DR. H. A. TOMLINSON, St. Peter, Minn., said that behind the anemia there is the instability of the individual. In these cases we are probably dealing with a secondary anemia, having its origin in chronic autointoxication; in other words, an intoxication anemia. A careful study of these cases clinically will show that behind the autointoxication there is faulty elimination. After correction of the faulty elimination, and under improved nutrition, the anemia disappears. In the majority of cases of chronic nephritis, in which there is marked sensory and often motor disturbance, there is secondary anemia, and all the manifestations described by Dr. Langdon. Dr. Tomlinson agreed with Dr. Wolfstein that there is no ground for grouping these manifestations into a special classification, because they may result from a number of disease conditions. We have no right to ascribe to the anemia the power to cause the nervous disturbance.

THE TUBERCULOSIS PROBLEM IN LOS ANGELES.*

GEORGE H. KRESS, M.D.
LOS ANGELES, CAL.

The mortality statistics for pulmonary tuberculosis for the city of Los Angeles, when analyzed, suggest some rather interesting questions, not only for the physicians and citizens of Los Angeles, but for our professional brethren east of the Rocky Mountains, since it is these latter gentlemen who are largely responsible for the fact that Los Angeles has a tuberculosis problem. It is the purpose of this paper to consider various phases of these statistics, to draw some conclusions therefrom and to suggest some measures whereby such danger as exists for the public health from an unusually high mortality rate from pulmonary tuberculosis may be minimized or entirely prevented.

In order that the task may be accomplished with some degree of completeness, most of the etiologic factors that are known to influence the morbidity and mortality rates of the great white plague will be considered in turn.

FACTORS INFLUENCING MORBIDITY AND MORTALITY RATES.

Climate.—We who live in this country and know its many advantages, need not be told that the pure air coming from ocean and desert, the good soil drainage, the great amount of sunshine, the temperature which, while pleasant and equable, varies sufficiently during the day and night to be anything but enervating, are atmospheric and topographical conditions not favorable to either the development or the spread of consumption under ordinary conditions.

So far as the value of our climate may be called into question as regards the treatment of tuberculosis, we have but to remember that, in a general way, there is no such thing as a specific climate for the cure of tuberculosis; that it is the manner, rather than the place of, treatment that is of first importance; that the disease has been cured, in fact, in climates of widely different characteristics, and that the Southern California climate, in allowing an out-of-door life the year round, in a pure atmosphere, with an abundance of sunshine, possesses advantages excelled by but few localities. So that what may be said later concerning a large mortality rate from tuberculosis in Los Angeles exists not because of, but rather in spite of, a climate, which with proper cases, under suitable conditions, would and does exercise a potent influence in the cure of many, many patients.

Sociologic and Industrial Conditions.—Our northern friends and some few others at various times, in prognosticating the industrial growth of our prosperous city, have been in the habit of saying, "Los Angeles has nothing and exists on nothing else than its climate and its tourists." Taken literally, such an assertion is, of course, a great exaggeration, but there is this kernel of truth within it, that Los Angeles has, for a city of its size, not nearly the number of manufacturing interests that are found in many eastern municipalities of the same population.

With this apology for the use of dry figures, the ordinary causal factors of consumption will be considered in turn.

STATISTICS.

The statistics here given have been taken largely from the last United States Census reports and from the death certificates on file in the City Health Office. While allowance must be made for slight errors, since all the items on the death certificates are not invariably filled in by physicians, they are, in the main, correct. The registration area of the United States contains about 40 per cent. of the population of the country, and, as it

MORTALITY RATES FOR ALL CAUSES.	
UNITED STATES REG. AREA. DEATHS—ALL CAUSES = 1780	PER 100,000 POP.
U.S. REG. AREA. CITIES ONLY. ALL CAUSES = 1860	PER 100,000 POP.
U.S. REG. AREA. RURAL ONLY. ALL CAUSES = 1540	PER 100,000 POP.
CALIFORNIA. 1900 YEAR. ALL CAUSES = 1515	
LOS ANGELES. YEAR 1900. ALL CAUSES = 1810.	
LOS ANGELES. YEAR 1904. ALL CAUSES = 1686.	

Diagram 1.—Showing the mortality rates, from all causes, for the United States and Los Angeles. It will be seen that in spite of having the second highest tuberculosis mortality rate in the United States, the mortality rate for Los Angeles, from all causes, is below that of the average registration cities of the United States.

has much more accurate methods of keeping vital statistics, its figures are, therefore, taken in preference to those for the United States as a whole.

The following figures show the annual economic loss to the United States from preventable deaths from pulmonary tuberculosis: Annual total number of deaths in the United States from consumption, 150,000; in California, over 4,000; in Los Angeles, over 600. Average age of patient at time of death, 35 years. From one-third to one-half of all deaths between the ages of 15 and 35 are due to tuberculosis.

Average years of after-life expected by man of 35, about 32 years; cost of rearing child to age of 20, at \$100 a year for 25,000 persons, \$50,000,000; same for 60,000 other persons who die between ages of 20 and 35, \$90,000,000; diminished earning power of \$150 each for 200,000 sick consumptives, \$30,000,000; loss of future savings at \$1,000 each of those who die between the ages of 20 and 60, \$130,000,000; annual expense of sickness of 150,000 persons, at \$50 each, \$7,500,000; extra expense of caring for families of 75,000 married consumptives at \$25, \$1,875,000; grand total in monetary loss to the United States, \$309,875,000 annually.

No estimate in dollars and cents is placed on the mental and physical suffering of the patients or their families.

* Read before the Los Angeles County Medical Association June 2, 1905.

These estimates, if anything, err on the side of conservatism. Counting the cost of rearing a child, the loss in diminished wage earnings during sickness, the loss through premature death, the expense of sickness and expense of caring for dependents of deceased consumptives, there is a loss to the United States, on a conservative basis, of more than 300 millions of dollars annually.

All this loss annually from a preventable disease!

The accompanying charts, diagrams and tables have

<u>MORTALITY RATES FOR CONSUMPTION ONLY.</u>	
U.S. TOTAL REG. AREA. YEAR 1900. CONSUMPTION MORTALITY RATE =	187.3 PER 100,000 POP.
U.S. REG. AREAS. CONSUMPTION M.R. =	204.9
U.S. REG. AREA. RURAL. CONSUMPTION M.R. =	134.1
CALIFORNIA. YR. 1900. P.T.B. M.R. =	234.3
LOS ANGELES. YR. 1900. P.T.B. M.R. =	378.7
LOS ANGELES. YR. 1904. P.T.B. M.R. =	332.2
NEW YORK. YR. 1900. P.T.B. M.R. =	237.1
CHICAGO. YR. 1900. RATE =	171.9
PHILA. YR. 1900. RATE =	214.7
ST. LOUIS. YR. 1900. RATE =	177.1
BOSTON. YR. 1900. RATE =	233.4
BALTIMORE YR. 1900. RATE =	178.0
CLEVELAND. YR. 1900. RATE =	129.5
BUFFALO YR. 1900. RATE =	128.7
SAN FRANCISCO YR. 1900. RATE =	269.5
CINCINNATI YR. 1900. RATE =	217.1
PITTSBURGH YR. 1900. RATE =	121.5
NEW ORLEANS. YR. 1900. RATE =	256.0
DETROIT YR. 1900. RATE =	122.2
MILWAUKEE YR. 1900. RATE =	149.1
WASHINGTON YR. 1900. RATE =	210.4

Diagram 2.—Showing the mortality rates for consumption only (a larger unit of measurement being here used than in the preceding table, to bring out the differences more clearly). The first horizontal black line shows the average of the registration area of the United States. The Los Angeles line, the longest given, is almost twice as great as that for the United States registration area average. Below the Los Angeles lines are given in order the tuberculosis mortality rates and lines for the fifteen largest cities in the country. The Los Angeles rate is larger than that of any of these large cities, where local conditions would lead one to expect high death rates from consumption.

been made to bring out more clearly such etiologic factors as have a bearing on the subject under discussion.

CONCLUSIONS TO BE DRAWN FROM THESE STATISTICS.

To summarize, it is noted that Los Angeles has a climate and topographical environment which, under proper hygienic and sanitary living, is inimical to the development of pulmonary tuberculosis among its inhabitants. The general industrial, sanitary and socio-

logic conditions of the city are likewise unfavorable to the spread of the disease. Yet, in spite of this, Los Angeles, in the census year 1900, had the second highest mortality rate from pulmonary tuberculosis in the United States.

If the rate has diminished somewhat during the last five years, it may be said with equal truth that the mortality rates of other cities have likewise diminished, especially in the large cities where the campaign for better housing and sanitation for the poor has been vigorously carried on. New York, with its new tenement house laws and park systems, is a case in point.

The consideration of the tuberculosis mortality rate of Los Angeles in relation to such factors as race, sex, age, conjugal condition, season of the year, and so on, brought out no particularly unusual points, other than that the ordinary variations of the United States registration area were somewhat intensified. Most of the variations could be traced to that one feature which is especially responsible for our high death rate, viz., the fact that southern California is known to possess a climate favorable to the cure of tuberculosis, as a result of which knowledge people flock to this region from all parts of the country, too often, however, in such advanced stages of the disease that recovery is quite out of the question. Consequently, the Los Angeles death

<u>DIAGRAM SHOWING MORTALITY RATES PER 100,000 POPULATION BY DISEASE GROUPS FOR LOS ANGELES IN 1904.</u>	
I. SPECIFIC INFECTIOUS DISEASES =	534.7 DEATHS PER 100,000 POPULATION.
TOTAL TUBERCULOSIS =	382.9
PULMONARY TUBERCULOSIS =	351.7
II. RESPIRATORY DISEASES =	181.1
III. DIGESTIVE SYSTEM =	174.1
IV. CIRCULATORY AND DUCTLESS GLANDS =	170.0
V. NERVOUS SYSTEM =	156.4
VI. CONSTITUTIONAL DISEASES =	150.0
VII. INTOX., VIOLENCE AND ACCIDENTS =	110.5
VIII. MISCELLANEOUS DISEASES =	122.9
NON-PULMONARY TUBERCULOSIS =	25.29

Diagram 3.—Showing the mortality rates, for Los Angeles, of diseases by the health office groups, except that the tuberculosis mortality is added for sake of contrast. The large portion of the line for specific infectious diseases which the tuberculosis line would cover and the much greater mortality from this single disease than for the entire groups of diseases, are both worthy of notice.

rate from tuberculosis assumes most undue proportions.

There are naturally more deaths among the males, because a larger number of that sex can come here unattended. The large number of deaths among adults is likewise due to the same reason. As yet the comparatively few deaths which occur among the native population of Los Angeles from consumption take place, many of them among the Mexicans and others who live in the poorest circumstances under the worst hygienic conditions.

The table showing the term of residence prior to

death is one of the most significant given. From it is noted beyond any question of argument that from one-third to one-half of those who die of consumption in this city, and who came here in the hope of regaining health and strength, are hopelessly diseased with tuberculosis. For such persons, many of whom die within a few months after their arrival in southern California, death at home, with the tender ministrations of relatives and friends, would be preferable to the hopeless outlook presented here. Forced by the lack of material means to seek lodging in the cheapest rooming houses, unable to purchase nourishing food, without which even the best climate on earth is of but little avail; forced, when their material means are not so limited to conceal the nature of their malady from the keeper of the room-

Fernando, Santa Fe, Sickie, Sixth, Temple, Tennessee, Twenty-third and Twenty-fifth, 3 each, and so on; County Hospital, 118; coroner, 34.

One hundred and eighteen deaths from consumption in the Los Angeles County Hospital last year! Thirty-four deaths in rooms and lodging houses, without a physician in attendance, so that a coroner's inquest was necessary! The Associated Charities yearly provide transportation to an additional hundred or so of consumptive persons to enable them to return to their homes because they are unable to keep up the struggle here.

If so many patients die as charity patients in our public hospital, can there be any doubt but that, prior to their admission to that charity institution, they must have lived in the cheapest of lodging or rooming houses? Would it not be a safe assumption to state that 25 per cent. of the mortality from this dread disease—which is responsible for more than one-fifth of the entire mortality of this city—and about 50 per cent. of the morbidity from consumption is to be found in the lodging and rooming houses of Los Angeles; in brief, that 25 per cent. of the deaths and 50 per cent. of the tuberculosis morbidity (whatever this latter figure may be; under our present laws we have no means of finding this out) is to be found in those dwellings which harbor about only 30 per cent. of our population? More than

Diagram 4.—Showing how the Los Angeles death rate from consumption outclasses the other main causes of death in that city.

ing house, lest they be requested to go elsewhere for lodging; eating in the public restaurants, among the better class of which even, the cleansing of dishes is not any too well performed, and where among the cheapest this work is decidedly neglected, the lot of these hopelessly advanced victims of consumption is, indeed, hard. Their sufferings terminate somewhat when, bedridden, they are admitted to the County Hospital, where, even though the white-capped nurses be strangers, they may spend a few hours of peace before death.

The following is the tuberculosis mortality on different Los Angeles streets: Hope, 10; Fourth, Hill and Pico, 9 each; Main, 8; First and Twenty-second, 7 each; Alameda, Seventh and Twenty-sixth, 6 each; Aliso, Fifth, Figueroa, Los Angeles, St. Julian and Twelfth, 5 each; Avenue Sixth, 4; Boyle, Castelar, Eighth, Grand, Girard, Maple, Soto, Spring, Third, Twenty-first, Twenty-eighth, Vermont and Wall, 4 each; Avenue Five, 4; Buena Vista, Central, Elizabeth, Fifteenth, Flower, Marchessault, Pasadena, Ruth, San

Diagram 5.—Presenting the mortality rates by months, as given in Table 6, in the form of a diagram.

that, owing on the one hand to the prejudice among proprietors of good dwelling houses to accept such persons as tenants or lodgers, and, on the other, to the poverty-stricken condition of a large number of these patients, it is reasonable to assume that the proportion of consumptives to the poorer lodging houses is much larger than this. If this be true, it means that in the places where the largest number of poverty-stricken, poorly nourished and depressed men are to be found; in the buildings where the amount of cubic air space is least; where ventilation is prevented to keep up body heat and to avoid draughts; in the dwellings where the bed clothing is filthiest, where bath tubs and lavatories are the fewest and then of the crudest pattern; in short, where bad hygiene, worse sanitation, and the largest number of predisposed persons are congregated in the smallest space (precisely those conditions most potent in the spread of this disease), we find the largest number of consumptives, and not only that, but the largest number of consumptives in advanced stages of the dis-

ease, that stage in which millions of bacilli are cast off by each patient in his sputum of a single day.

On what premises and by what process of reasoning are we warranted in concluding that, under such lodging-house conditions, tuberculosis does not endanger the public health of our city? When a firebrand is thrown into an inflammable structure, the result that is expected is a conflagration. When foci of infection are scattered in places where predisposed persons can most easily acquire the disease, one expects new cases of the disease to arise. The spread of the disease may be confined for a time to such places, but it does not take long before some of these diseased persons repay their debt to a criminally neglected community by infecting inhabitants in better portions of the city.

By what right does any municipality endanger the

County Medical Association, which is a component unit of the Americal Medical Association, and which is supposed to take an active participation in all efforts to promote the public health, excuse itself for its dereliction of duty?

Is it right that we as physicians should allow this work to be done almost entirely by a half-dozen men, the members of the Board of Health, and more especially by our health officer? Our politicians will not undertake this work, because it conflicts with vested interests that at once make themselves heard when reform is attempted; but let other vested interests, viz., those representing the great mass of our citizens, who stand for decent sanitation and hygiene, be heard with equal force, and our politicians will not turn an unwilling ear.

Diagram 6.—This diagram shows the length of residence in Los Angeles prior to death of 500 consumptives who died here in 1904. The high proportion of deaths for the first year is worthy of notice, also the height of the curve for the first year. It then drops rapidly, until about the fifth year, when it runs along at a very low figure. This means two things: One, that a large proportion of patients come here in hopelessly advanced stages of the disease; and two, that after two or three years' residence, the other patients have a fairly good chance for lengthened years of life.

life of its healthy inhabitants, especially when this danger to others comes from the violation of the most fundamental laws of decent and hygienic living? What does Los Angeles intend to do in this matter? Shall it close its eyes and allow the next census to publish the same unfavorable mortality rate from consumption? How long will it be, whether justly or unjustly, before it becomes noised abroad throughout the country that our tuberculosis mortality is so excessive as to be a danger to healthy persons?

Los Angeles can account for her tuberculosis death rate without shame to herself. The fault lies much more at the door of those eastern physicians who send hopelessly advanced patients to this community than at the doors of the local physicians. In what manner do we as physicians, and how does this Los Angeles

THE SOLUTION OF THE LOS ANGELES TUBERCULOSIS PROBLEM.

The solution of the tuberculosis problem in Los Angeles, while not a complicated one, has ramifications in many directions. It may be worth while to consider the more important of these in some detail.

Compulsory Notification.—Under the present health rules and regulations, our health officer has but little control over the tuberculosis situation, because he is denied the power to execute. This is so serious a problem that the health officer of this community should not only have mortality statistics bearing on tuberculosis, but also should know how much morbidity there is from that disease, and in what parts of the city it is located, so that intelligent action may be taken.

In New York City every physician is obliged to report every case of tuberculosis with which he comes in contact. This information is sent to the health department on a blank devised for that purpose, in which the physician not only gives the name and address of the patient, but states his opinion of the hygienic condition of the patient's surroundings. The patient is supplied with literature informing him how to avoid reinfection of himself (a most important point, in that it leads the patient to observe safeguards for others as well), and how to avoid infecting others, a precaution he is sometimes loth to take until the danger to self is first emphasized. This notification information is for the use of the health department only, i. e., the book is open to the inspection of health department officials only. When charity patients are reported, or when the attending physician states that hygienic conditions are bad, a physician or deputy from the health department investigates and gives needed information and assistance for the betterment of the conditions. From time to time inspections are made to see if these measures are complied with. When these measures are ignorantly or willfully but persistently neglected, the health officer has the power to transfer such a patient from his unhygienic surroundings to the tuberculosis hospital on North Brothers Island.

Los Angeles needs just such a law, only, unfortunately, the health officer in this state has no authority forcibly to send a patient to a hospital.

MORTALITY TABLES BY RACE									
RACE	UNITED STATES					LOS ANGELES			
	POPULATION		DEATHS, ALL CAUSES		RATE PER 100,000	POPULATION		DEATHS, ALL CAUSES	RATE PER 100,000
	U.S.	REG. AREA	NUMBER	RATE		LOS ANGELES	ESTIMATED	NUMBER	
WHITE	21,535,310	495,140	1,725.0	47.0	174.0	16,144	2,847	1,450	338
TOTAL COLORED	1,351,047	34,125	2,927.0	6.063	444.4	8,788	134	1,520	48
NEGRO						4,000	88	2,200	26
CHINESE						2,500	46	1,000	10
JAPANESE									4

Table 1.—This table shows how much higher is the death rate for the colored races than for the white. The negroes, Chinese and Japanese of Los Angeles have not quite so high a death rate from this disease as their colored brethren of the United States, as a whole.

As is known, tuberculosis has been listed by our local board of health among notifiable diseases. How this voluntary notification has worked out in practice is seen from the health officer's last annual report, where, with 651 deaths from tuberculosis, only 206 cases of tuberculosis were reported, and, although the health department makes free sputum examinations, only 434 specimens were sent in, and of these only 167 specimens gave positive results.

Knowing the opposition of patients and their families to having their cases reported, is it any wonder that physicians avoid much trouble by not reporting them? The solution of this phase of the question lies not in voluntary, but in compulsory notification, and that, as stated, can best be followed out after the Biggs plan of New York, the information being for the health department's use only, no placard being placed on the house; the sole purpose of the arrangement being to protect the patient and his fellow-men, but at the same time to inconvenience both as little as possible.

Such a law Los Angeles should have. Such a law Los Angeles some day will have. Just how long the wait is to be will depend, in good part, on the attitude

the medical men of the community take on this question. It is to be hoped that those who would be tempted to oppose compulsory notification will accept the change of heart of New York medical men who at first opposed the Biggs system, as an indication of how experience would cause them to change their own opinion. Compulsory notification of cases would also perform this further excellent service to the anti-tuberculosis cause, in that it would overcome the prejudice of the laity to tuberculosis as a cause of death, so that the true number of those who die from this disease could be more accurately determined. At present, large allowances must be made for error in mortality statistics in this disease. Ultimately also, by necessitating a recorded diagnosis during life, it would be a valuable influence in leading medical men to make earlier diagnoses, i. e., diagnoses in the curable stages.

Compulsory Fumigation.—The health officer of Los Angeles, when a death certificate comes in marked pulmonary tuberculosis, sends out a deputy to fumigate the premises where the individual died, but the fumigator

MORTALITY RATES BY NATIONS. MORTALITY NUMBERS BY STATES			
NATIONALITY	MORTALITY RATES PER 100,000 POP. U.S. REG. AREA.	MORTALITY RATES PER 100,000 POP. LOS ANGELES.	WHERE NATIVE AMERICANS AMONG DECEASED CONSUMPTIVES, CALIFORNIA, LOS ANGELES, 1904.
TOTAL COLORED	587.4	459.0	LOS ANGELES = 13
IRISH	428.0	240.0	CALIFORNIA = 59
BOHEMIANS	235.2	—	ILLINOIS = 45
SCANDINAVIANS	233.7	390.0	NEW YORK = 27
FRENCH	220.6	160.0	MISSOURI = 27
GERMANY	205.9	230.0	OHIO = 25
CANADA	199.7	370.0	PENNSYLVANIA = 24
UNITED STATES	162.5	270.0	INDIANA = 9
ENGLAND	151.4	202.0	MICHIGAN = 15
ITALIANS	149.9	40.0	IOWA = 15
RUSSIANS	131.1	650.0	TEXAS = 12
MEXICANS		770.0	TENNESSEE = 11
CHINESE		400.0	KENTUCKY = 11
JAPANESE		266.0	MASSACHUSETTS = 11

Table 2.—This gives in the three left-hand columns the mortality rates by nations, for the United States as a whole and for Los Angeles alone. In the United States registration area the Irish, next to the colored persons, have the highest death rate from consumption. In the column for Los Angeles the mortality rate of the Mexicans is especially worthy of notice. A considerable proportion of the native-born population of Los Angeles who die of pulmonary tuberculosis are of Mexican parentage. In the two right-hand columns may be seen from what states the native-born Americans who died here last year from consumption, came. Los Angeles had only thirteen deaths among her native born, and the Californians in all numbered only 59. Illinois sent us 45 consumptives, New York 27, Missouri 27, Ohio 25, and so on.

can do nothing, if the owner or lessee of the building forbids him to enter. This deputy has told me of the different ways in which he is met by the families or friends of the deceased, and has stated that in a number of cases he is denied admission. Los Angeles needs a statute that will make it compulsory to have rooms fumigated after the removal or death of a consumptive patient. The work should be carried on, of course, with as much privacy as possible. The benefit of fumigation would not be helped by undue publicity of the work, with its subsequent gossip of neighbors and the corresponding distress of the family.

A statute should also be passed to prevent the furnishings of the room from being sold to second-hand dealers until after they had been fumigated.

Ordinances to Place Lodging House Licenses on the Same Basis as Dairy Licenses.—In his last annual report the health officer of Los Angeles stated: "We recom-

mend that an ordinance be passed requiring all proprietors of lodging houses to secure a permit to conduct a rooming house, and that any proprietor who fails to furnish clean bed clothing, etc., be refused a permit, and in case he fails to keep or to maintain a clean and sanitary place his permit be suspended." What action has been taken in this matter? The health officer is the executive officer of the Board of Health. Is it right to thrust on him in addition the legislative functions? Is it not the duty of physicians, yes, of a committee of the Los Angeles County Medical Association, to take this matter in hand and make this suggestion of the health officer a reality? Such an ordinance should have provisions as to the amount of air space to each occupant of a room; should provide for an adequate amount of ventilation; should insist on clean bed clothing and furniture; should demand accessible bath and wash rooms and lavatories. Proprietors of places violating the requirements, and who, on notice to clean up, fail to do so, should be punished by withdrawal of license, just as a milk license is withdrawn from a dairyman for an analogous offense.

What objection can there be to such a law? If it be inconsistent for a physician or for a body of physicians to oppose fundamental provisions of cleanliness and sanitation, is it not equally inconsistent, in view of the high nature of their calling and better knowledge of these subjects, for them to make no effort to bring about the adoption of necessary hygienic and sanitary measures?

MORTALITY RATES BY SEX.									
SEX.	UNITED STATES REG. AREA. 1900.				LOS ANGELES. 1904				
	POPULATION	DEATHS—ALL CAUSES	DEATHS—CONSUMPTION		POPULATION	DEATHS—ALL CAUSES	DEATHS—CONSUMPTION		
MALES.	14,393,332	372,874	18,940	28.0	100,000	1769	176.0	876	87.6
FEMALES	14,403,897	371,857	16,640	24.7	100,000	1212	121.2	232	23.2

Table 3.—This table shows that while for the United States registration area the deaths among males are to the consumptive deaths among females, as 8 to 7; for Los Angeles this ratio is about 15 males to 9 females.

Building Regulations.—We can all become indignant over the cheapest lodging houses, forgetting that, because of this very cheapness, they offer a roof to sleep under and a space to lie on for those unfortunate members of our community who have no means to turn to something better. Some of these shacks have existed for years.

To extirpate an established evil is always difficult. What is being done to prevent the erection of like places? The new building ordinance (No. 10,415, New Series) went into effect on Dec. 31, 1904, and its forty-two articles extend over more than three and one-half full pages of the *Los Angeles Times* of Jan. 9, 1905. Therein are specifications as to material and mode of construction for private and public buildings of all conceivable descriptions; fire-escape and plumbing requirements are all pointed out, but nowhere is mention made of the amount of air space per occupant nor the amount of ventilation required.

The new building ordinance deals almost entirely with material specifications. This is in keeping with this very material age. We do not know who composed the committee that drew up the specifications, but it would seem that that committee should have had among its members at least one medical man who had given

thought to building and other requirements. Such a medical man might have come to the aid of the building inspector when he sought to have a rule passed whereby the number of buildings of frame construction would be limited for certain size lots. Under the present ordinance, a single frame building may not contain more than a stipulated number of rooms or apartments. Nothing is said about the size of the lot. Hungry land and property owners violate the spirit of the ordinance by erecting buildings, each with the maximum number of rooms, a foot or so apart from one another, just enough space to enable them to state that the buildings are separate. The narrow areas between them are excellent flues, and the buildings make splendid fire traps. Where was our medical society when these laws were being adopted? It was conspicuous by its absence, as has been said, or it might have been of aid to our building inspector in having his much-needed regulations adopted.

Building requirements on the subject of air space per occupant, ventilation, lavatory arrangements, plumbing and the like need not necessarily stop with our cheaper lodging houses. Without entering into a discussion as

MORTALITY RATES BY AGE PERIODS.							
AGE →	UNDER FIVE YEARS	BETWEEN 5-10 YRS.	BETWEEN 10-20 YRS.	BETWEEN 20-45 YRS.	BETWEEN 45-65 YRS.	65 YEARS AND OVER	TOTALS.
U.S. ALL CAUSES.	317,532	36,749	62,609	229,360	174,214	211,191	1,031,655
U.S. CONSUMPTION.	9,454	1,287	11,944	63,886	19,997	7,949	108,757
PROPORTION DEATHS DUE TO CONSUMPTION	1.41%	3.50%	19.2%	27.8%	11.4%	3.7%	
LA. ALL CAUSES.	474	68	166	999	154	47	
LA. CONSUMPTION.	6	2	51	401	117	31	
PROPORTION DEATHS DUE TO CONSUMPTION	1.26%	.29%	30.7%	40.1%	75.9%	65.9%	

Table 4.—This shows the tuberculosis mortality rate for the United States and Los Angeles by age periods. The proportion of deaths for the adult age periods is much greater for Los Angeles than for the United States.

to the probable effect on future generations, of our present-day flat life, we may well ask ourselves what kind of physical beings these compartment buildings in time will produce, and whether children born and reared in such structures, where the ingenuity of man is bent on seeing how he can transform the dwelling house of a generation ago into one or two small rooms, and these, in turn, perhaps into living closets no larger than those used by our grandmothers in storing clothes, will be of a high physical standard? In any case the duty of the present generation is to demand that an adequate supply of oxygen and sunlight be allowed to reach the interior of all classes of dwellings. The thickly carpeted, stuffy, ill-ventilated apartment house or hotel can at times be as much of a disease breeder as the poor hovel or miserable tenement, where such of our fellows as have fallen behind in the life race are of necessity forced to make their homes. If the principle of good ventilation be applicable for the tenement, it should be made applicable to the apartment house and hotel also.

A Municipal Dispensary for Consumptives.—Los Angeles can not avoid the conclusion that a large number of penniless consumptives take up their residence within its boundaries. Some of these patients come here on the advice of eastern physicians. Happily, the general

awakening that has come about through the active anti-tuberculosis warfare of late years has resulted in attention being directed to the evil advice of sending advanced patients far from home; with the establishment of sanatoria in the Eastern States and the wider acceptance of the knowledge that tuberculosis in the early stages is curable in any climate, there will be fewer and fewer of such offenses traceable to our brother physicians in the states east of the Rockies. There will always be a goodly number of consumptives who will come here on their own responsibility. The potent influence exerted by a good climate in the process of cure can not be denied and the victims of consumption will ever seek it. Many come in early stages, but, lacking means, hurt themselves by overwork. Improving their condition and arresting the disease, they imagine themselves entirely well and overdo. As their illness continues and draws on their available funds, they seek cheaper and cheaper lodging and eating houses. The larger proportion who go to the County Hospital to die has already been noted.

MORTALITY RATES BY CONJUGAL CONDITION								
CONJUGAL CONDITION	DEATHS FOR THE UNITED STATES, 1900.				DEATHS FOR LOS ANGELES, 1900.			
	ALL CAUSES	CONSUMPTION	PROPORTION MORTALITY DUE TO CONSUMPTION	MORTALITY RATE PER 1000 POP.	ALL CAUSES	CONSUMPTION	PROPORTION MORTALITY DUE TO CONSUMPTION	MORTALITY RATE PER 1000 POP.
SINGLE	524,271	74,924			170			164
MARRIED	326,039	48,568			230			277
WIDOWED	141,547	9,678			41			263

Table 5.—This shows the relation to conjugal condition.

To these poverty-stricken consumptives, citizens of eastern municipalities, rather than those of Los Angeles, the city of the Los Angelenos owes an obligation. First to them as individuals, because to those who are ill unto death and without means it is under obligation to provide advice and aid. They should not be made to shift for themselves. Almost any afternoon, at the office of the Associated Charities in the county courthouse, inquiries are made by one or more of these unfortunates, who, without home or shelter, realize at last that they are ill,

TABLE SHOWING MORTALITY RATES BY MONTHS FROM CONSUMPTION, LOS ANGELES, 1904.												
MONTHS	JAN.	FEB.	MCH.	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
DEATHS IN WARD 8	45	48	51	44	33	33	28	30	25	27	33	40
DEATHS IN HOSPITALS	14	16	16	16	14	7	7	6	13	13	12	16
TOTAL DEATHS	59	64	67	60	47	40	35	36	38	40	45	56
MORT. RATE PER 1000 POP.	416.0	451.0	472.0	424.0	331.0	262.0	247.0	254.0	268.0	242.0	317.0	398.0

Table 6.—This shows how the number of deaths from consumption varies during the different months of the year.

indeed, and seek medical advice or transportation back to their old home. Why not put this work on a separate basis; establish a room somewhere, with a dispensary staff, where this class of consumptives can be reached and put on the road to recovery, or, at least, if that be impossible, be so guarded that their presence in this community shall not be a source of danger to healthy citizens.

Antisputting Ordinance.—There can be no doubt about the millions of bacilli that are expectorated by a single consumptive in the course of twenty-four hours. Fortunately, where this is expectorated on streets in the

summer season, when the sunshine is at its height, it is soon rendered innocuous. Not so, however, with the sputum in insanitary lodging houses. No matter what may be the most frequent channels of infection, whether by the respiratory or by the alimentary tract, it is generally conceded that infection from bovine sources is comparatively infrequent, if it exists at all, and that, as a rule, all individuals acquire their disease from other persons. The most frequent medium of transmission is the sputum. Antisputting ordinances are good. Too much publicity can not be given to this danger. Let the ordinance be enforced. More than that, the lodging houses should be made to have signs in prominent places, forbidding expectoration, except in suitable spittoons.

TABLE SHOWING WARD POPULATION, ACREAGE AND MORTALITY FOR LOS ANGELES.										
WARDS.	POPULATION	PERCENTAGE OF POP. IN WARD	WARD ACREAGE	DENSITY OF POP. PER ACRE.	DEATHS ALL CAUSES	DEATHS TUBERCULOSIS	PERCENTAGE DEATHS DUE TO TUBERCULOSIS	MORTALITY RATE ALL CAUSES PER 1000 POP.	MORTALITY RATE TUBERCULOSIS PER 1000 POP.	MORTALITY RATE TUBERCULOSIS PER 1000 POP.
WARD 1	16,429	8%	4,584	3.5	195	40	20%	1,190	243	
WARD 2	20,708	10%	4,628	4.4	222	45	20%	1,070	217	
WARD 3	22,851	11%	1,543	14.8	196	42	21%	859	194	
WARD 4	33,909	16%	3,132	10.8	355	60	16%	1,040	177	
WARD 5	21,092	10%	3,734	5.5	241	42	17%	1,110	193	
WARD 6	37,119	18%	4,172	9.3	384	69	17%	982	176	
WARD 7	23,740	11%	1,153	20.6	285	62	21%	1,240	261	
WARD 8	10,031	5%	577	17.3	184	46	25%	1,040	440	
WARD 9	12,871	6%	3,737	3.2	152	36	23%	1,170	281	

Table 7.—This shows the relation of tuberculosis mortality by wards, to ward population, acreage, density, deaths from all causes, and so on. The crowded Eighth Ward, i. e., the plaza district, excels in both its death rates from all causes and from tuberculosis, that of any other ward. While ward density is greater for Ward 7 by acreage, the dwelling places of Ward 8 are much more densely populated.

If sputum is dangerous on the sidewalk, it is equally and more dangerous in the public buildings, in elevators, in cabs, in streets, in steam railways, in hotels, and in lodging and dwelling houses.

Disinfection of Pullman Cars.—The problem of making the owners of those temporary and traveling lodging

TABLE SHOWING DWELLING CONDITIONS IN LOS ANGELES, Census Year 1900									
SIZE OF DWELLING	DWELLINGS WITH ONE PERSON.	DWELLINGS WITH 2-4 PERSONS.	DWELLINGS WITH 5-10 PERSONS.	DWELLINGS WITH ELEVEN OR MORE PERSONS.	TOTALS				
NUMBER	14,679	17,573	2,773	— 676	22,581				
PERCENTAGE OF DWELLINGS WITH NO. OF PERSONS DWELLING IN—	14.6%	65.701	21.814	13.495	102.47%				
YEAR.	1900.	1890.	1900.	1890.	1900.	1890.	1900.	1890.	1900.
PERCENTAGE OF DWELLINGS FOR NO. OF PERSONS NOTED	6.5%	5.9%	70.1%	74.1%	12.3%	15.9%	3.1%	3.3%	
PERCENTAGE OF POPULATION IN DWELLING OF SIZE NOTED	1.4%	1.2%	64.4%	68.9%	21.3%	21.3%	13.2%	13.4%	

Table 8.—This gives some figures from the latest United States Census reports, showing how large a proportion of the population of Los Angeles lives in simple dwellings and in boarding houses.

houses known as Pullman sleepers fumigate the berths and furnishings is an intricate and difficult one. If the municipality can not solve it, the legislature should be requested to give the State Board of Health adequate powers in this connection.

Municipal Sanatoria and Hospitals for Consumptives.—New York and Cincinnati have established municipal sanatoria for consumptives. These perform a most excellent work not only through the direct cures, but also in being centers from which a better and wider knowledge concerning the best methods of prophylaxis

and cure permeate the masses. Unfortunately, the poor can not easily be taught to regard these institutions in their proper light. In Los Angeles, by the action of the city council, consumptives can go only to the County Hospital, if we except the endowed Barlow Sanatorium, with its as yet limited number of beds. The council made no effort to abate the dangers in lodging houses, but for the private hospitals, where sputa could be disinfected, stringent rules were laid down. The theory is good, but the council, in its wisdom, if it would have been consistent, should have first turned its attention to the worst offenders, viz., the cheaper lodging houses.

The Los Angeles County Hospital has several wards for bedridden consumptives and a few tents for ambulant cases. As soon as patients get in fair condition, in other words, as soon as the active stage for which they were admitted abates, they are urged to seek quarters elsewhere. The County Hospital does this in sheer self-defense. Its entire equipment could be given over to this disease. It is true that many of these patients should have been treated by other municipalities, but since they are here they must be treated humanely.

With this mild climate, why would it not be a wise and economical thing to model after the plan adopted by Texas? That state found that its prisons had an unusually high mortality from tuberculosis. Dr. Fowler, the prison physician, sought permission to take such consumptive prisoners to the Wynne State Farm, an abandoned state prison farm with buildings. These buildings were turned into a sanatorium, hospital, farm and prison, all in one. The prisoners were treated according to the extent of the disease. Light farming, dairy work and poultry raising were done by those who were able to work. The farm produce more than paid the cost of maintenance of the institution, if the expense of guarding the prisoners be deducted. The lives of many of these men were prolonged or saved, and many other prisoners who would have been their companions in the closed prisons escaped infection; escaped, in fact, a form of murder not within the pale of the law.

With the climate of California, which is equally as beneficent as that of Texas, why could not Los Angeles pursue a similar plan? With no expense for guarding, why could not such an institution, a municipal sanatorium, be made self-sustaining here? A dairy herd, a poultry ranch and a truck garden, all requiring but comparatively light work, could be instituted, and, with proper management, could be put on as self-supporting a basis as the Texas farm. With pure air, nourishing food and good medical supervision, we have the essence, the triad of present-day methods in the treatment of this disease. With these, then, the amount of good which could be done can hardly be estimated. The air costs nothing, the food could be furnished by the labor of the patients, and the other expenses of the institution need not be much.

IN CONCLUSION.

If Los Angeles would prevent the large number of tuberculous sick, who are domiciled within its boundaries, from being a danger to their fellow-citizens, it behooves her to consider some such measures as have been outlined above.

If the physicians of Los Angeles would remain true to the tenets of their profession, it becomes their duty to take a hand in the solution of this problem.

If the Los Angeles County Medical Association, a basic unit of the American Medical Association, would remain true to its own obligations, and true to its major

or parent organizations—the American Medical Association and the Medical Society of the State of California—it will aspire to give something more to its members than a didactic or even a clinical course of medicine or surgery, by taking a hand and doing its share in the solution of the many hygienic problems which confront this rapidly growing municipality.

One of these problems is the tuberculosis situation. It has as yet reached no undue danger. It should not be allowed to do so. To call attention to the need of its investigation has been one of the objects of this paper.

THE TRANSPLANTATION OF ORGANS.

A PRELIMINARY COMMUNICATION.*

ALEXIS CARREL, M.D.

CHICAGO.

This operation consists of extirpating an organ, with its vessels, of putting it in another region, and of uniting its vessels to a neighboring artery and vein. If the organ is replaced in the same animal from which it was removed, the operation is called an autotransplantation. If it is placed in another animal of the same species it is called a homotransplantation, while if it is placed in an animal of a different species, the operation is called a heterotransplantation.

The so-defined transplantation completely differs from the well-known experiments of subcutaneous or intraperitoneal grafts of small slices of organs.

LITERATURE.

The literature of the transplantation of organs is not extensive.

In 1901-02 I began experimenting with the view of finding a method of substituting a sound organ for a diseased one, e. g., of treating Bright's disease by replacing the diseased kidney by a normal one, or myxedema by transplanting a sound thyroid gland and securing it a blood supply by arterial and venous anastomosis. These first experiments were made in the Faculty of Medicine of the University of Lyons.

The transplantation of the thyroid gland, with its vessels, was performed on a large dog.¹ The right thyroid gland was dissected and its vessels cut. The largest artery and vein were united by a termino-lateral anastomosis to the carotid artery, and the external jugular vein. The circulation was re-established. It was impossible to observe physiologic results, owing to coagulation, which soon occurred, due to the bad aseptic and technical conditions of the operation.

About the same time the transplantation of the kidney was made.² The carotid and the jugular of a dog were dissected and prepared for anastomosis. The kidney, having been extirpated, with its vessels and its ureter, was put into the cervical wound. End-to-end anastomoses of the renal artery to the carotid, and of the renal vein to the jugular, were performed. The end of the ureter was united to a small opening of the skin, located a little above the sternum. On release of the clamps, the circulation was immediately re-established, and seemed thoroughly normal. After a few hours a clear fluid began flowing from the ureter. Per-

* From the Hull Physiological Laboratory, University of Chicago.

1. Carrel: "Les anastomoses vasculaires: leur technique opératoire et leurs indications." 2e Congrès des Médecins de langue française de l'Amérique du Nord, Montréal, 1904.

2. Carrel: "La technique opératoire des anastomoses vasculaires et la transplantation des viscères." Lyon Médical, 1902.