GHQ/SCAP Records (RG 331, National Archives and Records Service)

Description of contents

(1) Box no. 283

(2) Folder title/number: (4)
Technical Report No. 3

(3) Date: July 1946

(4) Subject:

Classification	Type of record
037, 212, 834	е

(5) Item description and comment:

Subject Is Interrogation of the Two Foremost Japanese Secret Writing Chemists by Civil Censorship Detachment

(6) Reproduction:

Yes

No

(7) Film no.

Sheet no.

(Compiled by National Diet Library)

SECRET

CIVIL CENSORSHIP DETACHMENT

CIS - MIS - GHQ - SCAP

APO 500

Technical Operations Section

July 10 1946

TECHNICAL REPORT NO. 3

SUBJECT: Interrogation of the two foremost Japanese secret writing chemists.

BAN Shigeo (Maj.) 伴繁夫少任。
ARIKAWA Shunichi (Capt.) 有川俊一大"尉

These two men were employed by the Japanese Ninth Military Laboratory (Noborito Institute). They were investigated and retained for questioning by the joint efforts of 5250 Technical Intelligence Company, G-2 and Civil Censorship Detachment G-2.

DISTRIBUTION:

Director of Intelligence WDGS
FBI
AFPAC-GHQ G-2,
5250 Tech. Intell. Co.
CIS

Special Note: The material in this document directly affects counter-intelligence activities of the U.S. government. Distribution will be limited to authorized personnel requiring such information in performance of their duties; unauthorized duplication or extraction prohibited.

SUMMARY OF INTERROGATIONS

On 10 June 1946 Shigeo BAN, former major in the Japanese Army, was brought to 5250 Tech. Intell. Co. Hq. in Tokyo for questioning about his former activities with the NOBORITO LABORATORY and Secret Writing Research. Present during the interrogation were Lt. Gelfond and Lt. Henning from Tech. Intell.; Capt. Paul R. Davis, chief of T.O.S.-CCD, and A. H. Blagg and B. Miyares, secret ink chemists from T.O.S., and T.O.S. interpreters. The following summary of the information was obtained from BAN by interrogation and intensive cross examination. Mr. Blagg did most of the questioning.

"I, Shigeo BAN (/半 禁 夫), graduated in 1927 from HAMAMATSU KOTO KOCYO CAKKO (Hamamatsu Higher Technological School) I maior

These two men were employed by the Japanese Ninth Military Laboratory (Noborito Institute). They were investigated and retained for questioning by the joint efforts of 5250 Technical Intelligence Company, G-2 and Civil Censorship Detachment G-2.

DISTRIBUTION:

Director of Intelligence WDGS

FRI

FBI
AFPAC-GHQ G-2,
5250 Tech. Intell. Co.
CIS

Special Note: The material in this document directly affects counter-intelligence activities of the U.S. government. Distribution will be limited to authorized personnel requiring such information in performance of their duties; unauthorized duplication or extraction prohibited.

SUMMARY OF INTERROGATIONS

On 10 June 1946 Shigeo BAN, former major in the Japanese Army, was brought to 5250 Tech. Intell. Co. Hq. in Tokyo for questioning about his former activities with the NOBORITO LABORATORY and Secret Writing Research. Present during the interrogation were Lt. Gelfond and Lt. Henning from Tech. Intell.; Capt. Paul R. Davis, chief of T.O.S.-CCD, and A. H. Blagg and B. Miyares, secret ink chemists from T.O.S., and T.O.S. interpreters. The following summary of the information was obtained from BAN by interrogation and intensive cross examination. Mr. Blagg did most of the questioning.

Research made on photo equipments were begun in 1938 and did not end till 1945. Major MARUYAMA () was chiefly responsible for the work in this section. As far as I know, he was in the process of construction two types of cameras: one, a small sized 35 mm Leica model; the other, a Miniflex model. The Fuji Film Co. supplied the Army with most of its films and developers for use in

the tropics. I believe they were of excellent quality. Information as to their manufacture and chemical formula may be procured by inquiring at the Fuji Film Co.

While at Noborito, I also had some experience with ultra-violet ray lamps. One of my subordinates, Capt. Shunichi ARIKAWA, conducted the research. Though I am not as well versed in this matter

as he is, I can give a general account of the processes.

I think that the ultra-violet ray lamps produced by the Shimatsu Mfg. Plant were the most outstanding. The Shimatsu Plant made two types. One was a cabinet model which was operated on 100 volts AC-DC. Since direct current is very seldom used in Japan, we solely relied on alternating current for power. As a result of this, a transformer was not used. The other model was a portable set which was destined to be used in combat. When circumstances did not permit the use of alternating current, this set was operated by batteries or a generator which, by pushing the foot-pedals, generated electrical energy.

We also used as an analyzer a Matsuda model ultra-violet ray lamp, which was chiefly made for medical purposes. As the filter attached to this lamp had such fine merits, it (the filter) saw service in combat. One of the uses found for it was to couple it to a flashlight which then enabled an individual to read and write invisible messages due to its powers of making invisible lines fluoresce. The instrument used in the writing of invisible messages was a special writing pencil tested in our Noborito Laboratory.

We had another lamp which was a low pressure mercury lamp. Its manufacturer was the Kanegafuchi Kogyo Kabushiki Kaisha.

Lastly, we made some studies on a Wood's Filter used in America. This one very closely resembles the Kanegafuchi model.

The equipment mentioned in this statement was used by the Kempeitai in the performance of their duties in counter-intelligence and detective work. Tests on chemical compounds, used as a medium in detecting secret inks with the aid of ultra-violet rays, were conducted by our laboratory mainly in the interests of the Kempeitai.

I took keen interest in the following publications: The Japanese translation of a book published in Germany entitled "Chemical Analysis with OXIN", "Black Chamber", "Criminal Investigation", written by Lucas, "American Ethics", and the "Police Journal" published in America.

I have probably developed a total of nearly ten letters written

patteries or a generator which, by pushing the root-pedals, gener-

ated electrical energy.

We also used as an analyzer a Matsuda model ultra-violet ray lamp, which was chiefly made for medical purposes. As the filter attached to this lamp had such fine merits, it (the filter) saw service in combat. One of the uses found for it was to couple it to a flashlight which then enabled an individual to read and write invisible messages due to its powers of making invisible lines fluoresce. The instrument used in the writing of invisible messages was a special writing pencil tested in our Noborito Laboratory.

We had another lamp which was a low pressure mercury lamp. Its manufacturer was the Kanegafuchi Kogyo Kabushiki Kaisha. Lastly, we made some studies on a Wood's Filter used in America. This one very closely resembles the Kanegafuchi model.

The equipment mentioned in this statement was used by the Kempeitai in the performance of their duties in counter-intelligence and detective work. Tests on chemical compounds, used as a medium in detecting secret inks with the aid of ultra-violet rays, were conducted by our laboratory mainly in the interests of the Kempei-

I have heard it mentioned that some information on secret ink formulae was brought in from Germany. However, I profess to have no knowledge of the facts you people have brought forth before me nor have I ever seen the formulae for secret inks. Capt. Shunichi ARIKAWA (有间传一大陆) carried out extensive research on secret writing materials.

I took keen interest in the following publications: The Japanese translation of a book published in Germany entitled "Chemical Analysis with OXIN", "Black Chamber", "Criminal Investigation", written by Lucas, "American Ethics", and the "Police Journal" published in America.

I have probably developed a total of nearly ten letters written in secret ink, including two Chinese secret ink letters. Table salt

and starch were used for their secret writing fluids.

During the war, I was engaged in censorship but I only executed special type of censoring, that is, the nature of my work called for chemical analysis and detection of secret inks on letters and documents, performed only at the request of Kempei-tai or higher government authorities. My superior was Col. YAMADA (),) 五 大 行. I do not know the methods which were used in the censoring of mails, but I do believe that the Kempei-tai was concerned with the censorship work. We technicians did not concern ourselves with anything other than the functions which were in connection with our work.

As far as I know, mail was censored at Tokyo Central Post Office and there probably were two ultra-violet ray lamps in use there. Work underlying the detection of secret inks was not scienI once went to the Tokyo Central Post Office but I have forgotten how censorship was operated and cannot recall which floor it was on. I believe the postmaster can give you that information. The ultra-violet lamp used at the post office probably was a Shimatsu model. I don't know what became of it, but I think the postmaster can tell you. Furthermore, I do not know who was in charge of the machine.

The procedure used in opening letters for censorship was to insert the edge of a knife underneath the flap and loosen it. We knew that letters could be steamed open but we seldom used that method.

In the event that secret writings were detected, the action taken by us (technicians) was to merely study the type of detector and methods used. Therefore, I have no knowledge of anything other than what was done.

I also did some work with infra-red rays. These rays were mostly used on photographs and maps. Major MARUYAMA (九山小在) was chiefly concerned with work of this nature.

The Kempei-tai was practically the sole agent which handled foreign mail. I do not have any knowledge of how the Japanese espionage agents stationed abroad kept in contact with their homeland. Furthermore, I have no idea as to where its various headquarters were located nor the location of its chief.

While I was at the 9th Military Chemical Research Laboratory of Noborito, there was a Mr. Imai there who made pencils for invisible writing. These pencils were identical with ordinary ones except they used a white lead. Messages were written on paper and when ultra-violet rays were thrown upon the lines, they fluoresced clearly.

Due to this superb quality, messages could be easily written in the dark with the aid of an ultra-violet filter flashlight. Likewise, the reader could easily see the message with the aid of his special flashlight. However, the flashlights in both cases must be equipped with a Matsuda filter.

The chemicals and formula for the white lead are as follows:

30% Anthracene 30% White Clay

40% Wax (high melting point)

I have written two of the three military-secret circulars you have shown me. (Note: These were intercepted by TOS/CCD). Capt. ARIKAWA (有月 八方) is author of the circular on "Hiiaki" (上有方). I probably have written approximately a total of ten military-secret circulars. (Later the number of circulars was reduced to five or six). I do not have any knowledge now as to who was responsible for the orders to dispose of important documents by burning them as soon as the war terminated. In compliance with a directive from SCAP, we submitted to SCAP a written report in English

I also did some work with infra-red rays. These rays were mostly used on photographs and maps. Major MARUYAMA (凡山小红) was chiefly concerned with work of this nature.

The Kempei-tai was practically the sole agent which handled foreign mail. I do not have any knowledge of how the Japanese espionage agents stationed abroad kept in contact with their homeland. Furthermore, I have no idea as to where its various headquarters were located nor the location of its chief.

While I was at the 9th Military Chemical Research Laboratory of Noborito, there was a Mr. Imai there who made pencils for invisible writing. These pencils were identical with ordinary ones except they used a white lead. Messages were written on paper and when ultra-violet rays were thrown upon the lines, they fluoresced clearly.

Due to this superb quality, messages could be easily written in the dark with the aid of an ultra-violet filter flashlight. Likewise, the reader could easily see the message with the aid of his special flashlight. However, the flashlights in both cases must be equipped with a Matsuda filter.

The chemicals and formula for the white lead are as follows:

30% Anthracene 30% White Clay

40% Wax (high melting point)

The reason for my not giving a detailed account of the nature of my work in a previous interview with Lt. HENNING of TIC at Inamura, Kamiina-gun, Nagano-Ken (是 野東上伊利力), as I did today, is that it would have proved detrimental to the interests of both me and my country.

Even when I was a moned to appear in Tokyo on this occasion, I had an interview with Col. YAMADA beforehand. Col. YAMADA advised me on various matters. However, he did not instruct me on what not

to divulge. As he was my chief at Noborito, it was solely out of respect and for personal matters that I had an interview with him.

I am now affiliated with the Agricultural Society Factory of Ina-mura (伊邦) 本 農業 全工 t湯), in the capacity of factory superintendent. Some of the products turned out here are as follows: Spades, hoes, matches, soy-sauce, rubber, cement, dry cleaning fluid, cosmetics, etc. The raw materials are obtained from the Regional Office and Agricultural Society, in addition to some of the military supplies that were turned over to us. The buildings now being used were formerly the Ina-mura factory buildings of the Noborito Research Laboratory.

I do not have any secret writing pencils in my possession now but I believe it is possible to obtain them at the former Military

Supply Depot (元) 连事 補給所) at Itabashi."

During the latter part of Ban's interrogation, Lt. Gelfond sent a party of his men to bring former Japanese Army Captain ARIKAWA, Shunichi. ARIKAWA was located by the information given by Ban and brought to 5250 Tech. Intell. Co. while Ban was still there. The two men were not allowed to see each other.

Following is a summary of the information obtained from ARIKAWA:

"I graduated from Kiriu Higher Technical School (大同生 学 文文) in 1938, graduated from Tokyo Technical University (東京工業大学) in 1941, then did research at the university for a year. I majored in applied chemistry at Kiriu and dye chemistry at Tokyo Tech. Univ. In March 1942, I joined the Signal C. of Eastern 103 Butai (東京 百 三 部 成), entering Noborito Institute in October 1941. My present address is:

ARIKAWA, Shunichi 248 Kamifuda, Chofu-machi, Kitatama-gun, Tokyo.

At Noborito my work consisted chiefly of preparing new secret inks and analyses of inks used in secret writing. When I entered Noborito, the secret writing pencil was already made and I tried to improve on it but didn't get much done because of lack of material.

About 1941 I was given a sample of German secret ink brought back by a spy. I found that tungsten was the metal used but I don't know what the rest of the compound was. I analyzed a sample of American secret ink also brought back by a spy. Titanium was the metal used.

In my research I used a Japanese translation of a book called "Analysis of Metals with Oxin" as reference quite a bit. All my work was done on my own without any hint or help from Germany or any other source.

Dyes intermediates and leuco dyes were not used as secret inks. I gave a report on all my research to Col. YAMADA probably about

During the latter part of Ban's interrogation, Lt. Gelfond sent a party of his men to bring former Japanese Army Captain ARIKAWA, Shunichi. ARIKAWA was located by the information given by Ban and brought to 5250 Tech. Intell. Co. while Ban was still there. The two men were not allowed to see each other.

Following is a summary of the information obtained from

ARIKAWA:

"I graduated from Kiriu Higher Technical School (木同 生 部等工業学校) in 1938, graduated from Tokyo Technical University (東京工業大学) in 1941, then did research at the university for a year. I majored in applied chemistry at Kiriu and dye chemistry at Tokyo Tech. Univ. In March 1942, I joined the Signal C. of Eastern 103 Butai (東部 三部 旅 entering Noborito Institute in October 1941. My present address is:

ARIKAWA, Shunichi 248 Kamifuda, Chofu-machi, Kitatama-gun,

At Noborito my work consisted chiefly of preparing new secret inks and analyses of inks used in secret writing. When I entered Noborito, the secret writing pencil was already made and I tried to improve on it but didn't get much done because of lack of mate-

About 1941 I was given a sample of German secret ink brought rial. back by a spy. I found that tungsten was the metal used but I don't know what the rest of the compound was. I analyzed a sample of American secret ink also brought back by a spy. Titanium was

In my research I used a Japanese translation of a book called the metal used. "Analysis of Metals with Oxin" as reference quite a bit. All my work was done on my own without any hint or help from Germany or

Dyes intermediates and leuco dyes were not used as secret inks. any other source. I gave a report on all my research to Col. YAMADA probably about

the middle of last September. The secret writing pencil is made like ordinary color pencils. The white lead is composed of 50% anthracine, 20-30% white wax (not

During the war I saw a letter going from France to French Indovery sure), clay, 20-30%. China with a blue stripe across the page. That probably was made by

I did not do any work on microdots but was once shown a sample German censorship. of one on a picture postcard by Maj. MARUYAMA. Maj. MARUYAMA was chief of photography. I don't know where he is nor what he is doing

At the end of the war, although I wasn't given any orders, I now. used my own discretion and burned all papers except those on oxin analyses. I also burned the secret writing pencil. (Note: Arikawa gave an account of Japanese secret inks and methods of development which is summarized below under the heading of "Technical Information").

I am now working at Toyo Ink Factory, doing experiments on glue. The address is:

TECHNICAL

Arikawa was asked to name the various Japanese secret inks and methods of development for each in order of their degree of secu-rity.

He named the following inks beginning with the most secure one:

(1) Zinc Acetate in concentrations ranging from .05% to .1%, the developer being alkaline DPTC.

(2) Cobalt malonate in concentrations of .05% to .1%, the developer being a-nitroso-b-naphthol.

(3) Copper malonate in similar concentrations, using DPTC as a developer.

Two days after the interrogation, Arikawa came back of his own accord with some additional information which he said he had forgotten. He claimed at this time that the most secure of all Japanese inks was cadmium naphthalene sulphonate

in aqueous solution of a strength varying from 0.5% to 0.3%; the developer for this ink is

which he said is used in the proportion of 0.05g/100 cc of 2N KOH or alcoholic KOH sol. The color of the developed ink is violet which changes to red brown on a yellow background after 5 minutes. This ink Arikawa stated was developed in 1944 and reported to the Japanese authorities, but as far as he knew it was never used.

He said that cobalt naphthalene sulphonate and cadmium naphthalene sulphonate were excellent inks also and that they could be developed by a-nitroso-b-naphthol and DPTC, respectively.

Regarding protection of secret writing, Arikawa stated that their original method of protection, consisting in dipping the screed in benzine, was unsatisfactory. He added that a better method, developed by him, consisted in dipping the paper in a saturated solution of sodium bicarbonate in 50% alcohol-water

methods of development for each in order of their degree of security.

He named the following inks beginning with the most secure one:

(1) Zinc Acetate in concentrations ranging from .05% to .1%, the developer being alkaline DPTC.

(2) Cobalt malonate in concentrations of .05% to .1%, the developer being a-nitroso-b-naphthol.

(3) Copper malonate in similar concentrations, using DPTC as a developer.

Two days after the interrogation, Arikawa came back of his own accord with some additional information which he said he had forgotten. He claimed at this time that the most secure of all Japanese inks was cadmium naphthalene sulphonate

in aqueous solution of a strength varying from 0.5% to 0.3%; the developer for this ink is

which he said is used in the proportion of 0.05g/100 cc of 2N KOH or alcoholic KOH sol. The color of the developed ink is violet which changes to red brown on a yellow background after 5 minutes. This ink Arikawa stated was developed in 1944 and reported to the Japanese authorities, but as far as he knew it was never used.

He said that cobalt naphthalene sulphonate and cadmium naphthalene sulphonate were excellent inks also and that they could be developed by a-nitroso-b-naphthol and DPTC, respectively.

Regarding protection of secret writing, Arikawa stated that their original method of protection, consisting in dipping the screed in benzine, was unsatisfactory. He added that a better method, developed by him, consisted in dipping the paper in a saturated solution of sodium bicarbonate in 50% alcohol-water.

For the detection of unknown inks, Arikawa prescribed iodine fuming, oxine, silver nitrate, quinine sulfate solution and heat. He said that for identification of actual samples of secret inks, he used the spectroscope. When asked if he had ever intercepted or developed any of the secret messages written by the enemy, he replied that he thought that type of work was done by the Kempeitai; that his work consisted mostly of research and that he reported the results of his findings to Maj. Ban, who in turn passed on the information to the appropriate government agencies. He claimed that he had no direct personal contact with any of the agencies or any liaison.

In reply to a question, Arikawa said that he had never done any work on Russian inks but that he had heard that the Chinese in

Manchuria had intercepted some Russian secret messages written with a lead ink, probably lead acetate.

EVALUATION

A. Shigeo BAN

Former Japanese Army Major, employed at the Ninth Military Chemical Research Laboratory; appeared to be 45 years old with an intelligence and pleasant manner. During the questioning, he was calm and composed and his answers were planned and deliberate. He was reluctant and made several attempts to withhold information, professing ignorance of the facts. It was only after seeing the Noborito documents (Note: These documents dealing with Japanese secret inks had been intercepted previously by TOS) that he finally admitted having special knowledge of secret inks. However, his knowledge seemed to be rather superficial since according to his own statement, most of the work on secret inks had been done by Arikawa. This statement was later confirmed by Arikawa.

B. Shunichi ARIKAWA

Our first impressions of ARIKAWA Shunichi were discouraging. He was unimpressive, short, shabby and not too intelligent looking. During the interrogation, he displayed a surprising air of frankness and readiness to talk. As the questioning progressed, it was apparent that our initial judgment of his intelligence had been erroneous. Arikawa proved himself to be brilliant and his knowledge of analytical chemistry and complexions was wide in scope. His answers were straightforward and his evaluation of inks and techniques objective. He told us he was extremely interested in pure chemical research and that he regarded his experience with secret inks as a dark chapter of his life, forced upon him by the war. Nevertheless, he personally claimed credit for most of the Japanese research in secret inks and declared that his former chief, Maj. Ban, was incompetent and had little knowledge of secret inks, which was congruent with our evaluation of Ban.

C. Comment on Technical Information

Apparently the Japanese lacked general reagents for the detection of secret ink. The information obtained in this interrogation regarding the use of iodine fumes, oxine, and silver nitrate as general reagents is not new. Apparently they did not have a liquid iodine reagent, nor did they use a general reagent for basic substances or for oxidizing and reducing agents. They seemed to be familiar with the use of quinine as an ink, although apparently they were not using it. Quinine sulphate plus ultraviolet light was used

secret inks had been intercepted previously by TOS) that he finally admitted having special knowledge of secret inks. However, his knowledge seemed to be rather superficial since according to his own statement, most of the work on secret inks had been done by Arikawa. This statement was later confirmed by Arikawa.

B. Shunichi ARIKAWA

Our first impressions of ARIKAWA Shunichi were discouraging. He was unimpressive, short, shabby and not too intelligent looking. During the interrogation, he displayed a surprising air of frankness and readiness to talk. As the questioning progressed, it was apparent that our initial judgment of his intelligence had been erroneous. Arikawa proved himself to be brilliant and his knowledge of analytical chemistry and complexions was wide in scope. His answers were straightforward and his evaluation of inks and techniques objective. He told us he was extremely interested in pure chemical research and that he regarded his experience with secret inks as a dark chapter of his life, forced upon him by the war. Nevertheless, he personally claimed credit for most of the Japanese research in secret inks and declared that his former chief, Maj. Ban, was incompetent and had little knowledge of secret inks, which was congruent with our evaluation of Ban.

C. Comment on Technical Information

Apparently the Japanese lacked general reagents for the detection of secret ink. The information obtained in this interrogation regarding the use of iodine fumes, oxine, and silver nitrate as general reagents is not new. Apparently they did not have a liquid iodine reagent, nor did they use a general reagent for basic substances or for oxidizing and reducing agents. They seemed to be familiar with the use of quinine as an ink, although apparently they were not using it. Quinine sulphate plus ultraviolet light was used as a detector for acid inks.

The main technical discovery in this interview was the use of un-ionizeable metallic-organic compounds as inks by the Japanese. Arikawa's favorite inks are of this type. The use of a basic (KOH) developer in these cases seems to be intended to break the complexion of the metal to the hydroxide which is subsequently developed by using a specific reagent.

The use of the bicarbonate alcoholic solution as a protector and its effects on various inks is being studied by TOS. The Germans used a similar technique of protection. If the Germans ever transmitted any information on secret inks to the Japanese, no information was passed on to Ban and Arikawa.