

## APPENDIX BB

### Hearings on the Incidents in Liaotung and Liaohsi Provinces Connected with the Dissemination of Anthrax Bacilli and Fatalities Arising Therefrom

#### A) Depositions of eye-witnesses, 22nd. July, 1952

##### First Case

	<i>name</i>	<i>age</i>	<i>occupation</i>
1)	Wang Yu-tsai	56	farmer
2)	Liu Chi-an	21	sanitary officer
3)	Liu Chung-kuo	27	railway platelayer
4)	Chang Yü-chia	28	medical student acting as bacteriological technician
5)	P'an An-ying	32	doctor
6)	Sung Tê-yu	30	pathologist
7)	Liu Chan-yuan	24	doctor, assistant to Dr. P'an.

- 1) Wang Yu-tsai found the flies in large numbers on the heaps of sand which he was engaged in carting, and recognised at once that this was abnormal for the season. (This was the case in which the document 00004 spoke of "flies gathering". Criticism of this in the west earlier in the year had asked how the flies could be gathering if they were supposed to be dispersing. It was established that this was purely a mistranslation from the Chinese text, the word should have been "gathered".)
  - (M) For him it was a sudden and inexplicable new phenomenon, he had never seen the like before.
  - (N) Assessed density 100-200 flies/sq. ft.; where less dense, still dozens. They could only creep about and seemed unable to fly.
- 2) Liu Chi-an took about 40 people with him to the spot to destroy the flies. Together they collected between 6,000 and 7,000 in an area about 4 x 5 metres; outside this region there were only a few.

- (O) There were no dungheaps anywhere near from which the swarm might have come. It was a sandy heath.
- 3) Liu Chung-kuo found quantities of flies on and beside the railway line when walking with his foreman Ch'ü Chan-yün. They both thought that it was very odd to find so many flies in such cold weather, and he went back to the station to report, while Ch'ü remained and started to collect the flies, picking them up with his bare hands. When Liu returned with help, he noticed that whereas before the flies had been spread out along a length of about one rail length, now they had dispersed to about two rail lengths. Liu and his mates poured petrol on straw and burnt all the flies up. Afterwards the sanitary chap sprayed him and said it was all right for him to go home.
- (O) The last train before they saw the flies had passed about an hour previously.
- (M) They had had instructions to report any such phenomena to the stationmaster.
- (N) The group who returned and finally destroyed the insects used forceps, improvised chopsticks, and masks. Ch'ü was the only one who used his bare hands, and he definitely did not wear a mask.
- 4) Chang Yü-chia, medical student, was acting as a bacteriological technician at Ssu-P'ing. He noticed that the abdomens of the flies which he received seemed very swollen. He crushed them with forceps and observed smears microscopically. Colonies on agar plates were typical of *B. anthracis*; they were quite large, with rugose surface like masses of hair. Hanging drop preparations were also made. Inoculation of the culture into a guinea-pig brought about its death in 40 hrs. Recultured in bouillon, a cloudy precipitate was seen, containing the bacilli. All results and material were sent on to Shenyang (Mukden) for confirmation.
- (Z) Agar colonies further described.
- (Mr. Chang said that he hoped very much that he would be able to return to his medical studies at Harbin Medical College and complete them. The Commission offered him their congratulations on an excellent piece of front-line scientific work, and wished him every success in his medical career.)

5) P'an An-ying was the doctor who attended Ch'ü in his last illness, the course of which he described.

(A) He knew of the connection which Ch'ü had had with the flies, and suspected that it might be anthrax due to them, but was not able to reach a definite diagnosis in time.

(Z) There was severe dyspnoea with rales when the last visit was made a couple of hours before death.

6) Sung Tê-yu described the results found at autopsy.

7) Liu Chan-yuan not called.

It was established from several witnesses that there was no sheep-raising anywhere around the district of Man-Ching and Ssu-P'ing.

#### Second Case

Wang Yu-lan, sister-in-law of the pedicab driver, Wang Tze-pin.

1) Wang Yü-lan said that her brother-in-law was single and gained his living in and around Shenyang (Mukden) by plying for hire as the driver of a pedicab (bicycle-rickshaw).

(A) Though she did not see him every day, she believed that he had engaged in the collection of insects when in one of the suburbs where a fare happened to have taken him. She heard that they were small ones. Did not know whether he wore a mask or used any other precautions.

#### Third case (a)

<i>name</i>	<i>age</i>	<i>occupation</i>
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1) Wei Hung-ch'in	33	forester, State employee
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1) Wei Hung-ch'in had gone to Harbin on duty when he received a telegram saying that his wife was dangerously ill. He was very surprised because she was usually in good health. When he got back to Anshan he found that she had been taken to the isolation hospital and had in fact died the night before. Friends who were looking after his children told him about her illness, which was similar to the other cases. She had certainly been out collecting beetles for several days previously. Whether she took full precautions, including a mask, he could not say. (She was

pregnant with a baby which she would have had if she had lived).

### Third Case (b)

<i>name</i>	<i>age</i>	<i>occupation</i>
1) Lu Li-tsun	42	farmer at Liu-Erh-Pu
2) Jen Wan-k'u	38	Home Guard sergeant
3) Wang Hua-ming	15	schoolboy
4) Li Lien-chung	32	village constable
5) Wang Shao-chih	32	chairman of local mercantile and industrial association
6) Mrs. Liu	57	old lady, landlady of the dead school-teacher
7) Chao Yü-chin	14	school-girl
8) Liu Ching	14	school-girl
9) Wei Hua-nan	-	doctor
10) Ho Ming-chia	25	husband of the dead school-teacher, himself teacher at a Teachers' Training College
11) Lai Yü-chung	-	school-teacher, colleague of Mrs. Ho (Wang Shu-chih).

- 1) Lu Li-tsun heard the planes about six o'clock in the evening.
- 2) Jen Wan-k'u saw an object fall from one of the planes as stated in the Report.
  - (N) The object seemed to be about the size and shape of a large thermos flask, red in colour. As it fell, it turned flame-red or orange. The red colour could not have been the reflection of the sunset on a metallic object as the sun had already set.
  - (O) The noise of the explosion was very slight. The colour-change, if such there was, occurred at the same time.
  - (N) He smelt a disagreeable burning smell as if of burning animal skin or horn (or feathers), though he estimated the falling object as about 160 yards away from him. The explosive puff occurred when it was from 9 to 12 yds. above the ground, and 3 to 4 yds. above the house-roofs. There was no wind that evening. The main mass of insects was found underneath where the container had seemed to fall; this point was fixed by three different people who had seen it fall from different directions.

(M) He could not say whether the brightness of the object was like that of a paper lantern in which a light shines through a transparent exterior, but he did not remember thinking this at the time.

3) Wang Hua-ming when lying on the k'ang in his home, also saw the object falling in the twilight, and also smelt the smell. A first brief reconnaissance outside revealed nothing, but after he lit the lamp in the house, he noticed insects thickly gathered on the exterior of the window-panes. They were as big as a large rice-grain, and had a "hard shell" and two long feelers. Remembering what his schoolmaster had said about bacterial warfare, he assembled the family and neighbours, who collected as many as possible of the insects, using masks or handkerchiefs tied over the mouth.

(N) The object which he saw falling was certainly not like a lamp or paper lantern.

(It may be noted that the accounts of these two witnesses would not be incompatible with the delivery of two self-destructive containers, one of which had a mechanism which went off too soon and burnt its load of feathers, while the other duly delivered its load of beetles).

4) Li Lien-chung described the collection of the insects.

(M) He saw only one kind, namely beetles, just as the boy said.

5) Wang Shao-chih was waiting, on the evening of 27th, Mar. for a meeting to start, and went out to hurry up some of the members. While walking past a cooperative store he shone his flashlight on the wall, and saw many insects. He had never seen anything like so many in his life, nor had he seen any of that kind before. They had a "shell, six legs, and two wings". At the time of year insects were normally very scarce, for the snow was still largely unmelted. He guessed what the origin of these beetles was, and coming back to the meeting-place, mobilised the members to collect and destroy the insects.

(M) He recognised the beetle *Ptinus* from a photograph.

6) Mrs. Liu an old lady of nearly sixty, was the landlady of the school-teacher Wang Shu-chih, and looked after her child. Wang Shu-chih was very active in participating in hunts

for insects, and spent the better part of eight or nine days on it. After that she fell ill. She went with her husband to visit parents, but did not improve hereafter, and finally collapsed in the toilet at the school where she taught.

- (A) Regarding the manner in which Wang Shu-chih and others collected the insects, she, herself, certainly had a mask and gloves, and they used twigs with sticky ends; but Wang Shu-chih was young and impetuous, and Mrs. Liu did not feel sure that she took all the precautions which she should have done, at all times.
- (Z) The surviving child, a little girl of 2, was in perfect health and so plump as to be hard to carry.
- 7) Chao Yü-chin and
- 8) Liu Ching giving evidence together, said that they were in the class taught by Wang Shu-chih. At 9 a.m. on the 8th, April they went to the toilet and found Wang Shu-chih there in a state of collapse. She died 1½ hrs. later.
- (M) The two girls had helped to collect insects, one of them actually with Wang Shu-chih. She thought that Wang Shu-chih generally wore a mask.
- 9) Wei Hua-nan when called as a doctor to Wang Shu-chih after her collapse, saw at once that she was already beyond aid. He had never seen a similar case in 20 years' experience. He rang up the Department of Health about it at 10 a.m., and the young woman died at 10½. Having been acquainted with her previously, he could say that she had a good physical inheritance, was strong and healthy, and in an excellent state of nutrition.
- 10) Ho Ming-Chia a teacher at a Teachers' Training College, was the husband of Wang Shu-chih. They had had an extremely happy married life for five years. Her health had always been excellent. Described what he knew of her illness. Whether she always wore a mask when collecting insects, he could not say.
- 11) Lai Yü-chung was a teacher in the same school as Wang Shu-chih, and a friend of hers. She was informed of her collapse by the girls immediately after their discovery. She was struck by the fact that the doctors said they had never seen a similar case.

- (P) There were no lesions, so far as she knew, in the mouth of Wang Shu-chih, her teeth were good, and she had not bought a new toothbrush shortly before her illness.
- (N) Regarding the precautions taken when insects were being collected, she had actually seen Wang Shu-chih working without a mask. She herself had not gone far afield for insects, and had always worn a mask. Other friends practically always wore them, and considered it rather risky on the part of Wang Shu-chih not to do so.
- (O) Everyone in and around the school was a bit scared at these events.

(The Commission did not close this session without offering its deepest sympathy to the bereaved).

#### Fourth Case

	<i>name</i>	<i>age</i>	<i>occupation</i>
1)	Wu Ching-ming	28	farmer and Constable of village
2)	Chiang Wên-ch'ang	22	farmer and Home Guard sergeant
3)	Wang Chiao-p'ing	43	farmer and Constable of village
4)	Sung Wei-i	-	pathologist

- 1) Wu Ching-ming, Constable of the village of Pei-Ching-Tzu, near the coast of Liaotung, said that the village people were holding a meeting after assembling to extinguish a straw fire caused by a child accidentally at one of the houses. Three American planes suddenly passed over, flying very low and very fast; the people took cover. He could not be sure of the type. (Other sources of information show that they were F-86 jets). He saw one of the trailing ones throw something out. Some said it was a bomb but he thought it was falling too slowly for that. It seemed to have a bright metallic colour and appearance, though it was hard to be sure, as the sun was shining (it was about 11 a.m.). It descended toward the Luan-Shih Hills. Chiang Wen-ch'ang and other Home Guard members went off to look for it, while he (Wu) rang up the District Government. Near what must have been the point of impact Chiang found great quantities of feathers which seemed to be those of hens, ducks and geese. The whole population of some 300 went out and worked for two hours collecting them. He saw that some were kept for examination and not destroyed.

(N) The wind was from the northwest on the morning that the object was dropped. When the people got to the part of the hills where the feathers were, they found that the feathers were distributed over a triangular dispersal area, the height of the isosceles triangle measuring about three-quarters of a kilometer and the base rather less than half a kilometer. It was supposed that the apex of the triangle represented the point of impact, since the feathers were most thickly distributed there, thinning out towards the base of the triangle gradually. The long axis of the triangle was in the line of the wind, the feathers spreading south-eastwards. No fragments of any container could be found near the presumed point of impact.

No insects of any kind were seen among the feathers.

Masks (or handkerchiefs) and chopsticks, had been prepared beforehand, and were used. Among the feathers some lumps of cotton-wool were found (the witness was not familiar with this, but called it "balls like the cotton flower itself").

No remains of bird skeletons were found anywhere on the hills.

(A) No trace of container, reaffirmed. No smell. All the feathers were small, downy, and moist; not as if from adult birds.

(M) He thought he saw the (metallic) object burst when about 30 ft. above the ground, but could not be sure, as he was 1 km. away. The total volume of feathers collected was enough to fill 14 large lemonade bottles.

2) Chiang Wên-ch'ang agreed in all details with the facts stated by the previous eye-witness,

(M) but saw no explosion.

(O) As the first to reach the feathers, with three fellow-members of the Home Guard, he noted them carefully. They were quite conspicuous, because largely white. The wind was rolling them gently along, but dispersal was greatly inhibited because they kept on catching in grasses, twigs, and plants.

He confirmed the low height and great speed of the planes.

Snow was still lying in the valleys of the Luan Shih Hills, and no trees were out anywhere.

- (Z) He did not touch any of the feathers, nor let anyone else do so. All were downy.
  - (O) No one in his village or any other Chinese village that he knew of ever used feathers for stuffing bed-mattresses or cushions. Any such things that they had were stuffed with cereal husks such as millet. They were not accustomed to soft cushions or beds.
- 3) Wang Chiao-p'ing, Constable of East Shuang-Shan village, knew the dead farmer T'ien Ch'eng-ho well. He generally had good health. When he heard what had happened he (Wang) was therefore very surprised, and went to enquire about it from Mrs. T'ien. Four days before his death T'ien had been in normal health, and had gone to his fields to manure them. These fields lay about a km. south of East Shuang-Shan village, and therefore not far from the northern end of the base of the triangular dispersal area. Seeing a few feathers, T'ien had picked them up and handled them, as something rather unusual, but then remembered that they might be dangerous and let them lie. Two days later he fell acutely ill. After his death others went and found the feathers just in the location he had mentioned, and burnt them.
- (A) T'ien had been warned of the danger, but forgot, and picked the feathers up out of curiosity.
  - (P) The dead farmer always shaved at home.
- 4) Sung Wei-i described the course of the disease which he, as physician, had followed. It was clinically identical with the other cases. The autopsy, which he described, was concordant with all the other pathological evidence. His findings of anthrax bacilli were confirmed by the bacteriological specialists of National Medical College, Shenyang (Mukden).
- (M) The Chinese peasant does not generally carry a handkerchief.

[The Commission did not close this session without offering its deepest sympathy to the bereaved].

**B) Questions Addressed after the Depositions of the Scientific Specialists  
(qualifications in App. TT).**

**1) Prof. Lu Pao-ling (entomologist)**

(N) The beetle *Ptinus fur* is a pest of stored grain, leather, etc. It ought to occur only in granaries, museums, and places where dried stuffs are stored. Yet here it appeared in large numbers in the open air. Moreover, it is a nocturnal animal, yet at Liaoyang it made its appearance in the daytime. Furthermore, subsequent efforts to discover individuals of this species in granaries and other places where it would be likely to be found, in the neighbourhood, completely failed. The whole phenomenon is therefore oecologically very peculiar.

No figures could be obtained as to swarm density, but it was certainly considerable. The appearance of the beetle showed no seasonal abnormality.

In size it is 3.4 – 4.4 mm. long.

The species is widely found in China, but it is nowhere a common insect. No previous records of any similar swarm of this insect are to be found.

**2) Dr. Chêng Kêng (bacteriologist)**

(Z) Emphasis is to be placed on the fact that whereas strains of anthrax bacilli isolated from various natural places show marked differences in the fermentation tests, especially with regard to behaviour towards maltose and salicin; in the present case every one of the suspected objects tested (flies, beetles, and feathers) was found although collected from different places, to be carrying bacilli with the same fermentation characteristics. This is a most unusual occurrence.

**3) Dr. Pai Hsi-ch'ing (pathologist and Vice-Minister of Health,  
Northeastern Region).**

(A) All cadavers of anthrax victims were cremated, although this is very contrary to traditional Chinese custom. Relations gave consent at the special request of the government. All possible additional precautions were taken to guard against infection.

(N) As regards anthrax among workers in the famous Chinese pig bristle industry, there had been no cases for a number

of years, a fact which was thought due to the widespread inoculation of the animals. So far, anthrax vaccine had not been available for man, but it might well be that it would be desirable to institute further researches on it immediately.

4) Dr. Fang Kang (bacteriologist, Central Research Institute of Health, Peking) (information received later).

Although in general opportunity did not permit of quantitative work on the various kinds of insects which were suspected of having been infected artificially, a rough estimation was carried out on the *Ptinus* beetles from the present series of incidents.

Six specimens of the beetle were ground up in 5 ml. of physiological saline and an inoculum of 0.004 ml. (one loopful) was transferred to each of several vessels of nutrient medium, with the aid of a loop of 3 mm. diam. There resulted from 15-20 colonies of anthrax bacilli in each case, from which it was possible to calculate that each insect had carried between 3,000 and 4,000 spores or bacilli.

C) Visit to the Pathological Laboratories of the National Medical College, Shenyang (Mukden).

Prof. Dr. Li P'ei-lin (pathologist) demonstrated slides showing:

- (a) haemorrhages in sub-arachnoidal spaces
- (b) anthrax bacilli in and around meningeal blood-vessels
- (c) acute perilymphadenitis and peribronchitis
- (d) anthrax bacilli in hilum lymph gland
- (e) anthrax bacilli in mucosa of small intestine
- (f) necrotic foci of colon with anthrax bacilli
- (g) pneumonic lung tissue
- (h) anthrax bacilli filling up a capillary in brain substance

On behalf of Prof. Lu Pao-ling specimens of the three arthropods concerned:

- (a) *Musca vicina*
- (b) *Tarentula* sp.
- (c) *Ptinus fur* were demonstrated.

It was particularly noted that the elytra of this beetle were exceptionally abundantly covered with chitinous bristles, which on breaking off could readily enter human respiratory passages, where they would act as inoculation needles.

#### D) Summary of Data on Selected Cases of Anthrax Victims.

Date of Death	Case No.	Name	Occupation	Mode of Infection
22/3/52	1	Ch'ü Chan-Yün	railwayman	flies ( <i>Musca Vicina</i> )
24/3/52	2	Wang Tzu-Pin	pedicab driver	?
14/4/52	3a	Wei Liu-Shih	housewife	beetles ( <i>Ptinus fur</i> )
8/4/52	3b	Wang Shu-Chih	school teacher	beetles ( <i>Ptinus fur</i> )
18/4/52	4	T'ien Ch'èng-Ho	farmer	feathers

Note: In connection with the foregoing it is of interest to note that in the "Textbook of Medicine" of Cecil & Loeb, 1951, it is said of pulmonary anthrax (p. 243) that "death may occur within 18 - 48 hrs." It goes on: "Absence of the severe symptoms usually accompanying acute infections and the rapidity with which collapse sets in are characteristic features of this form of anthrax. Not infrequently the disease is suspected only because the patient's occupation subjects him to inhalation of dust from hairs soiled with spores."

The same work says of gastro-intestinal anthrax that the organisms are carried to the mouth from external lesions. Here again the infection may be symptomless, collapse, cyanosis and apoplectic death terminating the infection within 1 - 3 days. Haemorrhages in myocardium and brain are seen on autopsy.

Individual susceptibility to anthrax seems to vary considerably. The mortality rate may be as high as 40%, even if septicaemia and meningitis do not supervene. The organism is sensitive to certain sulpha-drugs and antibiotics, if the necessity of giving them could be recognised in time.

#### E) Frequency of Occurrence of Cases of Anthrax according to Autopsy Records

- 1) Shanghai Medical College Hospital, Shanghai  
1928-1952 no. of autopsies 1178
- 2) China Union Medical College Hospital, Peking  
1916-1952 no. of autopsies 3942
- 3) National Medical College, Shenyang (Mukden)  
1940-1952 no. of autopsies 1093

In all these records, there was not one single case of acute pulmonary anthrax or acute haemorrhagic anthrax meningitis.