

TING HSIEN AND THE PUBLIC HEALTH MOVEMENT IN CHINA¹

by C. C. CH'EN, M. D.²

THE year 1936 was very troublesome in North China. The unfavorable political situation, combined with natural internal developments, brought about a new policy in the Mass Education Movement. In the first place, the programs worked out in Ting Hsien needed to be tested for their applicability in other parts of the country. In the second place, certain other aspects of a reconstruction program, particularly in connection with the reorganization of the local government and its functions, could not be carried out under the conditions existing in Hopei Province. In the third place, while hsien-unit administration is sound as a basic principle, there are many aspects of a hsien-unit program which cannot be effective unless the province is taken as the unit.

Accordingly, in July, 1936, the Movement embarked on a new policy of expansion. The request of the authorities led to the establishment of two new provincial stations in Hunan and Szechuan. The program in Hunan is mainly cooperation with the Provincial Government in the administration of an Experiment Hsien. A province-unit experiment is being conducted in Szechuan, under the auspices of a "Provincial Planning Commission," which also conducts an Experiment Hsien. Thus the Movement now maintains three stations: one in North China (Ting Hsien), one in Central China (Hengshan), and one in West China (Chengtu and the Hsintu Experiment Hsien). In 1936, the author was appointed director of the Ting Hsien Station of the Mass Education Movement.

¹ With some condensation, this is the annual report of the Department of Public Health of Ting Hsien, Hopei, China, written a month before the present outbreak of hostilities in China.

² Head, Division of Public Health, Chinese National Association of the Mass Education Movement, Ting Hsien. This Division has received financial assistance from the Milbank Memorial Fund since 1929.

Because of its facilities for training, Ting Hsien will continue to be a vital part of the Mass Education Movement. The present nation-wide activities of rural reconstruction under both governmental and private auspices demand a large supply of trained personnel. For some years to come the Government will have to depend upon private institutions to supplement its training of personnel, and the Mass Education Movement, which was the first organization in the field and the first to develop a program with a comprehensive approach, has a rich amount of available experience for dealing with special problems of agrarian life and reform. The senior staff of the Movement is probably the best qualified in the country to impart the necessary knowledge and technique. Moreover, effective teaching requires field facilities in addition to a competent staff, and the organization at Ting Hsien is generally recognized as distinctly original and qualitatively superior to similar developments in many parts of China. It is therefore the policy of the Movement to conserve and expand the technical developments in rural reconstruction at Ting Hsien, so that it will continue to be a center of specialized training under the auspices of the Movement.

By the end of 1936, several assistants in the Department had become responsible administrators in governmental units of rural health service. Dr. Li Fang-Yung was appointed Chief of the Rural Health Division in the Kiangsi Provincial Health Service. Dr. Hsu Shih-Chu achieved marked success in the Kiangning Experimental Hsien (near Nanking) as its county medical officer. The work of Dr. Hou Tse-Ming, who has become the county health officer at Hua Hsien, Shansi, was commented upon favorably by Dr. A. Stampar, who was appointed by the Health Organization of the League of Nations to conduct technical studies and furnish expert advice to the National Economic Council of the Government. More recently, Dr. Chiang Mao-ch'ing has occupied the post of county health officer at Henshan, Hunan. Dr. Li Chuan-ch'eng was sent to Szechuan to act for the writer on the Planning Com-

mission of the Szechuan Provincial Government, and has made an extensive survey of rural medical problems in that province. All of these individuals have been paid from government funds and today have much greater financial resources at their command than have ever been available for the parent experiment at Ting Hsien.

The governmental authorities in Kiangsu Province gave the first real political recognition to the rural health movement, providing a budget of about \$40,000³ for the work in the Kiangning Experiment Hsien. Quite recently, the Director of the National Health Administration announced that the Executive Yuan approved the budgeting of 5 per cent of hsien government expenses for the promotion of health, and fifty-two out of sixty-three hsiens in Kiangsu Province have initiated some organization for the application of modern medicine. The rural health budget of Kiangsu Provincial Government in a period of three years has increased from about \$100,000 to over half a million. The Province of Kiangsi, one of the poorest in China, is providing a budget of \$300,000 for the development of hsien health services.

ACTIVITIES IN TING HSIEN IN 1936

The Collection of Vital Statistics. Health officers in this country are afraid of statistics, because there is not an economical machinery to collect the most elementary information. In one or two places, special inspectors have been trained and employed, but they prove extremely expensive, thus affecting the vital issue of continuity. There are no registrars such as those found in Western countries, and the police organization extends only to the big market towns.

Attempts to collect information on births, deaths, and certain causes of mortality, which were started in Ting Hsien in 1932 through the village health workers, have proved fairly successful. The registration area increased from a population of about 400 in 1932 to 170,000 in 1936. The number of reports (births and deaths)

³ Monetary figures are based on Chinese currency, which is approximately one-third the value of United States currency.

	1934	1935	1936
Population Under Registration	22,600	103,000	170,000
Crude Birth Rate	27.4	25.9	25.1
Crude Death Rate	27.2	29.1	20.4
Infant Mortality	163.1	185.2	145

Table 1. Crude birth rate, death rate, and infant mortality in Ting Hsien, 1934-1936.

increased from 791 in 1933 to 7,742 in 1936. The data gathered in 1934, 1935, and 1936 are analyzed in Table 1. It is hard to say which year's figures are most accurate, but, in spite of the rapid increase in the number of registering villages, the results are reasonably constant. The decline in the crude death rate in 1936 may be partly due to the absence of any severe epidemics such as the epidemics of scarlet fever and dysentery in 1935, and a comparison of the age

Table 2. Age distribution of deaths in the registration area of Ting Hsien, 1935-1936.

AGE	NUMBER OF DEATHS		PERCENTAGE	
	1935	1936	1935	1936
TOTAL	2,997	3,475	100.00	100.00
0-1	494	522	16.48	15.02
1-4	839	629	27.99	18.10
5-9	308	301	10.28	8.66
10-14	83	88	2.77	2.53
15-19	60	93	2.00	2.68
20-24	74	118	2.47	3.40
25-29	66	113	2.20	3.25
30-34	73	88	2.44	2.53
35-39	40	73	1.33	2.10
40-44	57	86	1.90	2.47
45-49	48	84	1.60	2.42
50-54	112	177	3.74	5.09
55-59	64	127	2.14	3.66
60-64	139	207	4.64	5.96
65-69	110	161	3.67	4.63
70-74	171	208	5.71	5.99
75-79	90	174	3.00	5.01
80-89	144	204	4.81	5.87
90 and Over	25	22	.85	.63

distribution of deaths reported in 1935 and 1936 (Table 2) seems to bear out this impression. The largest decrease in percentage of total number of deaths occurs in the 0-9 age groups and the decrease is most marked in the preschool age group.

Specific death rates for the three-year period are shown in Table 3. It will be noted that the death rates from certain of the controllable diseases, such as smallpox and rabies, remained persistently low in each of the three years. In 1936, there was a marked drop in mortality from gastro-intestinal infections, particularly dysentery and diarrhea and enteritis under two years, and the death rate from

Table 3. Specific death rates in the registration area of Ting Hsien, 1934-1936.

CAUSE OF DEATH	SPECIFIC DEATH RATE PER 100,000 POPULATION		
	1934	1935	1936
Typhoid Fever	9	25	21
Typhus Fever	18	2	10
Dysentery	102	230	53
Smallpox	4	10	3
Plague	0	0	0
Cholera	13	12	1
Diphtheria	44	55	79
Epidemic Cerebral Meningitis	18	9	7
Scarlet Fever	31	653	151
Measles	44	62	46
Purulent Infections	84	74	78
Rabies	4	0	1
Other Infections and Parasitic Diseases	119	104	111
Convulsions	84	111	118
Puerperal Conditions	31	23	28
Tuberculosis of the Respiratory System	208	178	141
Respiratory Diseases	49	154	160
Diarrhea and Enteritis (Under 2 Years)	75	200	30
Disease of the Digestive System Not Otherwise Specified	173	157	156
Cardio-renal Diseases	159	149	118
Senility and Apoplexy	239	318	270
Congenital Debility and Premature Births	66	39	51
Poisoning and Suicide	27	19	23
External Causes	93	28	41
Other Causes	27	89	121
Ill Defined Causes	22	107	48

scarlet fever decreased to one-fourth the figure for 1935, although it is still very high. The death rate from tuberculosis of the respiratory system has shown a steady decline. The reason for this decline is obscure, although it might be partially credited to the relative economic prosperity of the area in 1936. Lastly, in spite of the lack of accurate diagnosis, the mortality from certain uncontrollable causes, such as the cardio-renal diseases, senility and apoplexy, diseases of the digestive system not otherwise specified, and purulent infections, is surprisingly constant—which possibly might be added to the credit of the method of collecting the data.

The death rates for tetanus neo-natorum and kala-azar were 62 and 25 respectively. Trained midwives delivered 18.1 per cent of the births in the City of Tinghsien in 1936, with no deaths from tetanus neo-natorum, while there was a rate of 8 per cent among the deliveries made by local untrained women. Cases of kala-azar are treated with ureastibamine, and the cost of each course of treatment has been reduced to about four dollars.

Inasmuch as registration is only one of the functions of the village health workers, and the analysis of the reports requires only a full-time clerk under the direction of the physician in charge of communicable disease control, the cost of collecting vital statistics in Ting Hsien can be reduced to a minimum. Roughly, each report, including the analysis, costs about ten cents.

Communicable Diseases. Work on communicable disease control is being carried on in many parts of China, but most of the health officers are not sure whether any preventive technique may be applied extensively under rural conditions and whether any disease is controllable. After four years of organized efforts in Ting Hsien, there are proofs that smallpox vaccination may be carried on economically on an extensive scale and that the disease can be kept reasonably under control. At Ting Hsien, the number of persons vaccinated against smallpox has been steadily increasing each year, and in 1936 reached one-seventh of the population. The

increasing percentage of primary vaccinations is even more significant (Table 4), because it shows that the vaccinations are being given to those most in need. Over 50 per cent of the primary vaccinations were of children under one year, and the percentage of primary vaccinations of children under three years increased from 66.9 per cent in 1933 to 83.4 per cent in 1936. Only 5 per cent of the primary vaccinations last year were given people over ten years of age, and only about 12 per cent of the total were third or fourth vaccinations.

As reported before, difficulties in vaccinating girls and women, especially adolescents who are ashamed of exposing their arms to a vaccinator, are very great. However, the percentage of females vaccinated in Ting Hsien increased from 20.1 per cent of the total in 1930 to 37.1 per cent in 1936. The tradition against vaccination in the autumn is also breaking down. In 1932 only 196 vaccinations were made during the autumn campaign, while in 1936 there were 6,335.

The effectiveness of the technique this year was found to be 95.3 per cent, showing that the work was qualitatively satisfactory. The cost was 2.2 cents per vaccination, each primary vaccination costing 7 cents.

Diphtheria inoculations of one injection of alum precipitate toxoid were given 1,282 preschool children, and 1,084 school children were Schick tested. Over fifty per cent of the 450 children found to be Shick-positive were immunized.

Table 4. Percentage of previous vaccinations against smallpox among the vaccinated in Ting Hsien, 1933-1936.

YEAR	NEVER BEEN VACCINATED	VACCINATED ONCE	VACCINATED TWICE	VACCINATED THREE TIMES OR MORE
1933	22.4	61.8	11.9	3.9
1934	28.6	52.5	13.4	5.5
1935	29.1	48.5	14.8	7.6
1936	31.1	56.7	8.5	3.8

Medical Relief. Public health work in this country includes medical relief, because the public demands it and satisfactory medical relief is far beyond the economic reach of Chinese farmers. There are three possible approaches to the problem. The first is to limit all treatments of diseases to clinic service, which is unsatisfactory because of the limited service which can be provided. The second alternative is to concentrate on institutional treatment. This is the policy of most of the missionary hospitals in the country, but it too makes medical relief available to only a small portion of the population.

The third possibility is to discriminate between the quantitative and qualitative types of medical care. An analysis of 15,701 treatments given by the village health workers in Ting Hsien disclosed that 60 per cent were for minor skin infections and 27 per cent were for eye infections. Obviously, there is a great demand for the proper use of simple antiseptics. In 1936, the 151 village health workers gave 200,755 of these minor treatments, each treatment costing less than one cent. In addition, the physicians at the subdistrict health stations gave 56,671 treatments and attended 13,168 new patients. 29.8 per cent of 2,277 cases studied were suffering from skin infections and 27.3 per cent had eye infections, the other cases being chiefly parasitic diseases, surgical conditions, and respiratory diseases. In other words, over fifty per cent of the treatments given at the health stations were for conditions quite similar to those treated by the village health workers. The cost per treatment at the subdistrict health station clinics last year was about 6.5 cents, including the expense for drugs. These treatments given by the village health workers and the general practitioners at the subdistrict stations are quantitatively significant, inexpensive, and meet the needs of the general population to a considerable degree.

The cost of operating the District Health Center Hospital (forty-five beds) in 1936 was \$22,380.77. This cost cannot be further reduced without seriously affecting the quality of the service. Calculated

on the basis of 614 admissions and 12,807 patient days in 1936, each new admission cost about \$36.45 and each patient day \$1.74. Two hundred and seventy-two operations were performed, 7,567 diagnostic examinations of all kinds were made in the hospital laboratory, and 207 outcalls made by members of the hospital staff.

Forty-five beds are not sufficient for a population of 400,000, but in view of the cost of hospitalization and the limited amount of personnel capable of handling services of qualitative superiority, it is questionable whether plans for larger hospitals in a district or hsien are practical in this generation. A hostel for convalescing patients is being considered in Ting Hsien, which may help to reduce the cost of hospitalization.

Public Health Nursing. In comparison with bedside nursing, public health nursing is new to the medical profession in China. The results of public health nursing are often rather intangible because of their educational nature; public health nurses, because of additional training, are generally more expensive than bedside nurses; and the majority of these nurses have been trained in metropolitan areas and so are not fitted for work under rural conditions. Therefore, unless an administrator is fully convinced of the educational value of public health nursing, he is usually inclined to confine nursing to the bedside care, especially for surgical conditions. On the other hand, the solution of social problems in China depends mainly on educational work, and, since medical services are strategic channels for such educational activities, it seems illogical for the health officer to omit public health nursing from his program.

Since 1932, the Health Department in Ting Hsien has been seeking to develop a public health nursing program in the experimental area. There follows a summary of the activities carried on by the nurses in Ting Hsien in 1936:

School Health. Seventy primary schools and a girls' normal school, with an enrollment of 5,882 children, were put in charge of four public

health nurses and a half-time supervisor. These nurses gave about 320,000 minor treatments, principally for trachoma, tinea of the scalp, dental defects, and discharging ears. As a result, 25 per cent of the 3,172 cases of trachoma were practically cured by the end of the year and 30 per cent showed improvement; 67 per cent of the 360 cases of tinea of the scalp were almost cured; 168 children had had their serious dental defects corrected; and of 129 cases of discharging ears under treatment 38 per cent had been cured. The cost per treatment was negligible. The nurses also vaccinated 1,855 children against smallpox, inoculated 248 boys against typhoid, and gave one injection of diphtheria alum toxoid to each of 300 children. With some technical assistance from a sanitary inspector, forty-six school latrines and thirty-nine school wells were improved at the expense of the schools.

Health Education. The nurses and teachers gave 2,337 talks to the school children; nurses held 1,768 individual conferences with the teachers; and the school health corps assisted in the discussion of sanitary problems at 118 meetings. 15,509 free baths were given the children.

In cooperation with the Department of Education of the Movement, a series of teaching guides in 200 lessons has been developed and is being tested in the experimental primary schools of Ting Hsien. A special grant from the Rockefeller Foundation has also made possible the production of adequate material for the ordinary primary schools. Emphasis is laid on health habits in the first two grades, physiology in the third grade, and community health in the fourth.

The adult training class held in 1936 had an enrollment of forty women from twenty-one villages. The objectives of the course are: (1) to understand woman's place in social improvement; (2) to cultivate desirable attitudes and habits of healthful living; and (3) to acquire useful knowledge and technique for the enrichment of home life. Personal hygiene, animal husbandry, gardening, handicraft, recreation, literacy, and citizenship, were taught, the schedule being arranged so that most of the time was occupied by activities rather than by classroom lessons. Each week-end an excursion was arranged to local socio-economic institutions. Most important, by coming to the class these farmers' wives were obliged to live a different life than that to which they were accustomed. After four weeks of strict discipline, they seemed to have found that to live better does not necessarily mean spending much more

money, and in some cases they have made astonishing improvements in their homes.

Maternity and Infant Health. For the past year a public health nurse has had charge of the maternity and child health work at the District Health Center, with promising results. During the year she made 571 visits to antenatal and postnatal cases and attended sixty cases of normal labor and, with the assistance of a physician, four cases of difficult labor. She conducted a mother's club for twenty-three women and ten of them completed a full course of sixteen meetings.

Field Training of Technical Personnel. While the Central Health Administration at Nanking has devoted a great deal of its resources to the training of health officers, there are at least three ways in which the Health Department at Ting Hsien can supplement the service offered by the Central Government: first, through the provision of facilities for a course of field training for students who have completed a six-months' course at Nanking; second, through field training courses for under-graduate students at the medical colleges and, third, through the training of public health nurses. Twenty-seven third-year students of the Peiping Union Medical College observed the work at Ting Hsien last year, and three fourth-year students each spent one month at Ting Hsien, participating in the activities at the District Health Center and the subdistrict health stations. Beginning with 1937, internes at the Peiping University Medical College will each spend two months in Ting Hsien, one month at the District Health Center and the second at a health station. The course at the Hopei Provincial Medical School was lengthened to six years in 1936, and the field teaching of public health shifted to the interne year. Consequently, there were no students from the School at Ting Hsien last year.

In 1935, six graduate nurses were enrolled for the training course in public health at Ting Hsien, seven more students were enrolled in 1936, and plans are being made to enlarge the enrollment to fifteen next year.