by inefficiency or some unknown factor" and "would require outside aid to bring facilities to average."

There were no hospitals in any of these counties, and two counties did not adjoin any county having a hospital. One adjoined a county containing a large city with eight hospitals and 1,746 beds. In all the adjoining counties there were twenty-six hospitals with 3,050 beds, of which 2,218 was the average occupancy in 1935. Considering the poor roads and mountainous character of these counties, this condition would seem to indicate a lack of medical facilities in some of these localities. Any suggestion as to methods of supplying such facilities must consider the equal lack of educational facilities and all other necessities, and the low cultural and economic standards which limit the local resources.

The death rate in the state as a whole was 10.6 per thousand, and for the rural districts 8.7. Only one of these ten counties had a death rate above the state average, and in seven the death rate was lower than the average rural rate.

23. An Outline of the Taxing Ability and Governmental Facilities of Tennessee Counties, Tennessee State Planning Board, Nashville, Tenn., 1935

TEXAS

There were twelve counties in Texas in 1934 in which there were more than 2,000 persons per physician. There were also five counties in 1934 and six in 1936 in which there were no physicians. In the five counties without physicians in 1934 there was an average population of but 1.02 persons per square mile and in the six counties that were without physicians in 1936 the population was 1.09 per square mile. Since counties with but one person or less per square mile are considered "unpopulated," it is scarcely to be expected that physicians would be among the first to enter such counties. There were forty-eight physicians in the twelve counties in 1934 and fifty-five in 1936. These physicians are very evenly distributed throughout all these counties. There was an average of 2,370 population per physician in 1934 and 2,068 in 1936. All were very close to the line that has been drawn, and there is no claim that this line really marks a sharp difference between sufficient and insufficient supply of physicians. The increase in physicians that took place between 1934 and 1936 in these twelve counties reduced the ratio of population per physician in five of them to below 2,000. There was a considerable amount of movement of physicians within these counties. The number of physicians increased in seven counties and decreased in one between 1934 and 1936.

There is no great preponderance of aged physicians in these counties, and the fact that the number of physicians under 40 was eight in 1934 and seventeen in 1936 shows that young physicians are entering these counties.

A study of the distribution of population shows that these counties fall into two groups. In five counties there is a population of from sixteen to twenty-eight persons per square mile. All these are small counties surrounded by counties hav-

ing hospitals in which the bed occupancy is low and with ample physicians to supplement the physicians in the counties having fewer physicians. In seven counties the population varies from 8 to 1.4 persons per square mile. All these counties are in land with soil unfitted for general agriculture.²⁴ Most of them are west of the line marking the limit of 25 inches of annual rainfall.

There is no such sharp distinction in income between these counties and the remainder of the state as has been seen in many states. In the state as a whole, 19.4 persons per thousand made income tax returns. In two of these twelve counties twenty-five and thirteen persons per thousand made such returns. The one with twenty-five persons per thousand had a population of but 1.4 per square mile and was occupied by large ranches. In the remainder of the counties the number making income tax returns varied from 8.3 to 0.8 per thousand.

Retail sales averaged \$166 per capita and the highest per capita sales in these counties was \$129; there were eight in which such sales were below \$100 a year.

The average value per farm for the state was \$5,137 and per acre was \$18.70. There is not much difference in the majority of these counties in these values. In the county with the highest percentage of income tax returns the average "farm" contained 4,494 acres and was valued at \$15,144.

The problem of medical services in these counties cannot be given a single simple explanation. It differs in the various counties. In some it is scarcity of population, in others the existence of an ample supply in adjoining counties.

The number of persons on relief is not exceptional, being 18.2 per cent of the population.

One of the twelve counties has a hospital with sixteen beds, which had an average occupancy

24. Report of the Texas Planning Board for 1935, Austin, Texas, pp. 38 and 40.

of five during the year 1935. In the adjoining counties there were thirty-five hospitals with 1,379 beds, in which there was an average occupancy of 764. These figures do not seem to indicate a general lack of medical facilities. It is probable that comparison of death rates in this state is of even less value than in some other states, owing to conditions of population that have been pointed out. The average for the state was 9.8 in 1933 and for the rural districts was 7.8. One of these twelve counties had a higher rate, 10.4, and in eight the rate was below the rural rate for the state.

It would seem that in this state the question of the supply of physicians is adjusting itself as rapidly as settlement and economic conditions permit. The secretary of the state medical society seems to confirm this, as he says "It is my very definite impression that medical service in this state has been ample throughout, since pioneer days, and even in those days medical service was on a par with other services required at the time."

VIRGINIA

There are eighteen counties in Virginia with more than 2,000 population per physician. Eight of these are in the "Appalachian-Ozark Problem Area" and most of the remainder are in the "Tide Water Region." There were 120 physicians in these counties in 1934 and 136 in 1936. There is a very even distribution of physicians throughout these counties, there being an average of 2,642 persons per physician in 1934 and 2,331 in 1936. There was an increase of physicians in these two years in eleven counties and a decrease in one. Young physicians are moving into these counties, since there were forty-two physicians under 50 in 1934 and fifty-two in 1936. Physicians are located in seventy-six different towns, sixty-nine of which have a population of less than 1,000 and only one of which has a

population over 4,000. These counties do not have a scanty population; they have an average of thirty-seven persons per square mile, and considering the large proportion of the land that is mountainous or otherwise unamenable to cultivation this indicates a fairly closely settled agricultural region.

In the state as a whole, 18.3 persons per thousand made income tax returns in 1933. In one of these counties there were 6.8 per thousand; in fifteen counties less than 3 per thousand and in four less than one per thousand made such a return. Retail sales per capita for the state averaged \$148. The highest average in these counties was \$79 and there were eight in which the average was below \$50.

The average value per farm in the state was \$3,005 and per acre, \$33.66. In two of these counties the average for both farms and per acre was higher than the state average. In twelve the average was below \$2,000 per farm. Since Virginia is the oldest settled state in the Union, it may be assumed to have a fairly settled social organization, which may make it worth while to analyze these figures a little further to show how these values are distributed. Of the farms, 28,098, or 59 per cent, were operated by "full owners" and had an average value of \$2,241. Seven per cent, or 3,713, were operated by "part owners" and had an average value of \$1,739 per farm. Thirty-three per cent, or 16,130, were operated by tenants and had an average value of \$1,301. There were also seventy-seven farms with an average value of \$21,764 operated by managers. Since this includes buildings as well as land, it is evident that the valuation of farms operated by tenants indicates an income that would leave but little free cash to be expended for medical care. Most of the income that would be available for medical service would have to come from about 60 per cent of the population.

The percentage on relief was only 7.8, which is lower than in almost any of the counties that have been studied.

Three hospitals within these counties had eighty-eight beds, of which but thirty-three were occupied on an average during 1935. Adjoining counties contained sixty-nine hospitals with 5,174 beds, of which but 2,973 were occupied. It would seem that except in some localities that may be cut off by mountainous or poor roads as much hospital accommodation is available as can be paid for.

The death rate in the state as a whole was 11.7 and in the rural districts, 10.5. The death rate in three of these counties was higher than the average for the whole state and was lower than the rural average in eleven counties.

The picture as a whole is one in which it would appear that medical service is furnished to the full extent that economic conditions will permit.

WASHINGTON

There is no really peculiar problem common to the five counties in Washington having 2,000 or more population per physician. In most of these counties the population is very close to this margin—so close that the increase from ten to fourteen physicians in these counties, which took place between 1934 and 1936, reduced two counties below the ratio set and gave an average population in these five counties of 2,087 per physician. This indicates that the situation in these counties is a temporary one.

Three of these counties are in the mountains, with a population of 1.9, 4.2 and 13.4 per square mile respectively. The other two are on the coast; one of them is composed largely of islands in the bay near Seattle, where ample medical facilities are available. In all, the number of persons per thousand filing income tax returns is less than the state average of 34.4.

While the per capita retail sales for the state are \$235, the highest in any of the five counties is \$144, and three are below \$100. The fact that farms in this state vary so widely between highly cultivated and irrigated sections and large ranches makes any comparison as to value of farms and acreage unimportant. These counties are not especially distinguished from the rest of the state by any economic conditions or excessive relief.

There are no hospitals in these five counties, but all adjoin counties having hospitals. In these adjoining counties there are twenty-eight hospitals with 2,718 beds and an average occupancy of 1,685. The whole picture is one of a temporary condition due more to location than to anything else. An increase of population would probably bring a corresponding increase in medical facilities.

WEST VIRGINIA

Of the six counties in West Virginia having more than 2,000 persons per physician in 1934 there were three that were among the twenty-nine counties with the highest percentage of relief in the United States in 1930.²⁵ During the year ended June 1935 there still remained 32,621 of a total population of 87,911, or 36 per cent of the population, on relief. All these counties are in the "Appalachian-Ozark Problem Area." They are almost exclusively white, being less than 3 per cent Negro in the counties with the largest percentage of the Negro population. These counties are not scantily settled, the average population per square mile being fully equal to that of the average rural district with a similar proportion of arable land.

There were thirty-five physicians in these counties in 1934 and forty in 1936. In 1934 there were thirteen physicians under 50 and in 1936

25. Goodrich, C. L.; Allin, B. W., and Hayes, Marion: *Migration and Planes of Living, 1920-1934*, Philadelphia, University of Pennsylvania Press, 1935.

this had increased to sixteen. There was an increase of three physicians in one county and two in another, which increase sufficed to reduce both below the 2,000 line. In fact, all the counties are close to this line; the average population was 2,511 in 1934 and 2,198 in 1936.

While 15.8 per thousand made an income tax return in the state in 1933, the highest return per thousand in any of these counties was 4.6; all the remainder were below 3 per thousand. The per capita retail sales in the state averaged \$141; the highest in these counties was \$82 and the lowest, \$41. There is less difference in the value of farms, the state average being \$2,269 and \$25.22 per acre. One of these counties is slightly above the average for farm values, but all are below the average value per acre.

There is one hospital in one of these counties.

The adjoining counties seem to be amply supplied, having thirty-nine hospitals with 3,258 beds, of which 2,076 were occupied. As every county has at least two hospitals in adjoining counties, and in view of the low rate of occupancy, there is little reason to believe that unless economic conditions were changed further hospital facilities would be utilized.

The death rate for the state is 9.4 per thousand; in the rural districts, 7.5. The death rate in all these counties is below the state average and in two it is below the rural. This section resembles all those in this area in that extreme poverty sets a limit to the possible expenditures for medical service. Yet, in spite of this fact, five physicians moved in in the two years that followed 1934.

General Survey and Conclusions

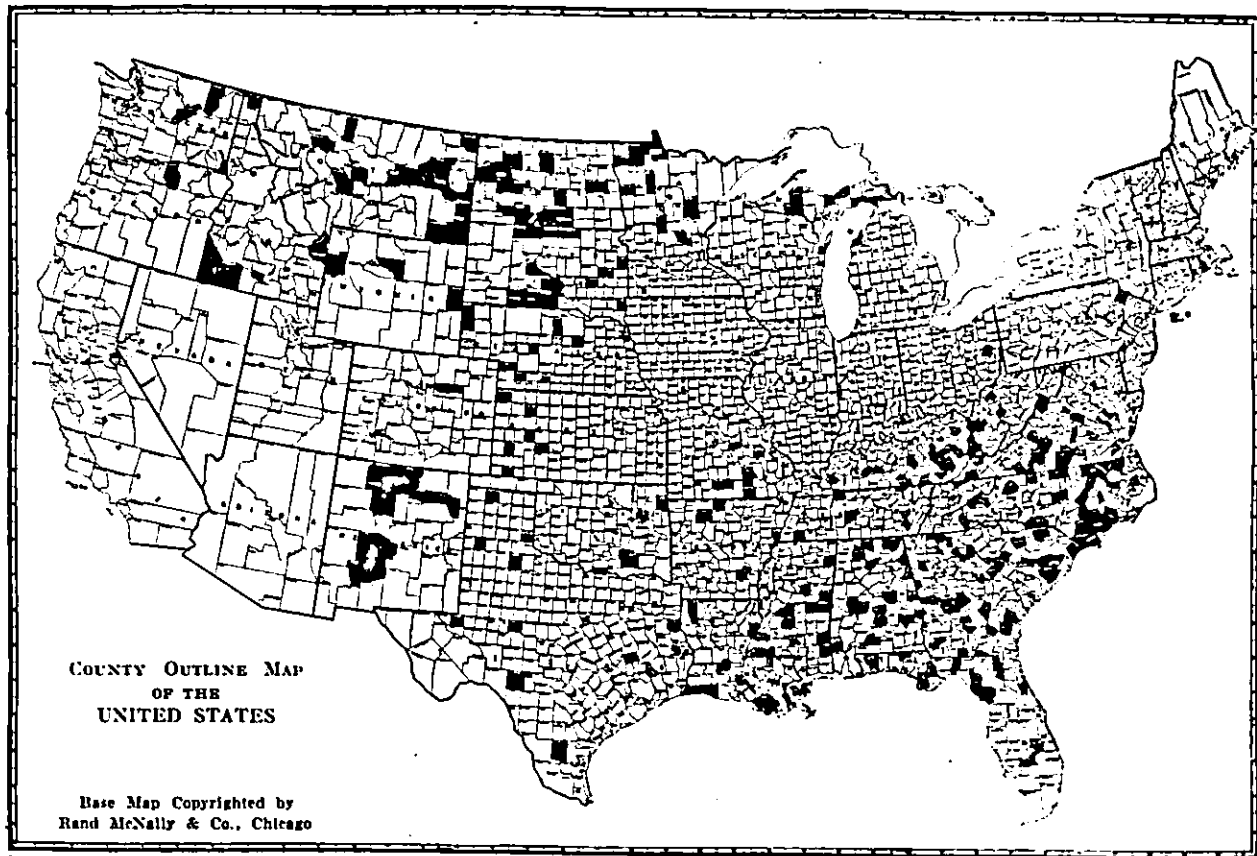
Even a superficial examination of the medical writings of the last 100 years will indicate that there has scarcely been a time or a place, in Western nations at least, when there have not been complaints of a lack of medical service in rural districts. Moreover, the extent and vociferousness of this complaint seem to bear no particular relation to available medical facilities, unless, as sometimes appears probable, the complaint becomes more vocal as the facilities increase.

Wherever human nature is involved, emotion will always be mixed with logic. Birth, sickness, accident, death are words surcharged with emotion. Their dramatic crises attract universal attention, while the causes that created those crises interest but few.

Poverty and malnutrition may slay thousands and the public remain unmoved, but a child strangling with diphtheria without medical attention will arouse the indignation of an entire community and—with sufficient sensational publicity—the entire nation, which had long been indifferent or actively hostile to the immunization that would have avoided many such crises.

This natural emotional reaction is itself a fact that forces consideration in any discussion of medical service, but its appeal should not overshadow other facts less emotionally charged but far more significant in the care of the health of an entire community.

The age and universality of the complaint of lack of rural medical service suggest that the causes underlying the condition criticized are somewhat deeper and more general than are commonly recognized. Nearly all the new features of a changing civilization make their first appearance in the city and only gradually, if



Counties in black had more than 2,000 population per physician in 1934. Note concentration in Appalachian, Ozark, cotton belt, dust bowl, and cut-over regions. Shaded counties had no physicians in 1934.

ever, invade the countryside. Slums, overcrowding, noise, smoke and industrial uncertainty, as well as physicians, hospitals, libraries, schools and theaters, have always been more plentiful in the cities than on the farm, and there is little reason to expect this difference wholly to disappear in the future. It is as impossible to take all the desirable features of city life to the farm as it is to move the open fields and deep forests to the city.

There is always a steady migration of the desirable and transferable features developed in the city to rural districts, but this is a process of development and diffusion and not of simultaneous development. This is an expression of the "law of diffusion" familiar to anthropologists and sociologists. Because the best physicians, hospitals, schools and other similar institutions usually develop first in the cities, it follows that in general they will always be most numerous there, although their influence will constantly spread and carry continuous, if somewhat delayed, improvements to less congested areas.

If these centers of progress are themselves diffused, stagnation may follow. If each new development should be immediately and equally diffused throughout the country, it might destroy the sources of progress. There must be centers of development before anything exists to diffuse. An attempt at diffusion during early stages might stop the development. The social need is not to find a way instantaneously and simultaneously to disseminate the services developed in the large centers of population but rather to determine the lagging localities and how and when to bring the available facilities to the places where they are needed.

The ratio of population to physician in any locality is, by itself, no accurate measure of medical service. This is especially true of counties, whose boundaries were more fre-

quently fixed to fit the convenience of a system of surveying by standard sized townships than by considerations of efficient social and economic organization, so that it is the exception where such boundaries coincide with any economic or social unit. The limits of medical service are almost never marked by county lines.

Some states maintain a central general hospital that supplies hospital and medical service to citizens in all sections of the state, and nearly all states assume the burden of care for mental patients. Many state health departments offer laboratory services and biologic products free, or at low cost, wherever needed within the state. Few hospitals or physicians limit their services to the residents of a single county. The county with the smallest population per physician in the United States is the one in which the Mayo Clinic is located; but its patients come from every part of the United States.

Transportation, telephones, physical obstacles, such as mountains and rivers, often have more effect in determining the availability of medical services than immediate proximity.

However uncertain any conclusions from the ratio of physicians to population in counties may be, the fact still remains that nearly all official statistical compilations in the United States make the county the unit and are available only on a county basis.

The General Education Board ²⁶ tried to avoid the defects of the county as a unit by using instead towns graded according to population and assuming an almost arbitrary percentage of rural population as dependent on such towns. This method provides a view from a somewhat different angle, but it is also subject to certain handicaps aside from the impossibility of obtaining on a uniform basis the economic statistics,

26. Mayers, Lewis, and Harrison, L. V.: *The Distribution of Physicians in the United States*, New York, General Education Board, 1924.

which have a very important bearing on nearly all phases of the problem. The use of the town with adjacent population assumes that the rural population is almost entirely dependent on towns of less than 2,500 population and also that the number of physicians in such towns and villages is a measure of the medical service received by rural dwellers.

These assumptions are especially dangerous in the United States, where the most common set-up of the population in a county is a "county seat," which is the natural trading center from which many of the highways radiate, and a number of small villages with a constantly declining degree of attraction to the immediately surrounding population. It seems doubtful whether the number of physicians residing in such villages or the rate of decline or increase is any real measure of the availability of medical service in the surrounding community.

The use of the number of physicians in any locality as the other term in a ratio to measure medical service has flagrant defects. A "physician" is by no means a standardized unit of medical service. It would seem probable that rural physicians are even less standardized than urban.

Rural physicians are older, and therefore more of them received their training in less standardized schools. Many are wholly or partially "retired" even though they do not state this in the Directory. Some have taken advantage of ample opportunities for graduate education; others have had few opportunities, and some have scarcely read a medical publication or attended a professional meeting since graduation. Some have taken up "side-line" occupations to make a living; others are working in their medical practice to the limit of endurance. Some possess all the latest essential equipment; others will belong to the era when "every physician carried within himself his

whole armamentarium." 27 Nor is it absolutely certain that the latter always gives less or even a poorer service to the community. It certainly cannot be taken for granted that a county with a population of 20,000 and ten physicians always has a poorer medical service than a county which has the same population and twelve physicians.

While in this study the ratio of one physician to 2,000 has been used as one of the characteristics by which to select such sections as may possibly be lacking in medical service, it is nowhere assumed that this ratio, by itself, is an accurate measure of deficiency. There are several definite reasons why this ratio has been selected.

The Committee of Hygiene of the League of Nations held a conference of experts on European Rural Hygiene, March 9-12, 1931, composed of physicians from several nations and members of the Staff of the League. This conference submitted a series of suggestions for future action, of which the following was placed first: 28

The experts are unanimously of the opinion that, for the purpose of furnishing an efficient medical service to the rural population, the number of persons capable of being cared for by a duly qualified practicing physician should be a minimum of 2,000—it being understood that in relation to the degree of development of the health organization and necessities of the population this number may be reduced to even 1,000.

The limit set as the number that may be cared for by a single physician in various compulsory sickness insurance systems is usually around 2,000. The British system permits a physician to have 2,500 persons on his "panel." This does not include unemployed members of families, for whom he usually cares as private patients. In Sweden, where more special regulations to assure adequate medical care to rural localities

27. Vaughan, V. C.: Rural Health Centers as Aids to General Practitioners, *J. A. M. A.* 76: 983 (April 9) 1921.

28. *Revue internat. de méd. prof. & soc.* 4: 20-57 (May) 1931.

have been established than in almost any other country, the average number of persons per physician for the entire country is 2,660. In no

Counties with Least Number of Physicians per Population

	Counties with More Than 2,000 Population per Physician						Counties Having No Physicians		
	1918 Number		1934 Number		1936 Number		Same Counties in 1918 and 1934	Number Without Physicians, 1934	Number Without Physicians, 1936
	Counties	Physicians	Counties	Physicians	Counties	Physicians			
Alabama.....	2	22	16	180	14	181	1	..	..
Arkansas.....	..	..	4	35	3	36	..	..	..
California.....	2	8	..	..	..	..	..	1	1
Colorado.....	3	5	1	9	1	9	..	1	2
Florida.....	1	10	13	37	10	41	1	..	..
Georgia.....	8	20	33	129	27	136	6	..	..
Idaho.....	3	6	6	17	1	20	..	..	1
Kansas.....	4	37	6	12	4	13	1	..	..
Kentucky.....	6	40	10	120	15	121	4	..	..
Louisiana.....	7	60	9	59	7	74	4	..	..
Michigan.....	1	1	5	24	3	28	..	..	..
Minnesota.....	4	18	9	46	6	56	2	..	..
Mississippi.....	5	30	13	103	13	98	3	..	..
Missouri.....	..	..	5	20	5	20	..	..	..
Montana.....	5	27	13	21	10	22	2	..	..
Nebraska.....	4	5	8	13	7	11	3	3	4
Nevada.....	1	1	..	..	..	..	..	..	..
New Mexico.....	1	4	7	31	5	30	1	..	..
North Carolina.....	15	118	31	305	27	314	18	..	..
North Dakota.....	7	17	14	50	12	51	4	3	2
Ohio.....	..	..	1	8	1	9	..	..	..
Oklahoma.....	2	9	5	30	4	29	1	..	..
Oregon.....	1	10	1	2	1	2	..	..	..
Pennsylvania.....	..	..	1	3	1	4	..	..	..
South Carolina.....	10	123	10	103	9	106	3	..	..
South Dakota.....	7	21	14	44	11	47	4	2	2
Tennessee.....	3	7	9	38	9	42	3	..	..
Texas.....	11	45	12	48	7	55	3	5	6
Utah.....	2	5	..	..	..	..	..	1	1
Virginia.....	6	30	18	120	12	136	3	..	..
Washington.....	..	..	5	10	3	14	..	..	..
West Virginia.....	..	..	6	35	4	40	..	..	..
Wisconsin.....	3	13	3	22	8	50	..	..	..
Wyoming.....	..	..	3	5	1	8	..	..	..
Totals.....	123	702	300	1,679	241	1,812	62	16	19

European country having any considerable rural population with systems of state medicine, compulsory insurance or special provisions for rural districts has this ratio of 2,000 persons per physician been reached for a majority of the rural sections.

In further recognition of the errors that must exist in drawing conclusions from such a ratio by counties, a survey also was made of the general hospital facilities in the counties adjoining those with 2,000 or more persons per physician. While the number of hospitals or the ratio of beds to population or even the percentage of those beds occupied does not give an accurate measure of medical facilities, it does give some indication of whether a sufficient surplus exists to enable such adjoining counties to contribute to the services of near-by localities.

A combination of all these facts, which are nearly all that are available without a personal survey, makes it possible to locate the sections of the country in which, if anywhere, there may be the greatest need of additional medical service.

The factors that determine the character of the medical services that are available, utilized and supported in any locality are almost infinitely complex. Many, but not all, of these factors are economic. Medical service, like every other good in our present economic system, moves in response to a recognition of its need and value, a desire and an effective demand. To a large extent this recognition, desire and demand are three successive and essential steps. If either is lacking, the good will usually not be supplied.

Recognition of the value of medical service depends largely on the education and intelligence of the population. An ignorant, illiterate and socially backward community will prefer "patent" medicines, home remedies, witch doctors, quacks or cultists even when its residents recognize that they are sick. Some forms of sickness are seldom recognized by the ignorant at the time when medical service is helpful. Whole sections of the population had to be educated to the fact that they were suffering from hookworm disease before there was any recognition of the need for medical service.

Desire also depends to a large degree on native intelligence and education. Less intelligent mothers often prefer untrained midwives to trained obstetricians. Physicians in many of the counties studied report that patients finally call a qualified physician only after they have exhausted the resources of nostrum and home-made medication. They are even less able than the better informed classes to recognize the importance of standards of education and ethics. Recognition of the value of and a desire for good medical service may, to a considerable degree, be created by education, but such education is almost inevitably lacking in the localities without good medical service.

Even if good medical service is desired, it cannot usually come into a community unless the demand for it is supported by adequate purchasing power.²⁹ The most important factor in determining the character and extent of medical service in any community is the economic one. A physician cannot give any sort of medical service if he cannot live, and he cannot give good service without an income sufficient to procure the essential technical and educational equipment.

A number of indexes of economic conditions in the counties studied were analyzed to determine the possible demand for medical services. These included density of population, value of farms, average annual income, percentage of persons making income tax returns, number of persons on relief, annual per capita retail sales, automobiles owned and savings deposits for nearly all counties, and numerous other factors for a large number of these counties. Secretaries of state medical societies, reports of state planning boards and other publications were consulted to obtain as complete

29. An Introduction to Medical Economics, Chicago, Bureau of Medical Economics, American Medical Association, 1935, pp. 49-56.

a survey as possible of the localities in which it appeared medical services might be deficient.

The sections in which the supply of physicians, in relation to population, is exceptionally low fall into two quite distinct classes. One class of counties is on the margin of settlement, in mountainous, arid, national forest or grazing sections in which the population is actually too scarce to support even one physician for 2,000 persons. In some of these counties the population is increasing, in others it is declining. All of them lack the elements of permanently adjusted society, concentrated population and, in general, the higher and more complex social organization that can maintain modern educational, medical and other social services. Some of these counties in the "dust bowl" near or west of the hundredth meridian have been fairly prosperous in "wet" years and may then have had more medical and other facilities. Should rainfall increase, population might return, including physicians, as has been the case several times in the past. The counties in the "cut-over" sections of Michigan and Minnesota also really belong in this class. They now have a declining population and their future depends on forestation or other land-use policy rather than on present characteristics.

The other class of counties, located principally in the Appalachian-Ozarks, cotton and some sea-coast regions, presents a different situation and creates much different problems. These usually have at least the average density of population of rural areas, a fairly old and established but backward economic and social organization, a high percentage of illiteracy, tenantry and extreme poverty, and a general lack of the more recently developed features of modern civilization. These sections not only have less medical services than the average for the nation but also have fewer and poorer schools, teachers, banks,

amusement facilities and also less desirable food, clothing and homes.

The incomes of the population are too low to provide or sustain the so-called higher and more recently developed social factors without deprivation of other things that are necessary to health. In some of these communities the average annual retail sales per capita are between \$50 and \$100. Such an average means that many families have less than half this amount to spend. Many studies have placed the annual per capita expenditure necessary to secure good medical service at between \$20 and \$30. Manifestly no such sum can be expended by these families.

If good medical service is to be provided in these localities, either general incomes must be increased or the fact frankly faced that the remainder of the nation must assist the residents of such communities to obtain not only medical service but food, clothing, homes, education and other privileges of modern society. Present indications are that these counties are receiving all the medical care that they demand and considerably more than they can pay for. No evidence has been found to show that the people who live in these counties have complained of any lack of medical service. Neither have they complained of lack of schools, libraries, electric lights, telephones and other things which urban dwellers value highly. This is confirmed by replies from the secretaries of state medical societies, who are unanimous in reporting that no such complaints as to lack of medical service, and practically no requests for additional physicians, have been received from these counties. So long as these economic conditions exist there will be little increased recognition of the need or value and no effective demand for better medical service.

There has been much criticism of an alleged reluctance on the part of physicians to go into

rural districts or to remain there. Because the medical profession has a very lively sense of self criticism, this indictment has frequently found expression in medical publications and meetings.

The factors that influence the movement of the members of a profession among a population of 125,000,000 spread over a nation as large and complex as the United States are so many and so diversified as to defy analysis, much less conclusions as to their effect. Listing a few of the trends and tendencies may serve to indicate this complexity and may also suggest some reasons for the more significant movements.

For half a century, rural population has been declining quite rapidly in relation to urban residents. By 1920 more than half the population lived in cities. During most of this period the number of physicians in relation to population was steadily declining. There were but 636 persons per physician in the United States in 1898 as compared with 797 in 1929.³⁰ The number of graduates of medical schools reached the high point of 5,600 in 1905, fell to 2,529 in 1922, and then rose steadily to 5,183 in 1936. In spite of these changes there was never a time during this period when there were not more physicians per unit of population in the United States and in both urban and rural districts than in any other country on the globe.

So far as these general basic movements of population are concerned, the simple facts are: first, physicians moved with the general movement of population to the cities and, second, a larger proportion of the decreasing number of medical graduates naturally followed or anticipated this movement.

This explanation, by itself, is an oversimplification of an extremely complex development,

30. *Distribution of Physicians in the United States (Revised) 1936*, Bureau of Medical Economics, American Medical Association, p. 7.

which was greatly influenced by many other factors both in general social organization and within the medical profession. A majority of these factors tended to intensify this underlying movement. Good roads, automobiles, free postal delivery, mail order stores, interurban lines and later busses concentrated trade in the larger cities, and almost all other features of rural and small town life tended to follow this trend. The physician who left a village to locate in a nearby city often found his prestige and practice increased among his former neighbors, to whom he was usually no less and often was more accessible with improved transportation and communication than when he lived in the village.

Changes within the medical profession nearly all seemed to be increasing these tendencies. The rapid rise in standards of medical education decreased the number of medical schools and graduates just when population was deserting farms and villages for the large cities. This social movement was bound to include the diminishing stream of medical graduates and direct a disproportionate number to the cities. This development created the condition that is described over and over by commentators on the distribution of physicians; viz., a constantly aging and a decreasing number of the less well educated and equipped physicians in the rural districts.

The dominating trends in medical education still further intensified this tendency. It has often been noted that throughout the history of medicine there has been a tendency to alternate periodic emphasis on the science and the art of medicine.³¹ The years during which these population changes, the rise in medical standards and the decline in medical graduates were most evident were also years of extreme emphasis on the scientific side of medicine, and a consequent

31. Introduction to Medical Economics, Bureau of Medical Economics, American Medical Association, pp. 26-28.

neglect of the art of practicing medicine.³² It was a time when laboratories and new technics in many fields were making sensational advances. New scientific discoveries affecting diagnosis and treatment were being hailed with enthusiasm. These originated largely in the laboratories, hospitals, universities and research institutions located principally in the cities where the required facilities existed.

These scientific advances certainly could not be "diffused" throughout the rural districts before they were developed in the cities or until it was possible also to "diffuse" the technical equipment and training required for the utilization of the scientific discoveries. There is some question whether, even at the present time, more harm than good might not be done by forced and premature efforts to hasten the movement of some forms of "scientific" medicine into rural districts. In some instances, hospitals and medical groups have been created and certain forms of surgery and medical treatment attempted in such locations without either adequately trained personnel or sufficient equipment. It was during this period that medical groups or clinics grew most rapidly. This development also represented an effort to utilize, sometimes to excess, the newly discovered scientific technics. These groups had their greatest growth in medium sized cities (from 100,000 to 250,000 population). A study of their organization and equipment raises grave doubts as to whether even a majority of them were able to secure and assemble in a balanced group sufficient properly trained specialists and equipment to give a service really superior to that of the general practitioners whom they often displaced.³³ These groups also accelerated the movement of both patients and physicians to the city. The latter

32. Commission on Medical Education: Final Report, New York Office of the Director of Study, 1932, pp. 22-23.

33. Group Practice, Bureau of Medical Economics, American Medical Association, 1933, pp. 22-28.

were attracted by the opportunity to utilize the latest scientific phases of medicine, and the former by the sometimes extravagant claims of such scientific phases as contrasted with the less highly publicized skill of the country physician in the art of medicine.³⁴

A powerful impetus to all these movements was given by the World War.³⁵

By the time the United States entered the World War, many physicians still practicing in rural communities had been deserted by many of their regular patients and were having difficulty in making a living. To such physicians the entrance of the United States into the World War brought a God-sent opportunity to leave such districts without being accused of deserting them. On the contrary, their action was looked upon as a patriotic service. After the war closed, many of these physicians did not return to their former addresses but, after obtaining advanced training in some chosen medical specialty, settled in new and more promising localities—usually in a town or city.

The rural physician has always been primarily a practitioner of the art of medicine. Although he has usually tried to keep abreast of medical science and to apply what he has learned, he has been forced to put greater dependence on his unaided, but trained, senses than on devices to extend the scope of his senses. Although it was just the trained skill required to classify the reports of these senses and to assemble the essentials in a clinical unity that characterized a Sydenham or an Osler, yet during the years under discussion there was a tendency to under-rate this skill as compared with the same use of the often no more reliable information obtained by the application of microscopes, chemical reagents and x-rays often to dead tissues and fluids removed from their vital association with the whole sick human being. It would seem probable that this attitude of the

34. Lord Horder: *The Clinician's Function in Medicine*, New York State J. Med. 36: 843 (June 1) 1936.

35. Colwell, N. P.: *Why There Is a Shortage of Country Doctors*, Hygeia, July 1930, p. 640.

public and the medical profession also contributed in attracting patients and physicians to the more fashionable and showy equipment of the city.

If these factors are summed up there would appear to be reason to believe that during the years from about 1898 to 1929 there was an especially large number of tendencies, many of them temporary in character, operating to encourage a drift of medical facilities from rural to urban localities. Human memory is seldom able to judge social movements extending over more than a generation, and there is always a tendency to assume that any present trend is permanent. It is not surprising, therefore, that practically every recent discussion of rural medical service has assumed a continuous, long-time decline in such service.

An example of these generalizations, only a little less exaggerated than many others, is found in a formal statement to the House of Delegates of the American Medical Association by a representative of the National Grange, Nov. 24, 1927: ³⁶

The average age of rural doctors throughout the country in 1925 was 52 years. Since the average age at death of American physicians is 62 years, it will be seen at a glance that the present generation of country doctors will have practically disappeared in another ten years . . . the number of physicians in practice is actually decreasing and . . . their number will not regain its present size of 130,000 until 1965.

The 1936 Medical Directory contains the names of 165,160 physicians, of whom more than 150,000 are in active practice and the average age at death has risen to above 64 years. The mistake of these prophets, as it is with most of the tribe, arose from mistaking temporary for permanent trends and overlooking a multitude of modifying factors.

This includes those in active teaching positions, in the army and navy, in health

36. A. M. A. Bull. 23:101 (April) 1928.

departments, and in other positions where they are engaged in furnishing essential contributions to the task of providing a medical service for the people. It is impossible to determine the exact number in private practice but the best estimate that can be made from available information is about 135,000.

While carefully avoiding the pitfalls of prophecy, it is possible to examine somewhat more closely some of the trends and factors the uniformity and permanence of which have been generally assumed. The most basic of these trends, the movement of population from rural to urban districts, has continued for so long that it is not surprising that it has been generally accepted as a fixed and permanent trend. Yet we learn that,³⁷

From 1930 to 1933, rural areas in practically all states showed significant gains while urban areas either lost population or failed to gain. Coincident with these changes, industrial employment fell precipitously. But from 1933 to 1934 employment increased, and the available school census figures for these two years show for rural areas either a downward trend or a reduction in the rate of increase. Conversely, the census for the urban counties either decreased at a reduced rate or increased slightly.

Temporarily, at least, this long-time trend was reversed and then apparently was resumed in some sections at a reduced rate.

In all discussions of ratio of physician to population there appears to be a tendency to overlook the fact that the population of the United States is perhaps the most fluid of that of any nation in the world. Not only has there been a rolling wave of people moving through three centuries from East to West, but within that dominant movement there have been innumerable other currents. Lumbering, mining, oil production, and construction are but a few of the industries that have created cities only

37. Goodrich, C. L.; Allen, B. W., and Hayes, Marion: *Migration and Planes of Living, 1920-1934*, University of Pennsylvania Press, 1935, p. 62.

to have them disappear with subsequent industrial changes. Another dominant movement, that of the flight from the land to the cities, has already been discussed; this has never been uniform over the entire country. Changes of climate and types of farming have also caused whole regions to be filled up and then depopulated—in some cases several times within a century.³⁸

It would require more than superhuman foresight and mobility if physicians and other medical service institutions were to anticipate or even to follow these movements so closely as to maintain uniformity of service in relation to need in all sections of the United States.

A study that was made in 1918, in preparation for war service of American physicians, makes it possible to check some features of the supply of physicians at that time as compared with the present study.³⁹ The counties having less than one physician to each 2,000 of population were listed. There were 123 such counties containing 702 physicians. Of these 123, however, only sixty-two were included in the 300 counties which in 1934 had the same ratio of physicians to population. As has already been noted, this 300 in 1934 declined to 241 in 1936. It would appear from these figures that, while there was a decided increase in the number of counties with insufficient physicians between 1918 and 1934, these counties were constantly changing and, as has also been noted, this increase in the number of such counties apparently began to decline in about 1934.

The existence of cyclic trends in the rate of growth of the medical profession has been mentioned. One period of rapid increase seems to have reached a high point about 1900, when

38. Such movements are discussed by Thornthwaite, C. W.: *Internal Migration in the United States*, University of Pennsylvania Press, 1934. Goodrich, Allen and Hayes.¹² Creamer, D. B.: *Is Industry Decentralizing?* University of Pennsylvania Press, 1935.

39. *The War Service of the Medical Profession*, J. A. M. A. 70: 1646 (June 1) 1918.

after a slight pause population increased faster than physicians until 1929, when there are indications that the trend is again being reversed.

Other tendencies also are changing. There are many indications that we are starting on another cyclic trend toward greater emphasis on the art of medicine. Several medical colleges are revising their methods of teaching with the avowed objective of training more and better rural physicians and of directing their graduates to rural locations. Nearly every state medical association is devoting increased attention to graduate education for rural physicians.⁴⁰

The facts stated in this study would seem to refute the constantly repeated charge that physicians refuse to go into rural districts, where their services are most needed but where financial returns may be less than in the cities. The 300 counties that had more than 2,000 population per physician in 1934 are "marginal" counties in regard to resources and opportunity for physicians. Yet in the two years 1934-1936, 133 more physicians moved into these counties than left or died. This increase of 7.9 per cent in the number of physicians in these counties is four times the rate of increase in total physicians of the United States.

The fact that the 1936 Medical Directory recorded 13,157 new names and 70,000 changes of address, of which 28,629 were removals from one city to another, gives a rather vivid picture of the great "fluidity" of the supply of physicians in the United States and furnishes ample proof that every locality that might be in need of the services of a physician is frequently and carefully investigated.

PROPOSED REMEDIES

There is no lack of proposals for improving rural medical service, but there is seldom any clear idea of what is to be improved. There is

40. McLester, J. S.: Proc. Am. Cong. M. Ed., M. Licensure & Hospitals, 1931, p. 68.

also a monotonous agreement that more physicians or hospitals per population would "solve the problem." The same remedy is prescribed for all sections, even though it is clearly evident that there are at least two quite different problems. In the "cut-over" regions, the "dust bowl" and the mountainous frontier, or thinly populated ranch sections, the dominant features are not ignorance and long continued poverty but more or less transient conditions, which will change in the future as they have in the past. Whether or not more physicians should enter these counties depends on future prospects as they develop.

Where extreme poverty and illiteracy have long dominated the picture, no one would claim that better homes would be provided by sending more building contractors and carpenters into the area or that more grocery stores would furnish additional food. Where only three or four persons per thousand made an income tax return there is little if any possibility of increasing medical services by redistributing the financial burden.

Such a situation seems to make unpractical the frequently urged schemes for local subsidies for physicians. In many of the counties included in this study such a large percentage of taxes are already so far in arrears as fully to demonstrate the impossibility of obtaining further funds from that source. A variation of this proposal is that state or federal subsidies should supplement local resources. Sometimes it is suggested that this subsidy should take the form of a salary for a part-time health officer. This plan is still so indefinite as to offer little basis for intelligent discussion. Some questions might be noted. How is the physician to be selected? What will be the extent of state or federal supervision? How will the physician's time be apportioned? With a system of county health departments where will the physician be located? What will

be his official and competitive relations with physicians already in the locality? ⁴¹

A local subsidy from tax funds is practicable only when the need for a physician is accompanied by ability to pay higher taxes. Even where these conditions are found, as in the widely publicized system in Saskatchewan and Manitoba, the results are not always wholly satisfactory.⁴² Patients are permitted no choice of physician; there is difficulty in establishing and maintaining standards of selection in the first instance, and once a selection is made it is difficult to change.

These criticisms do not imply that some sort of subsidy to guarantee the support of a physician when needed and where local patronage will not be sufficient to maintain him may not sometimes be desirable. Such subsidies cannot be accepted as a panacea for all the weaknesses in rural medical service.

Another form of subsidy frequently proposed and attempted in numerous localities depends on the voluntary agreement of a number of residents to guarantee an annual income to a physician who will practice in a certain locality. Little can be said in opposition to the theory of such a plan, but it seems almost never to have succeeded in practice. Discussions of rural medicine mention numerous examples of such plans that were said to have been started during the past decade. Wherever the address of a subsidized physician was given an effort was made to ascertain the present status of the plan, but in no case was it possible to discover any such plan now in operation, although it is quite

41. Special Report of the Department of Public Health (Massachusetts) Relative to Health and Medical Service in Sparsely Settled Districts, January 1925, pp. 78-82. French, H. E.: The Number and Distribution of Physicians in North Dakota, *Federation Bull.* 12: 288 (Nov.) 1926.

42. McMillen, J. C.: A Proposed Scheme of Health Insurance for Manitoba, *Canad. M. A. J.* 32: 311 (March) 1935. Report of Committee on Economics of Canadian Medical Association on Plans for Health Insurance in Canada, *Canad. M. A. J. Supplement* 31: 46 (Sept.) 1934.

possible that some exist. One physician was located who had practiced under such a plan and he gave a very full report of its operation. Some extracts from his letter may give a better idea of the difficulties met than can be portrayed by a general discussion :

“With a clever amount of advertising a proposition of this kind can be readily organized in a small community. The newness of it grasps the people’s attention and the immediate need of the community for a physician can be easily comprehended from a number of concrete instances. The attempt to get a physician for an emergency or the high fees paid physicians of surrounding towns for making calls will illustrate.

“In addition, we might add the business asset to a community to have a physician. Directly the druggist is benefited and indirectly the grocer and other shopkeepers. The personality of the physician and the immediate confidence he can instil in the people of a community has much to do with a proposition of selling a health plan.

“Once the plan is sold there is a general sense of satisfaction among the people in having contributed to so worthy a cause; and, too, they early become engrossed with the idea of making use of the service they have paid for. Never before had they paid for a service to care for them in case of severe illness with a speculation only that it might happen. As a matter of course, their neighbors have had a ‘check-up’ at their local health office and found to have high blood pressure, a slight albuminuria, or what not—so why should they not see about the old attacks of backache, rheumatism, and the like?

“So, from the beginning, the doctor has had a good business; and, in turn, the contact has given both the doctor and the patient an enthusiasm for the community plan. It, indeed, seems an ideal arrangement.

“However, as the newness of it wears off, there concomitantly develops a lethargy in the family purse. They let the payments to the health plan drag on over the due time in spite of their signed agreement; and, if no one gets ill at home, then they just drop it for another year. However, if some one gets ill, there is again an active interest in the doctor.

“Another item of note is that the doctor is quite busy and seems to be very well established: ‘he surely would never consider leaving a lucrative practice such as he now enjoys.’ There is a psychologic factor in small towns, too, that is peculiar. If the doctor seems to be

doing well financially he surely doesn't need further help and there is a trifle of envy of his prosperity.

"How does this attitude affect the physician? He begins to sense his situation and quietly revolves in his mind the possible outcome. He sees his income lowered, his patients outside the association tell him they will just pay him for his services when they call him; but in most instances it proves to be a charge account, which was the very thing that dispossessed his predecessor physicians of a livelihood. With the narrowing down of his income and the outlook of being relegated to the standing of an unconcerned village practitioner, it occurs to him there will be no further opportunity to grow professionally in his present situation. He may grow choleric and be easily peeved at such trifles as being called to the country to see some patient during his busy hours and to find the patient was well able to come to his office with his ailment. The patient might even complain that he should have brought all the medicine and therapeutic measures with him. Possibly the roads are a little bad and it would be better for the doctor to make the trip and, too, they disliked prescriptions. In nice weather, and when business was somewhat quick, they disliked having to call the physician from a croquet court after office hours—he surely had too much play in his mind."

Much publicity has recently been given to what have been called "cooperative" medical plans in rural districts. If the name "cooperative" is to continue to retain the meaning given to it by the Rochdale weavers, who started the present "cooperative" movement, then none of these schemes have any right to be known as "cooperatives."

An examination of a number of these proposals shows that none of them have attempted to suggest any practical method by which one of the fundamental principles of cooperation—the consumer dividend to purchasers—can be applied to medical service. No plan operating in the United States can by any fair use of the word be considered a "cooperative."

One scheme now in operation which has been given considerable publicity and hailed as a successful medical "cooperative" is simply a scheme of contract practice. The promoter and

manager succeeded in selling sufficient shares at \$50 each to build a hospital in a community already well supplied with good medical service. This hospital has not been able to meet the standards required for approval by the American Medical Association. The share purchasers are now required to pay \$25 per family, annually, to secure a limited medical service in what must be designated as a sub-standard hospital. In addition to this \$25 they are also charged for numerous "extras." There is nothing about this plan that is new or that appears to offer any prospect of improving medical service in rural districts such as have been considered in this study.

Reports from all over the United States as to schemes for rural medical service, most of which are some variation of well known contract schemes that have proved unsatisfactory elsewhere, make it quite clear that such schemes are never proposed in any locality where there is really a lack of medical service. Two conditions seem to be essential before any promoter of such a scheme is interested: first, there must already be ample facilities for medical service; second, the average income in the community must be high enough to provide a margin for the promoter.

One such recently proposed plan is to be located in a county which would undoubtedly be included in any list of ten counties in the United States having the most ample and adequate medical facilities for the population. It would seem to be quite evident why such counties are selected. They are the only ones in which promoters of such schemes can hope to find enough people with sufficiently high incomes to make a sales program profitable.

All such schemes are variations of voluntary health insurance. Such insurance has been discussed so widely in medical literature that there would seem to be little need to repeat the argu-

ments for and against it here. Whatever may be its merits or demerits, it does not seem to offer any prospects of providing medical services to districts where the supply of physicians and medical facilities appear to be inadequate. The problem with which promoters of such schemes seem most concerned is less how to obtain more and better medical service for the residents than how to introduce a third party between the patient and the physician who will profit by persuading the former to accept an inferior service.

Conditions affecting rural medical service are so diverse that only after analysis of all the factors in any individual locality can a diagnosis be made and treatment prescribed. Placement services conducted by state medical societies or medical colleges can assist in directing physicians to locations where there is the greatest need for their services. Several medical colleges are already revising their curriculums for the purpose of better equipping their graduates for rural practice.

Where auxiliary equipment or services are needed to facilitate the work of physicians, the state and county medical societies should carefully survey the situation to determine such needs and how they can best be met. Hospitals should not be built as monuments to the dead or for the advantage of politicians but for the benefit of the sick. Laboratory service should be provided in the form that will best further the private practice of medicine and the treatment of disease. An extension of nursing services, in cooperation with local practitioners in some of the Appalachian areas covered in this survey, seems to be supplementing the services of physicians and making it possible to give better service. Similar extension may be found helpful elsewhere.

The construction and equipment of more hospitals in rural districts is frequently urged

as a means of providing all auxiliary facilities and services simultaneously. Without expressing any opinion as to the desirability of additional hospitals in certain localities, it is doubtful whether any wholesale program of hospital construction, financed by federal or state funds, would actually be helpful in many of the localities covered by this study. The hospital facilities already available in these counties are far from being utilized to their full capacity. It is by no means certain that to establish more hospitals that might be poorly staffed, under-equipped and inadequately supported would greatly improve the medical services that could be given to the residents in these sections.

A more promising line of action appears to be offered by efforts to improve and add to the availability of existing institutions. Improved transportation will sometimes change the entire relation of a community to medical facilities. The suggestion has been offered, and some experiments have been made in that direction, that an ambulance equipped for emergency surgical work be attached to hospitals located within a reasonable distance of communities lacking hospital facilities. Such an ambulance might be sent, together with a physician and nurse, to the home of the patient where emergency operations or treatment could be given and, if necessary, the ambulance containing the patient might remain as a sort of emergency hospital ward until the patient could safely be moved either to a hospital or to his home. Some such plan might be more suitable to the medical and economic needs of certain districts than the building of new hospitals.

Any action concerning districts that now appear to be deficient in medical service should keep in mind possible developments in connection with the extension of public health activities in the fields for which they are suited. Public sanitation, control of epidemics, and the pro-

vision of such forms of preventive measures as properly belong in the field of public health will permit more effective service by private practitioners.

Increased knowledge gives a physician increased power to give medical service. Already nearly every state medical society is developing a plan of graduate education, and some societies are making special efforts to reach rural physicians. Such action by increasing the efficiency of resident physicians would to a considerable extent be equivalent to increasing the number without adding to the local financial burden.

In the replies from secretaries of state and county medical societies there have been numerous suggestions of possible readjustments of fees and especially of mileage charges as a means of meeting special situations in rural communities. Manifestly this is so peculiarly a special local problem that any general proposals are difficult. It does, however, offer opportunity for local discussion and recommendations. Proposed action as to fees is usually connected with suggestions for payment by public authorities for the indigent and special adjustments for those with low incomes. Most of the state and county plans to meet this situation have originated in cities, but some have already extended to rural districts. As an example the Michigan State Medical Society is now operating a state-wide plan, and the Alameda County plan covers considerable rural territory.