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DEPARTMENT OF JUSTICE  
WAR DIVISION  
ECONOMIC WARFARE SECTION

REPORT ON FIRE ALARM  
SYSTEM, TOKYO, JAPAN

May 5, 1943

Submitted by:  
John J. Curran  
Antitrust Division  
Department of Justice  
Boston, Massachusetts

EXHIBITS

Exhibit #1:

Blue print showing complete installation of fire alarm system as prepared for the City of Tokyo by the Gamewell Company.

Exhibit #2:

Reconstruction Plan of the City of Tokyo.

Exhibit #3:

Copies of correspondence with the Gamewell Company and J. Kiyose, Tokyo, Japan, containing information as to installations of fire alarm systems in Tokyo; also questions and answers on the subject.

Exhibit #4:

Booklet published by the Gamewell Company, Newton Upper Falls, Massachusetts, containing details of various types of fire alarm systems manufactured by them, with illustrations.

Economic Warfare Section  
War Division  
Department of Justice  
Washington, D. C.

Confidential Report  
May 5, 1943  
Re: Fire Alarm System  
Tokyo, Japan  
Submitted by: John J. Curran  
Antitrust Division  
Department of Justice  
Boston, Massachusetts

## REPORT ON FIRE ALARM SYSTEM, TOKYO, JAPAN

### INTRODUCTION

The City of Tokyo, with a population now approaching 7,000,000 within an area of about 100 square miles, had, according to sources reported,<sup>1/</sup> about 200 street alarm boxes in 1936. This compares with the City of New York with 7,500,000 population in an area of 320 square miles with 12,205 street alarm boxes in 1929. The inadequacy of fire alarm box protection in Tokyo is apparent, but it is very probable that in recent years additional fire alarm installations have been made in line with war preparations. The most recent source interviewed <sup>2/</sup> was Dr. R. Walker Scott, who left Tokyo in 1939. He observed that at that time there were far less fire alarm boxes seen than are customary in American and European cities. He could not give any idea of the numbers.

The importance of adequate fire alarm systems is demonstrated by the experience of the City of Honolulu, where an increase of 46 percent of fire alarm box installations decreased the average loss per fire over a five-year period by 65 percent. <sup>3/</sup> It may be safe to assume that the fire alarm system and distribution of boxes is laid out approximately in line with the blue print of the Gamewell Company which accompanies this report.

Disruption of the existing fire alarm system in Tokyo would accomplish the following results:

- (a) Damage to trunk-line cables in the Central Station would prevent transmission of calls to any District Station;
- (b) Damage to a District Station would prevent communication to the Central Station of fires beyond its control.

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<sup>1/</sup> See Exhibit #3.  
<sup>2/</sup> See list of Sources, #2.  
<sup>3/</sup> Gamewell Company catalogue, pp. 2-8.

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### HISTORY OF TOKYO FIRE ALARM SYSTEM

Previous to 1917 Tokyo depended for fire alarms on fire towers with watchers, and telephones for communication with city-wide fire stations. In 1912 a delegation of Japanese electrical engineers representing the Imperial government made a tour of the large American cities, inspecting fire alarm systems. They were guided on most of the tour by Mr. L. E. Lowry, 4/ Export Manager of the Gamewell Company, Newton Upper Falls, Massachusetts, manufacturers of fire alarm and police signal systems. The delegation spent most of two weeks at the Gamewell factory in a study of the manufacturing processes and operation of the Gamewell system, and during their stay became thoroughly familiar with all the intricate details both of the manufacture and necessary installations of the system. As a result of this visit the Gamewell Company in 1917 received a detailed map of the City of Tokyo from the Japanese Department of Engineering at Tokyo. On this map was indicated the proposed location of the fire stations and the high and low value areas, and the Gamewell Company was requested to submit a detailed plan showing the proper installation of a complete fire alarm system for Tokyo. The Gamewell Company completed a set of blue prints 5/ and supplied details of all wiring necessary and sent it to Tokyo. They anticipated an order but they never received it. The delegation had taken with them a sample fire alarm box and other vital parts of the equipment.

In 1918 the Gamewell Company appointed the Nippon Electric Company at Tokyo as sales agents on a commission basis. They were also supplied with sample parts but no orders were ever submitted, and in 1923 the Gamewell Company terminated the agency. Sometime during the year 1926 Mr. Lowry was in conversation with one Paul Steintorf, former United States commercial attache at Tokyo, present location not known, and from him he learned that the fire alarm system had been set up according to plans furnished by the Gamewell Company and that it was assumed that they had duplicated the alarm boxes and other parts from the plans and samples furnished. Mr. Lowry states that he never visited Japan but is sure, from information he has received from reliable sources, that the fire alarm installations as set up on plans that he furnished have been closely adhered to.

### FIRE ALARM SYSTEM OF TOKYO, JAPAN

On the basis of the conclusions of Mr. L. E. Lowry that the plans furnished by him were followed in the layout of the installation of fire alarm boxes and connections with fire headquarters and sub-stations, it is assumed that the details shown on the blue print can be regarded as approximating the existing layout. At an interview with Dr. R. Walker Scott, he was quite positive that the fire alarm street boxes that he saw in 1939 in Tokyo were identical with those shown in the pictures of the Gamewell equipment.

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4/ See list of Sources, #1.

5/ See Exhibit #1.

It should be considered that Tokyo since 1933 has annexed surrounding towns and increased its population to 6,581,100 (as of 1939) and now covers an area of about 100 square miles. It is probable that in this expansion they have taken over whatever fire protective systems and apparatus existed in the annexed area. It is the opinion of Dr. R. Walker Scott that most of the suburban area annexed had depended on telephone communication in reporting fires. He doubts if any modernization existed in these rural areas.

Attention is called to copies of correspondence between the Gamewell Company and Mr. Jiro Kiyose, Tokyo, 6/ particularly a letter dated September 17, 1936, in which it is stated that:

City of Tokyo with more than 5,000,000, citizens has only 200 street boxes, City of Kyoto with more than 1,000,000 citizens has only 60 boxes. \* \* \*

As a comparison on the figure stated for Tokyo, the installations of fire alarm boxes in some American cities are cited:

<u>New York City</u>	:	<u>Chicago, Illinois</u>
N.B.F.U. Report #5, Oct. 1929	:	N.B.F.U. Report #208, May 1, 1940
Population: 7,500,000	:	Population: 3,677,000
Total Area: 320.41 sq. miles	:	Total Area: 212.82 sq. miles
Fire Alarm Boxes: 12,205	:	Fire Alarm Boxes: 2,566
<u>Boston, Massachusetts</u>	:	<u>Washington, D. C.</u>
N.B.F.U. Report #158, Dec. 1936	:	N.B.F.U. Report #275, Feb. 1941
Population: 800,000	:	Population: 663,153
Total Area: 47.81 sq. miles	:	Total Area: 60 sq. miles
Fire Alarm Boxes: 1,687	:	Fire Alarm Boxes: 1,201

From the above comparison it is obvious that as of 1936 fire alarm box installations in Tokyo were inadequate. This probably accounts for the fact that on first alarm fires in Tokyo a larger portion of the fire apparatus and equipment responds than in other large cities, excepting New York..

In a table compiled by the National Fire Protection Association, 7/ Quarterly Issue, October 1936, Part I, p. 112, the following figures are given:

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6/ See Exhibit #3.  
7/ See List of Sources #3.

Response to First Alarms

City	Stations from which Apparatus Responds	Fire Fighting Units	Firemen	Total Motor Apparatus Responding	Hose Carriers	Pumps	Aerial Ladders or Service Trucks	All Other Apparatus	Feet of Hose Carried	Special Assignment to Important Properties or Report of Serious Fire	
										Units	Men
Amsterdam	2	2-3	16-20	2-3	2	2	0-1	.. .	.. .	..	..
Berlin	1	2	15	2	2	1	1	.. .	2500	4-6	30-45
Copenhagen	1	3	18	3	2	1	1	1	.. .	..	..
Dresden	1	2	17	2	2	2	1	.. .	2900	4-6	34-51
Hamburg	1	3	20	3	2	1	1	1	2500	4-6	40-60
London	2-3	3-5	15-25	3-5	3-4	2-4	0-1	0-1	3200	..	40-60
Milan	2	2-3	18-22	2-3	2	2	0-1	.. .	.. .	By order	..
Moscow	1	3	18	3	3	1-2	1	1	2600	..	..
Munich	1-2	3	20	3	2	2	1	.. .	3200	6	40
Paris	1	3	22	3	2	2	1	1	3000	Up to 9	Up to 90
Tokyo	4-6	8-9	56-60	8-9	3	6-8	0-1	2-0	8000	..	..
Vienna	1-3	5	27	5-6	5	2-3	1	2-3	5750	..	..
New York:											
High Value	4-6	6-7	48-56	8-10	6-8	4	2	2-4	8000	..	.. .
Mercantile	3-5	5	30-35	6-7	4-5	3	2	1-2	5000	..	.. .
Outlying	2-3	3	15-18	3-4	2-3	2	1	.. .	2500	..	.. .
Los Angeles:											
High Value	4-5	7	45-49	11	8	4	2	5	8000	..	.. .
Hollywood	2-3	3-4	18-24	4-5	3-4	2-3	1	1-2	5000	..	.. .

FIRE ALARM SYSTEM OPERATION

The following is a statement by Mr. L. E. Lowry, Export Manager, the Gamewell Company, Newton Upper Falls, Massachusetts, in which he explains in detail the operation of the fire alarm system shown on Exhibit #1.

"Plan of operation recommended to Japanese engineers based upon the installation of the system as generally outlined in diagram 9-1183, dated November 28, 1917. While the equipment was not supplied by us it is improbable that any radical departures were made from the plan outlined if a complete system has been installed in Tokyo. The key letters hereinafter referred to indicate fire department districts and buildings.

"(A) The location for the alarm announcing and recording equipment for the central or most important district of the city. This station was also to be equipped to serve as the supervisory alarm headquarters for the entire fire district. All alarms would be received and recorded here but the firemen in this district would immediately respond only to alarms originating in District A.

"(C, E, D, F and G) These indicate the locations of five sub-stations, each serving together with other engine houses marked B-1, B-2, C-1, C-2, etc., its own district as outlined on the plan. The fire brigades in each district were expected to handle all ordinary fires without assistance from other districts but means were required to enable aid to be promptly summoned in case of fires beyond the capacity of the fire fighting forces within the district. Alarms from boxes in these districts would be first received, recorded and announced in the district station from which point they would be transmitted manually by fire alarm operators to the central supervisory station (A). According to our plan the alarms from the district would have been repeated automatically to the supervisory station (A), but as the Japanese manufactured their own equipment we consider manual transmission is probably employed; this, however, makes no difference in the general layout except that only four wires are probably used to connect up the sub-stations with the central (A) instead of the six wires shown on the plan. These wires are probably cabled and installed on poles or in underground ducts between the sub-stations and the central station (A). The wires and cables are undoubtedly erected aerially on poles for the most part as recent pictures of even the better districts in Tokyo still show poles with overhead wiring.

"Operation. District (A). All alarms originating in the central district go direct to this station and are repeated - manually or automatically - to fire stations (B-1) and (B-2). The firemen and the equipment located at (A), (B-1) and (B-2) respond to and are expected to control all ordinary fires. According to our plan the alarms in this district would also have been reported to and recorded at the sub-stations but this feature may not be in effect.

(OVER)

"Operation. Districts (B, C, D, E and F). Alarms originating in any district are first transmitted to that district sub-station and from thence repeated to the fire stations in that district and if our plan was followed also repeated to the supervisory station (A).

"For instance, an alarm occurring in district (C) would be first received at sub-station (c) where it would be announced, recorded and repeated - manually or automatically - to the fire stations (C-1) and (C-2), and to the supervisory station (A). The firemen and equipment at (C), (C-1) and (C-2) would respond immediately and if possible extinguish the fire; if the fire was beyond the capacity of these forces to extinguish second or third alarms would cause the authorities at the central supervisory station (A) to send assistance from (A) or some other district."

#### SOURCES

1. Mr. L. E. Lowry, Export Manager, the Gamewell Company, Newton Upper Falls, Massachusetts. Age, about 60 years. He has been employed by the company about 35 years. The company manufactures municipal fire alarm systems, having been in business since 1866. Mr. Lowry's married son, wife and child, are now in a Japanese concentration camp somewhere in the Philippine Islands. Mr. Lowry has a high standing in local fire and insurance circles and his opinions are accepted as authoritative.
2. Dr. R. Walker Scott. Age, 52 years. American citizen. Lived in the United States until April 1931, when he was assigned by the American Episcopalian Mission Board to the St. Paul College, Tokyo, Japan, as Director of Languages. This institution was built and equipped by the Mission and the operating expenses were paid by the Japanese Board of Education. During his stay in Japan he was more or less under the direction of the Japanese and had opportunity to observe civic and industrial affairs to some extent, although most of his work confined him to social and educational matters. He left Tokyo in the summer of 1940 and returned to the United States. He is now professor of languages at Trinity College, Hartford, Connecticut. He apparently retains a good recollection of the conditions on which he has reported.
3. National Fire Protection Association, 60 Batterymarch Street, Boston, Massachusetts. This is an international association with its main office in Boston. The company maintains detailed records of fires and causes, and through its engineering forces makes recommendations along fire prevention lines. Though they have most complete records on fire departments in the world's largest cities, they have never been able to obtain detailed description of fire fighting systems in Japan.



CONCLUSIONS AND SUMMARY

The subject of fire fighting equipment has been avoided by the Japanese government in so far as known publications are concerned. It is the consensus of the sources contacted that Japanese progress in the development of fire fighting facilities has not kept pace with their increase in population and industrial expansion. Considerable has been written by them of the superiority of their fire and earthquake-proof buildings in the city proper. It is true that a large portion of the city buildings are of fire-proof construction; but two-thirds of the area of Tokyo is covered by inflammable residences. The inadequacy of the fire alarm system as outlined in this report would not be counter-balanced by existing fireproof construction.