zation will contribute to human society through organized efforts for environmental pollution control and waste disposal. The major functions of this organization would be to accomplish systematic activities on environmental protection world-wide.

Pollution problems in the Prefacture of Osaka

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Ladies and gentlemen, I am deeply grateful and honored to be given this opportunity to speak at this Congress, the history of which is so illustrious.

Although what I am going to speak about has no direct bearing on the doctors participating in this Congress when we think of the future of mankind on this earth I feel that we must take an active interest in environmental pollution as a crucial problem confronting human beings and that we must devise effective measures against it and try to solve this problem by summoning all the knowledge and wisdom available to us in order to protect the sanctity of mankind and promote health. In view of this we in the medical profession naturally ought to offer cooperation in this task through our specialized field of work. I would be most happy if my talk might provide each of you with some sort of a guideline in this connection I would also like to tell you briefly about the current situation of environmental pollution in the Osaka Area, where I live. I would also be very pleased if you could comment on this part of my talk

I need hardly define about environmental pollution. However, in 1967 the Basic Law for Environmental Pollution Control was enacted in our country as shown in Table 1, and Article 2 of this Law gives the following definition.

> The term "environmental pollution" shall mean any situation in which the human health and the living environment suffer from air pollution, water pollution, soil pollution, noise, vibration, sinking of the ground and offensive odors which occur over a considerable area as the result of industrial or other human activities.

As you all know, we are promoting a comprehensive system of medical services aimed at the attainment of positive health, as the concept of health has become more expanded. In order to make this comprehensive system take root in the area, all the members of our Medical Society are working for the betterment of community medical care, which is given priority over the other activities of the Medical Society. In its relation with the various diseases, environmental pollution in the area poses at present a particularly grave problem in community medical care. It is also a fact that a change in the disease structure, a distortion produced by the industrialized society with a high economic growth, has become a big political issue as well as causing great anxiety to the people in regard to the appearance of the so-called "difficult-to-cure" diseases.

The Japan Medical Association, with which we are affiliated, predicted the advent of the situation today more than ten years ago and also warned the government about the urgency of countermeasures. It is to our great regret that we had to wait until as

late as 1967 to see the enactment of the Basic Law for Environmental Pollution Control. Since the enactment of this Law, laws relevant to this have been newly enacted or amended as public opinion has grown stronger, and at present they number as many as 22 in all. A mountain of difficult problems await solution, solution that cannot come until environmental pollution is definitely put under control.

In view of this situation, similar acts are currently being enacted at the prefectural level, and countermeasures are being put into effect based on local characteristics. A matter that has recently been attracting the attention of the people in the form of a social demand by the people is the question of compensation for damages caused by environmental pollution. Last autumn, a Committee of Experts for Consideration of the System of Compensation for Damages was organized by the Central Council on Environmental Pollution Control. In March of this year it will submit a recommendation to the government for a new system of compensation, which is expected to begin in January 1974. However, we will probably see the situation becoming more complicated before a final conclusion is reached concerning the respective responsibilities of the nation and enterprises and the introduction of the theory of liability without fault. We in charge of medical care are opposed to the idea of this system of compensation at public expense being introduced into the current medical insurance system and have grave concern in watching the further development on this matter.

At this point I would like to describe briefly the current status of environmental pollution in the Osaka Prefecture, where I live.

Although it is the smallest prefecture in Japan in area, Osaka haa a population of approximately eight million. It is an area with a high population density, second only to that of Tokyo. In addition, being an area which has developed from the olden days as the center of commerce and industry of our country, it has experienced a rapidly accelerating deterioration of the living environment and outbreaks of various forms of environmental pollution. Consequently, in order to fight the pollution in the prefecture, the local government, first among the prefectures, has established a Project for Environmental Pollution Control in the Osaka area, based on Article 19 of the aforementioned Basic Law for Environmental Pollution Control. The local government states in the outline of this project: "Because of the tremendous increase in the size of the sources of pollution, such as factories, etc., an increase in the volume of the discharge of pollutants and excessive concentration of population and industries, environmental pollution is no longer limited to small areas but has become widespread; it has also become so serious as to cause damage to the health of the residents in the area. Furthermore, it has become more complex, as symbolized by the outbreaks of photochemical smog, which is a composite product of various pollutants." The outline also points out emphasizing that in order to control pollution, "it is necessary to strengthen the regulations already in force concerning effluents and location of such sources of pollution as factories, etc. based on the environmental capacity standards, which indicate the quantity of pollutants which can be admitted into the environment without causing undue damage. On top of this, effective measures concerning control over industries, use of land, and population, as well as the establishment of such public facilities as the sewer system for the control of environmental pollution must be enforced comprehensively and intensively jointly with such measures as research studies on how various pollutants affect human health, plants and animals and constant watch over, and measurement of, the pollutants in the particular environment. Furthermore, it is necessary to strive for the conservation of green areas and protection of other aspects of the natural environment in order to help control pollution."

It is true that under these basic policies the situation is improving little by little in the Osaka area. For instance, as regards the changes in the condition in regard to air pollution due to sulfur oxides, Table 2 shows that over a period of four years between 1968 and 1971, the more polluted the area was, the more improvement was seen. As regards the air pollution due to dustfall (Containing lead, tin, manganese, iron, vanadium, copper, etc.), we can recognize some improvement, as shown in Table 3, but the fact that a temporary increase was seen in the outskirts of the Osaka City suggests the need for taking the influence of weather into consideration.

In view of these facts, we who are in charge of medical services, conducted a survey on our own on the influence of pollution on the human body. It was particularly aimed at the pupils of the public elementary schools in the Osaka Prefecture, focusing on the subjective symptoms which are believed to be the result of air pollution. As shown in Table 4, the number of schools surveyed was 719, and the total number of pupils involved was 609,190. The survey

was conducted in the form of a questionnaire, as shown in Table 4.

The figures below show the distribution of the schools with a high rate of complaints, as obtained from the survey. Fig 1 (1) shows the complaints of a sore or irritating throat (complaint rate more than 12%), Fig. 1 (2) painful or bleary eyes (complaint rate more than 9.0%), Fig. 1 (3) frequent headaches without symptoms of a cold (complaint rate more than 16%), and Fig. 1 (4) frequent coughing (complaint rate more than 15%).

As you can see by comparing the air pollution maps (Fig. 2), the findings of the survey correspond with the density distribution of air pollution. The fact that similar symptoms have begun to affect the human bodies in the outskirts of the city, as shown in Fig. 1 (3), outside of the concentrated areas, proves that we cannot neglect weather and the configuration of the land when considering this problem and that it is an important point when devising countermeasures against air pollution.

When we look at the problem from the viewpoint of the system of bearing at public expense the cost of caring for patients who are officially recognized as suffering from diseases caused by environmental pollution, it is clear that the designation of the areas to be covered by the system requires careful consideration, and this is why so many problems and disputes are involved. Up to now the number of areas where the system of bearing the cost of caring at public expense was applied had been three in all, but four areas were newly added to this number in February 1973 based on the findings of the survey. As of January 1972, the number of persons officially recognized as suffering from diseases caused by environmental pollution, as shown in Table 5, was 624 in regard to water pollution and 7,966 in regard to air pollution. Due to the addition of the areas newly designated in February, the number of patients increased by 7 and 2,910, respectively. It is now clear that the total number of patients is over 10,000 nation-wide. I am sure you will understand that this is a grave social problem.

We in the medical profession would like always to continue to actively point out such problems from our viewpoint as trustees of the life and health of the people. Through our medical practice, I believe we should listen to what the people have to say and grasp the real situation in which they find themselves. Then we should do everything in our power to make our environment better and eradicate all diseases caused by environmental pollution, and as opinion leaders of our society see to it that the direction of control and solution of this problem will not go astray. Naturally, we should also discuss the aspects of environmental pollution other than that of the air, but our time is, unfortunately, limited.

Before closing my remarks, I would like to ask each of the distinguished members present here today to give serious thought to the fact that a tendency for the knowledge and progress of mankind to lead us ultimately to extinction rather than to bring us welfare and happiness is beginning to make its appearance as a reality more grim than war with firearms. I would also like to ask you to take positive actions to study this problem and devise measures to combat it, for this is an urgent and serious task confronting us all on this "one earth" of ours. As the old saying in Japanese goes, "It is not just a fire on the other side of the river. It may happen to us." Thank you for your kind attention.

BASIC LAW FOR ENVIRONMENTAL POLLUTION CONTROL

(Enacted in 1967: amended in 1970)

Article 2

1. The term "environmental pollution" ("ko gai" in Japanese), as used in this Law, shall mean any situation in which the human health and the living environment suffer from air pollution, water pollution (including the deterioration of the quality and other conditions of water as well as of the beds of rivers, lakes, the sea and other bodies of water, the same applying, hereinafter, except in the case of Paragraph 1 of Article 9.), soil pollution, noise, vibration, sinking of the ground (except for the sinking caused by drilling activities in mining, this ex-

ception applying hereinafter.), and offensive odors, which occur over a considerable area as the result of industrial or other human activities.

2. The term "living environment," as used in this Law, shall include property closely related to the human life, and animals and plants closely related to the human life and the environment in which such animals and plants live.

Table 2 Changes in Condition of Air Pollution Due to Sulfur Oxides

(Lead Dioxide Method, 1971)

(SO_3 mg/100cm^2/day)

Area	District	1968	1969	1970	1971	Average figures of measurements made at
Osaka city area	Western part	2.33	2.24	1.78	1.21	35 places
	Northern part	1.74	1.74	1.34	0.93	20 places
	Eastern part	1.44	1.41	1.17	0.83	11 places
	Central part	1.90	1.86	1.46	1.07	7 places
	Southern part	1.28	1.25	0.99	0.68	12 places
	Average for area	1.90	1.85	1.46	1.00	85 places
North Osaka area	Northern part	0.62	0.63	0.68	0.54	13 places
	Southern part	1.20	1.34	1.03	0.73	17 places
	Average for area	0.94	1.02	0.88	0.65	30 places
East Osaka area	Northern part	1.05	1.03	0.90	0.74	27 places
	Southern part	0.99	1.12	0.90	0.70	24 places
	Average for area	1.01	1.07	0.90	0.72	51 places
South Osaka area	Sakai coastal part	1.62	1.72	1.61	1.27	10 places west of Osaka-Wakayama railway line
	Sakai hinterland	0.73	0.84	0.83	0.62	17 pl aces east of Osaka-Wakayama railway line
	Sakai-Takaishi	1.02	1.11	1.07	0.85	30 places
	Senpoku	0.92	0.98	1.01	0.80	38 places
	Sennan	—	—	0.75	0.59	14 places
	South Kawachi	0.54	0.45	0.57	0.44	12 places
	Average for area	0.92	0.98	1.01	0.74	64 places

Table 3 Changes in Condition of Air Pollution Due to Dustfall

(Tons/km²/month)

Area	District	1968	1969	1970	1971	Average figures of measurements made at
Osaka city area	Western part	16.98	17.06	17.04	15.19	7 places
	Northern part	8.29	6.71	5.30	6.29	3 places
	Eastern part	9.40	12.10	12.77	10.55	3 places
	Central part	11.55	9.46	6.92	6.85	2 places
	Southern part	11.06	10.05	7.03	10.07	Setsuyo Middle School only
	Average for area	13.46	12.80	12.15	11.22	16 places
North Osaka area	Northern part	5.52	7.58	6.37	5.48	Ikeda Health Center only
	Southern part	9.45	9.45	6.89	6.72	2 places
	Average for area	8.02	8.73	6.71	6.31	3 places
East Osaka area	Northern part	8.84	7.84	7.53	6.60	Moriguchi Health Center only
	Southern part	9.57	11.68	6.97	8.47	2 places
	Average for area	9.27	10.93	7.11	7.81	3 places
South Osaka area	Sakai coastal part	12.52	14.05	12.85	9.95	11 places west of Osaka-Wakayama railway line
	Sakai hinterland	6.53	7.61	8.00	6.65	7 places east of Osaka-Wakayama railway line
	South Kawachi	3.49	4.28	4.06	3.39	Figures by Osaka Pharmacy College
	Average for area	9.89	11.59	10.97	8.43	19 places

Dustfall : Lead and tin—decreasing
Manganese—increasing
Iron, vanadium and copper—no change

Table 4

Questionnaire on Subjective Symptoms in Schoolchildren

Number of schools surveyed: 719
Number of pupils answering: 609,190

Questionnaire on Children's Health

_____ Primary School, _____ Grade, Class _____

Name: _____ (male, female)

If you frequently experience any of the following, circle that number(s).

1. Sore or itchy throat.
2. Tonsils often become swollen.
3. Nose is often become obstructed.
4. Nose runs often.
5. Sneeze easily.
6. Eyes hurt or become bleary.
7. Discharges from the eyes often.
8. Often have a headache even when there is no cold.
9. Often have a stomachache.
10. Cough often.
11. Cough for a long time after going to bed at night, or at dawn.
12. Wheezing even when there is no cold.
13. Suddenly feel difficult to breathe when asleep.
14. Told by a doctor as having asthma.

Table 5

Number of Persons Suffering From Diseases Caused by Environmental Pollution

Relating to water pollution: 624 persons (plus 7 persons)
Relating to air pollution: 7,966 persons (plus 2,910 persons)

The numbers in parenthesis are the additional increase in the number of persons as of February of this year.

Fig. 1 Distribution of Schools With Especially High Rate of Complaints
(1) Sore or irritating throat (complaint rate more than 12%)

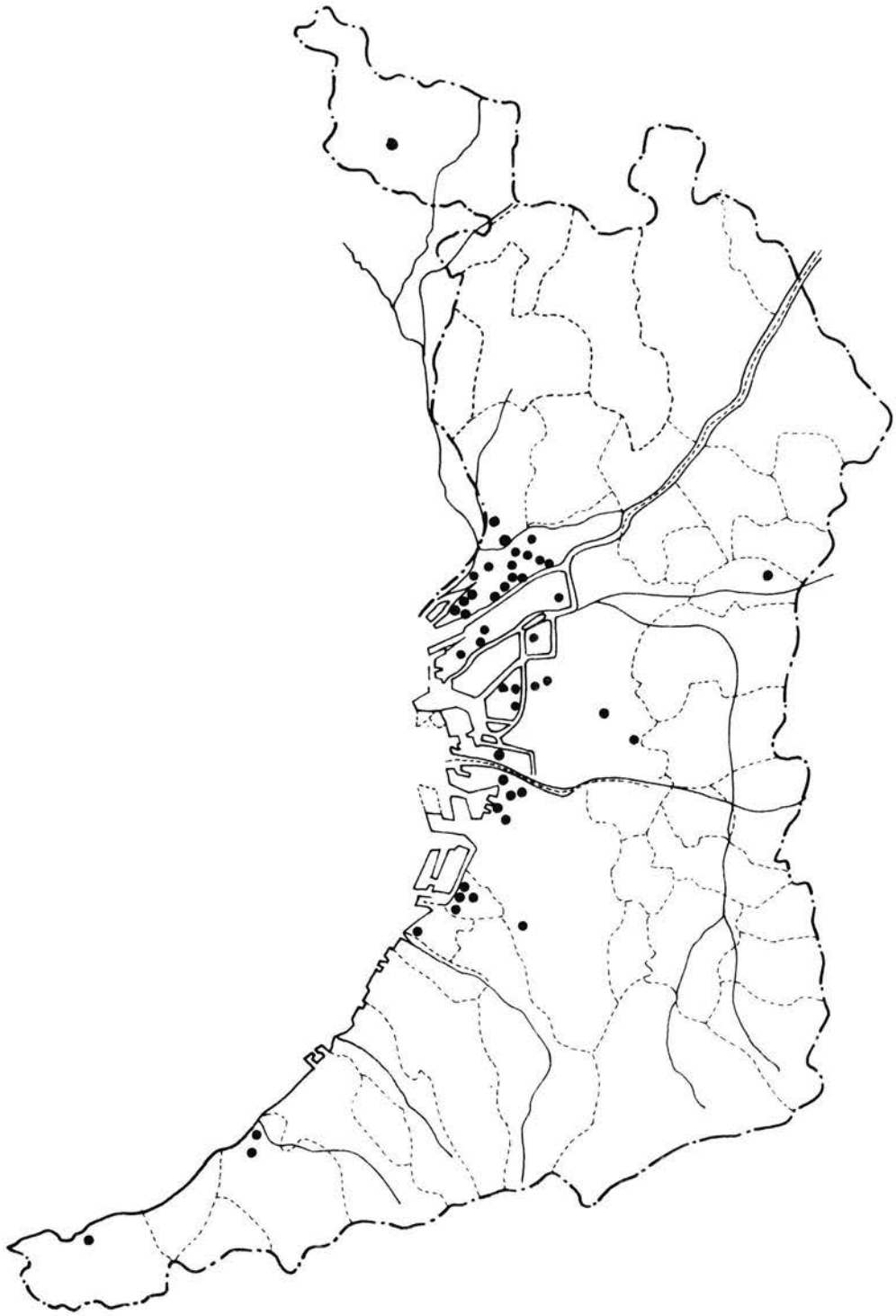

Fig. 1 Distribution of Schools With Especially High Rate of Complaints
(2) Painful or bleary eyes (complaint rate more than 9.0%)

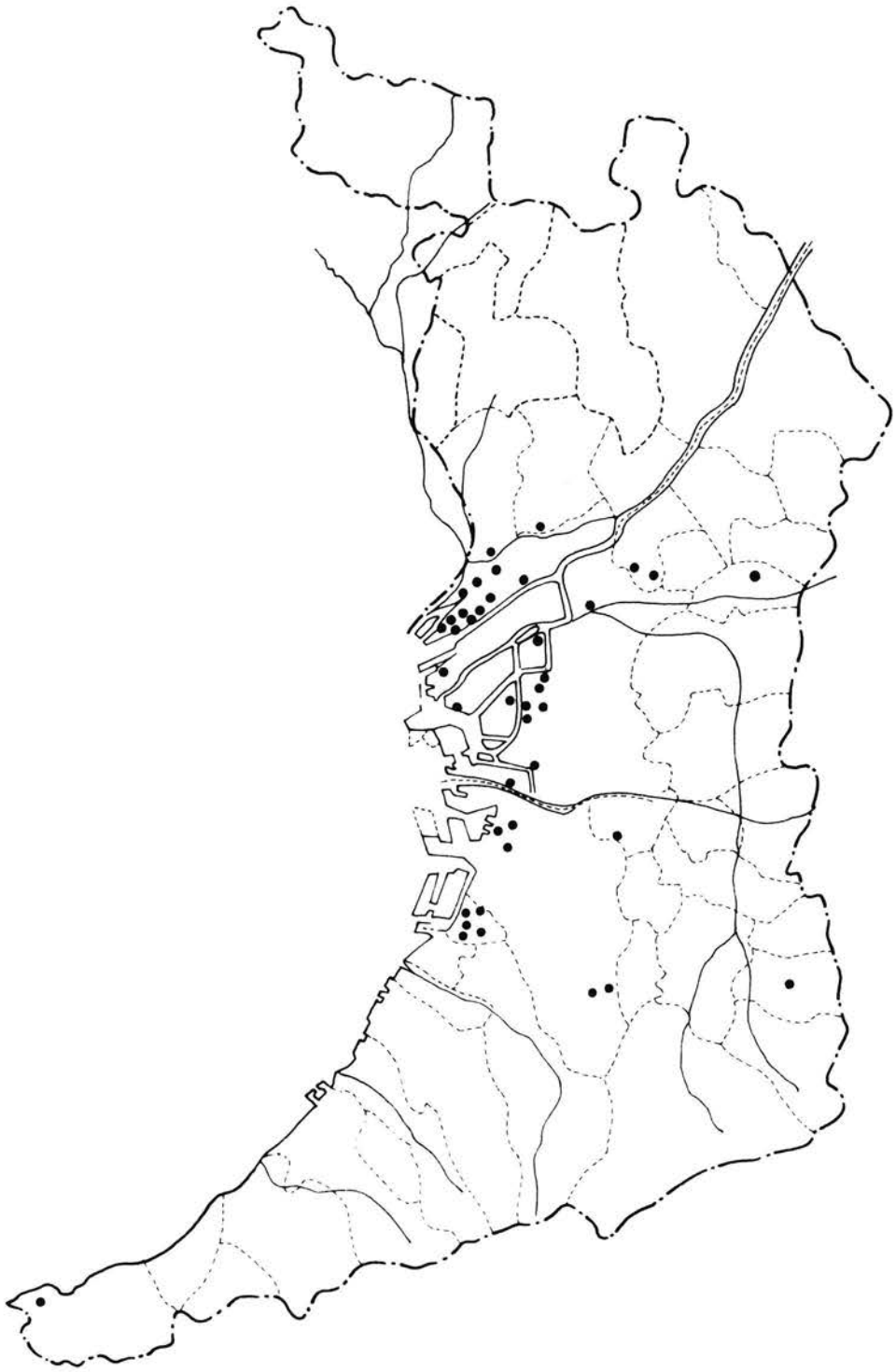

Fig. 1 Distribution of Schools With Especially High Rate of Complaints
(3) Frequent headaches without cold symptoms (complaint rate more than 16%)

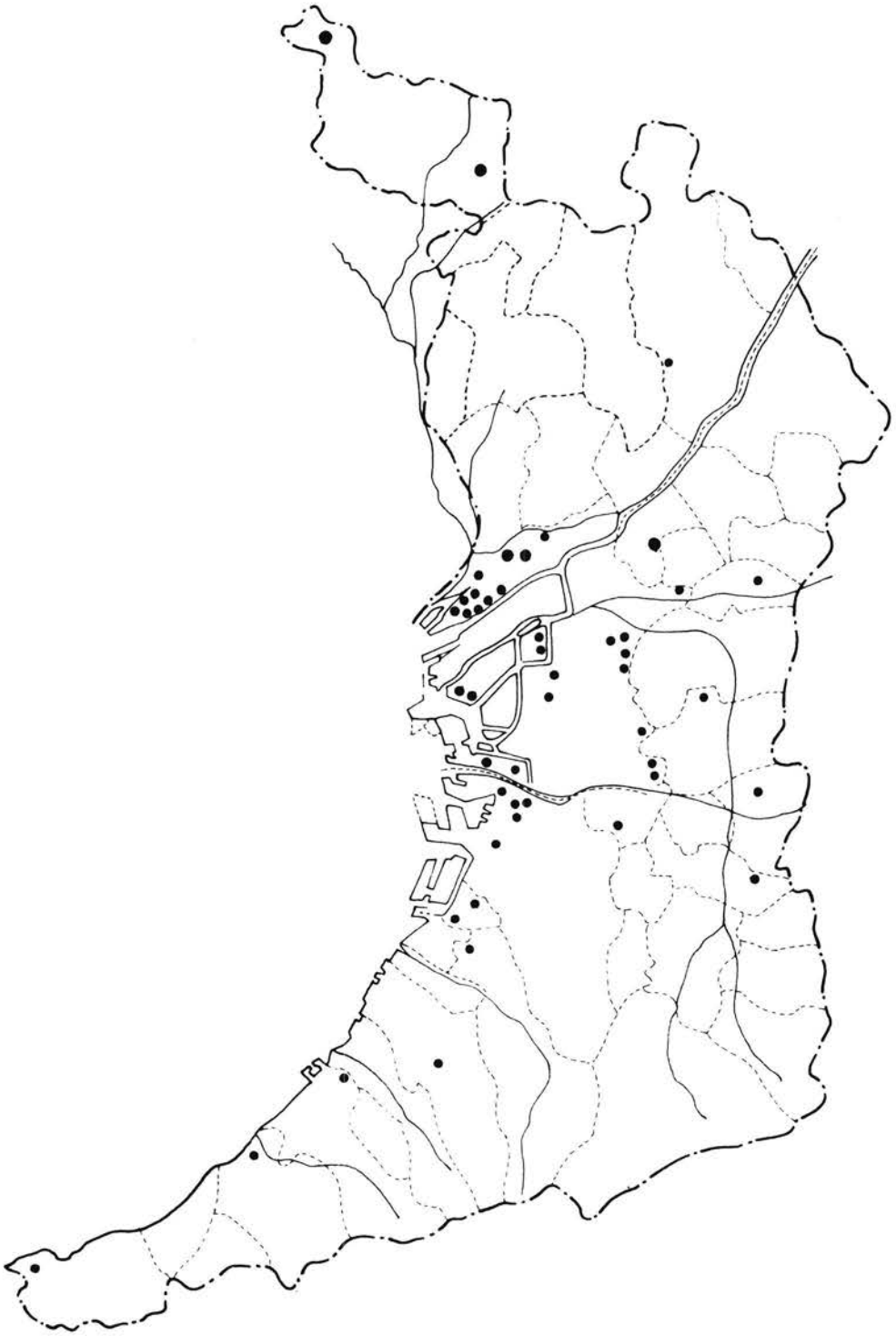

Fig. 1 Distribution of Schools With Especially High Rate of Complaints
(4) Frequent coughing (complaint rate more than 15%)

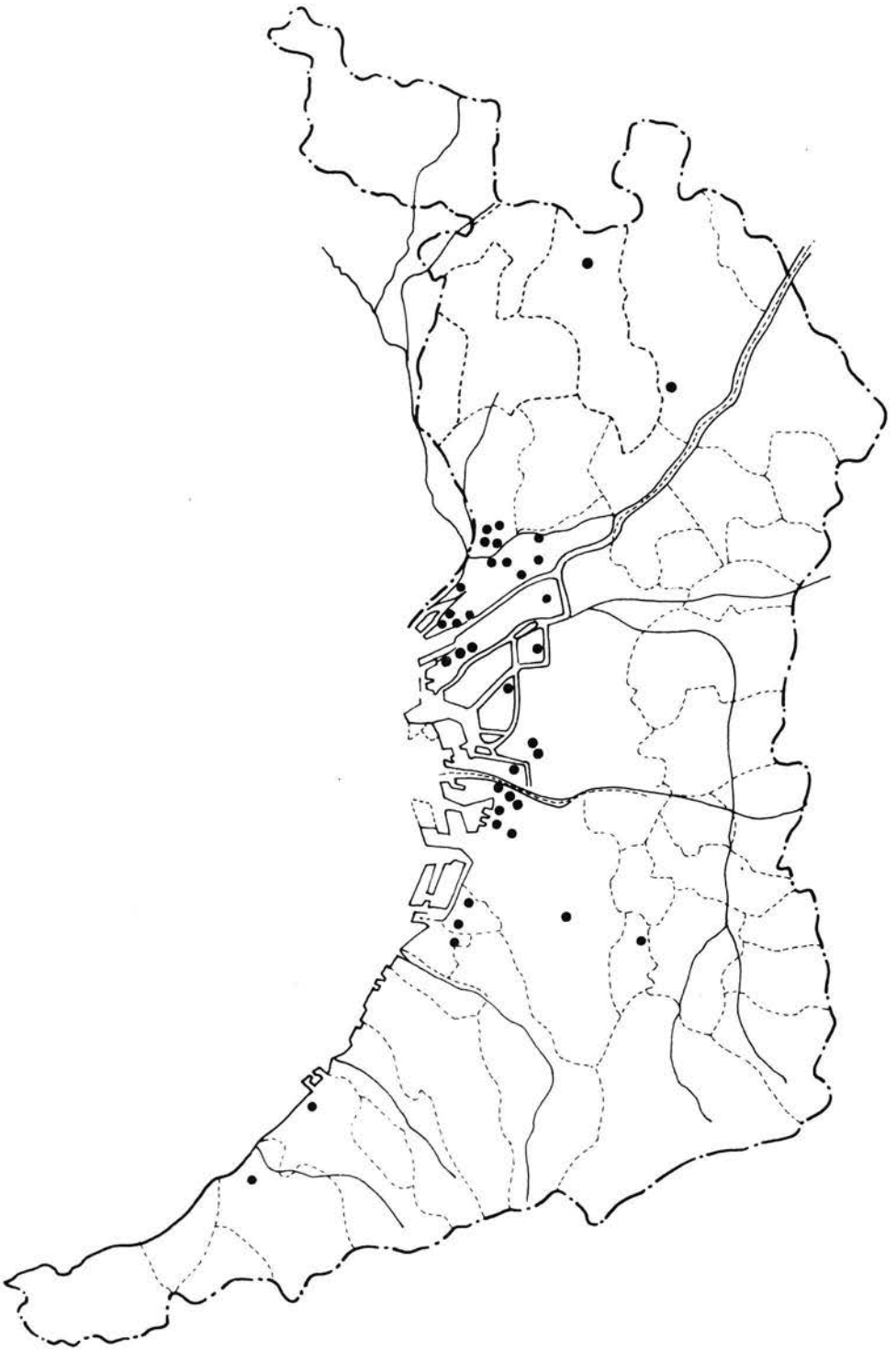

Fig. 2 Distribution Map of Density of Sulfur Oxides in 1970
(By Lead Dioxide Method)