

Photo 8 shows foundry sand filling into mould box  
(no binder and no moisture...just sand)

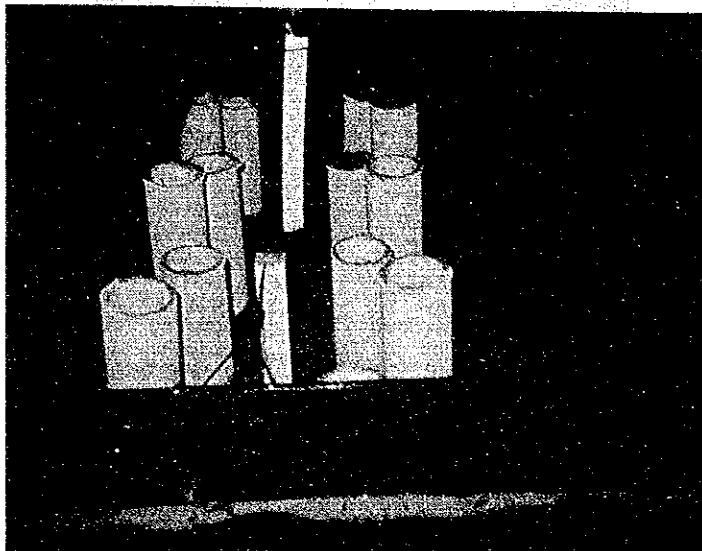


Photo 9 shows vacuum pump  
(vacuuming about 400 mm in Hg continuously till the poured metal solidification)



Photo 10 shows a complete mould ready for casting  
(polyvynil asetate film is covered for maintenance of vacuum suction)

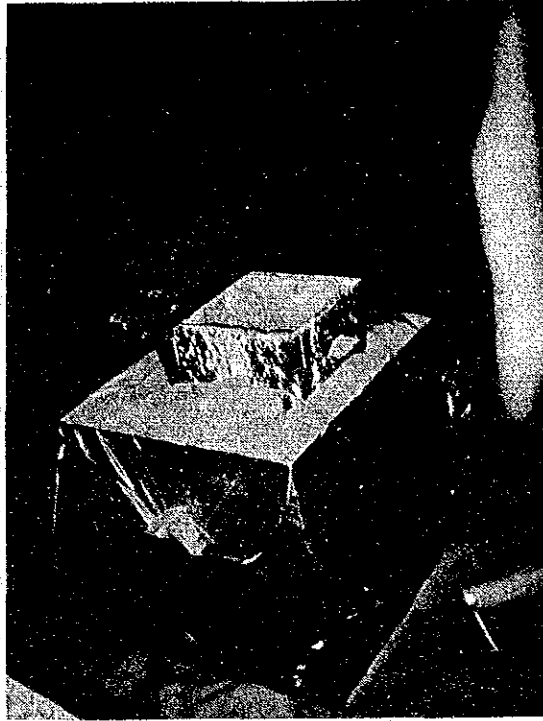


Photo 11 shows molten spheroidal graphite iron is under pouring



Photo 12 shows shaking out castings  
(the used sand can perfectly be used again & again)

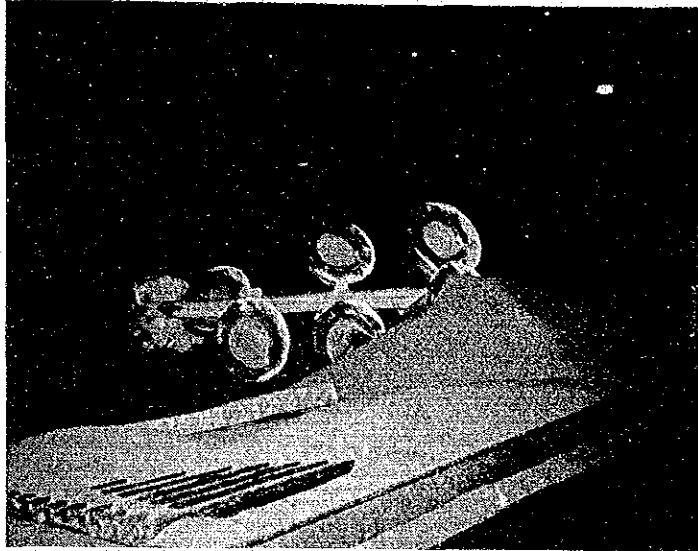


Photo 13 shows as cast just after the shaking out

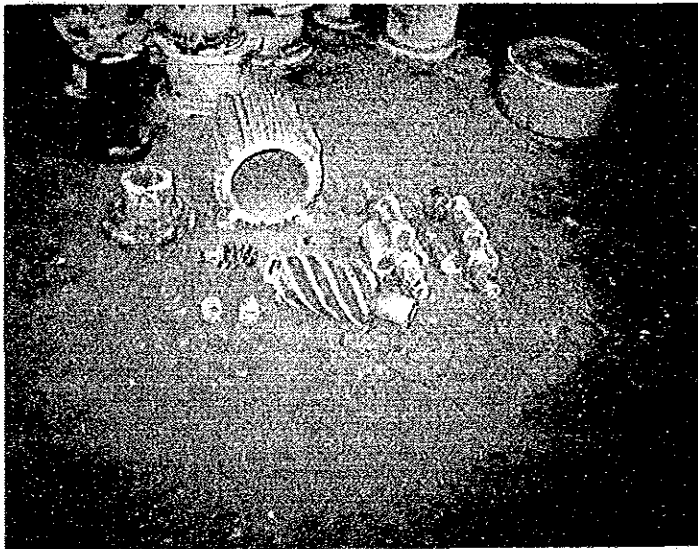


Photo 14 shows simple cleaning work by manually

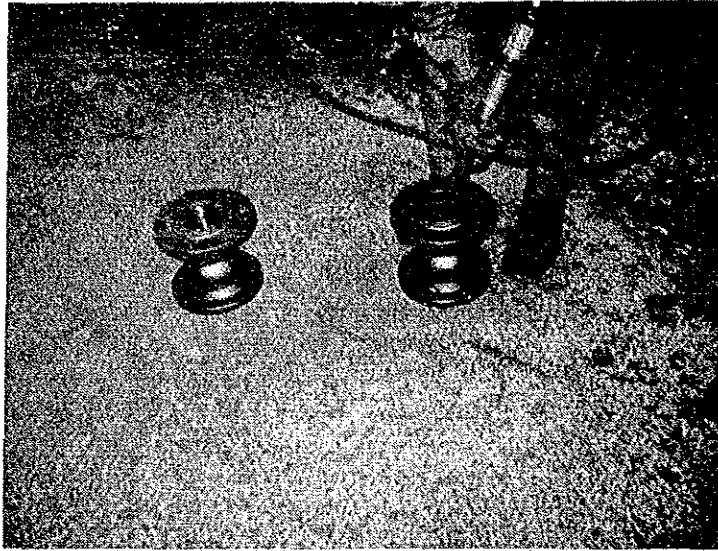
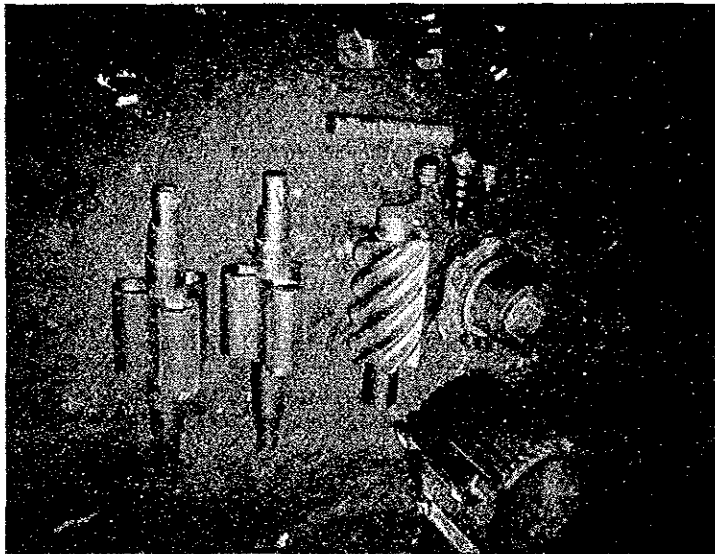
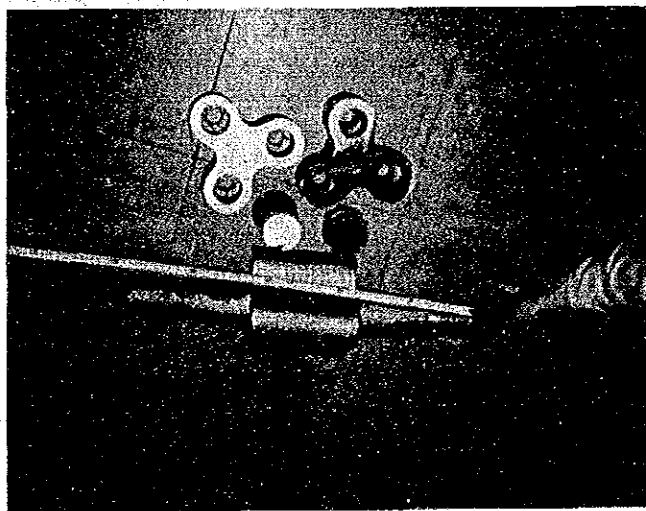
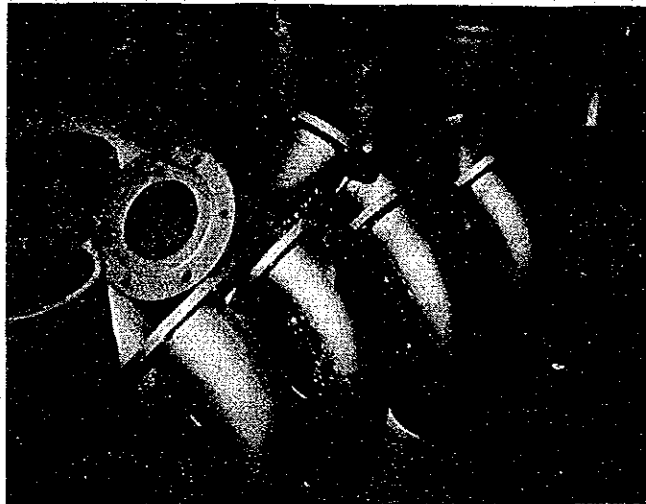
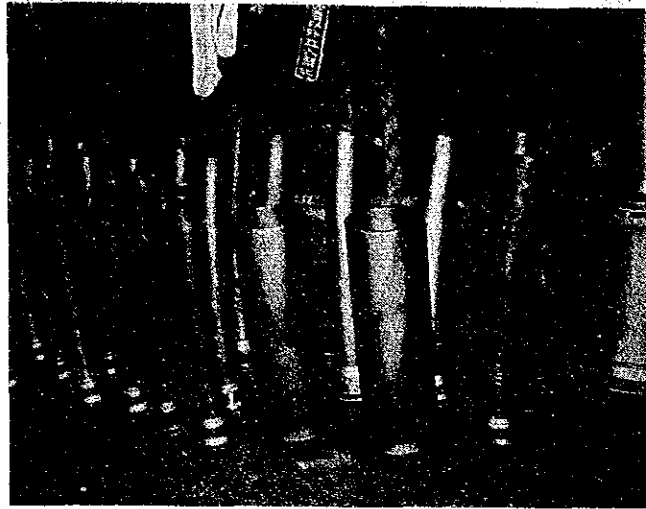
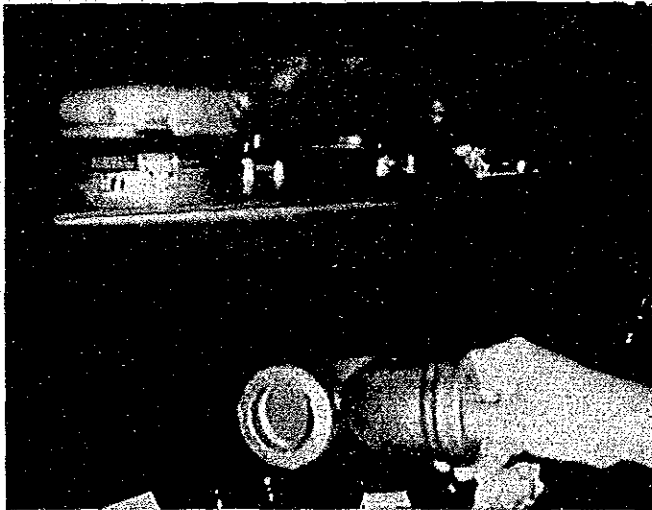
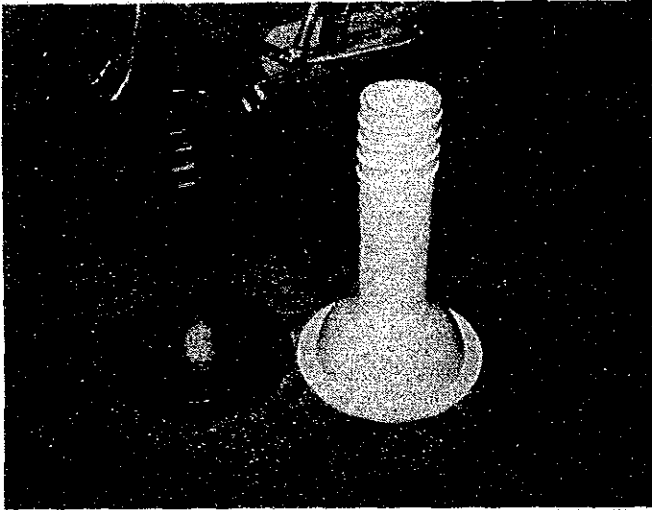
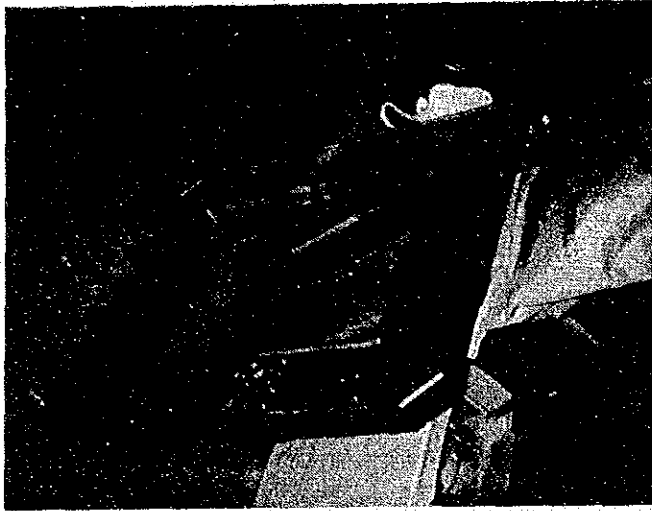


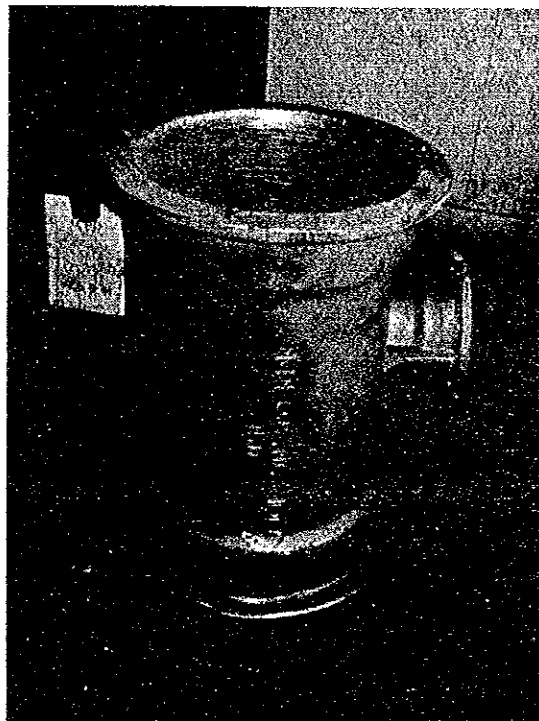
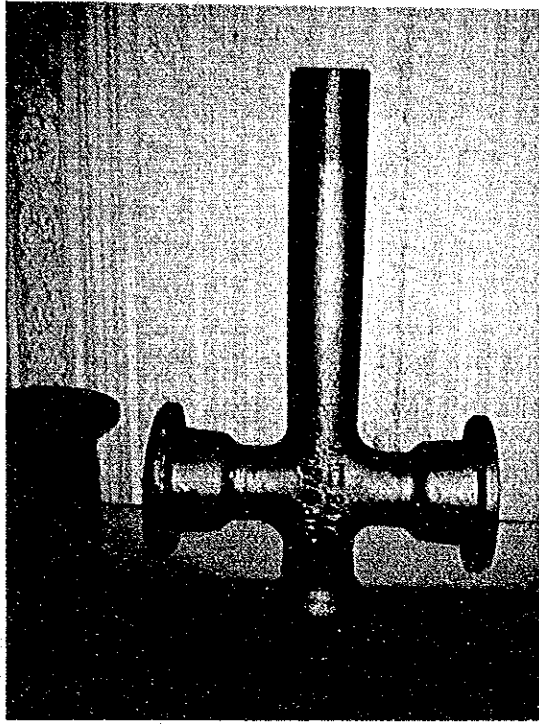
Photo 15 shows examples of as cast



Phot 16 onwards are examples of castings by this process







JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

P. O. BOX 216 MITSUI BLDG  
2-1, NISHI-SHINJUKU, SHINJUKU-KU TOKYO  
160 JAPAN

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Date: September 7, 1985

Dear Sir,

I am writing to you, hoping that you have been actively engaged in your work in excellent health and in high spirits since you returned to your country after training in Japan.

It is a pleasure for me to inform you that the Japan International Cooperation Agency is doing utmost efforts to expand and improve its technical training program year after year. We have accepted a total of 53,681 participants from developing countries during the period of 1954 - 1984. In 1985, we plan to accept about 4,300 participants and conduct 199 group training courses and seminars.

In programing future training courses, we endeavour to place emphasis not only on increasing the number of participants to meet the augmenting requests from developing countries but also on improving the quality of training programs.

In this connection we would like to know how and to what extent the ex-participants in our training courses/seminars are making use of knowledge and technology acquired in Japan, and we also would like to learn any suggestion or recommendation they may have for the betterment of our courses.

It is also important to brush-up and up-grade what they learned in Japan. For these purposes, JICA dispatches technical follow-up teams to participating countries every year to provide you with information on the latest developments in the related areas.

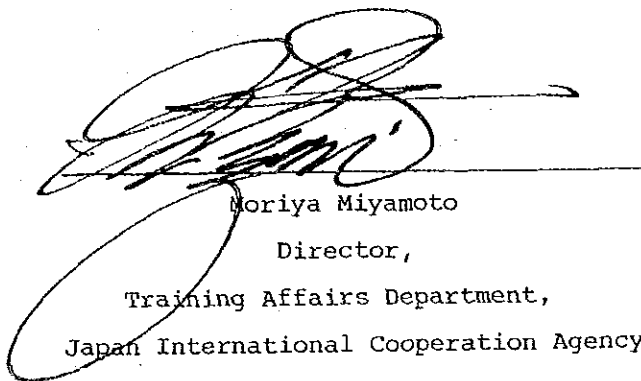


As such JICA has decided to send to your country a follow-up team in the field of your expertise. Details of its schedule and the questionnaire are enclosed herewith.

We would be grateful if you could extend your kind cooperation to our visiting team during its stay in your country.

We are really looking forward to seeing you.

Yours faithfully,



Moriya Miyamoto  
Director,  
Training Affairs Department,  
Japan International Cooperation Agency

Follow-up Team for Ex-participants of the Group Training Course in  
Electrical Steel Making Engineering

1. Objective: The follow-up Team will visit ex-participants' organization and related organs for the purpose of offering guidance through consultation, evaluating the results of training in Japan and assessing problems and needs in participants' countries as well as for improving JICA's training programme.
2. Period: From 7th of October, 1985 to 28th of October, 1985.  
For details, please refer to the tentative schedule attached herewith.
3. Members:
  - a. Mr. Jutaro Shimogo  
Acting General Manager,  
Overseas Technical Cooperation Dept.,  
Daido Steel Co., Ltd.
  - b. Mr. Ryuzo Komatsu  
Engineer in charge of Continuous Casting,  
1st Production Engineering Dept.,  
Aichi Steel Works, Ltd.
  - c. Mr. Kanji Takeuchi  
Officer, Training Div.,  
Nagoya International Training Centre,  
JICA

Cooperation Requested to You

1. We would like to request you to prepare a short report according to Questionnaire and send it to the following address so that your report may reach the follow-up team before it will meet you.
2. We would like to visit some organizations in your country according to the schedule.  
The appointment with the persons to meet and about the date and the place of the meeting will be arranged by the Embassy of Japan.

窓口機関  
関係機関用

(A)  
QUESTIONNAIRE

ON

THE GROUP TRAINING COURSE

IN

ELECTRICAL STEEL MAKING ENGINEERING

FOR

QUESTIONNAIRE TO PARTICIPANTS NOMINATING ORGANIZATION

1. Please tell us the procedures of nominating the participants, from your receipt of the Information on Group Training Course in Electrical Steel Making Engineering (GI) sent from the Embassy of Japan; and the time requirement at each procedure.

Example:

- a. Embassy of Japan
- b. Participants nominating organization
- c. Ministry of Industry
- d. Organization applicant belong to
- e. Applicant

2. As for the above procedures
  - a. Same procedures from year to year ( )
  - b. Subject to change ( )  
If subject to change, list the reasons

3. Circle one matched with the selection of the applicants for the participation in the course in your country.
  - a. many number of organization related to steel making
  - b. many applicants
  - c. small number of organizations related to steel making
  - d. small number of applicants
  - e. organization related to steel making is rather far away from the capital

4. Indicate your policy ground for the selection standard of the applicants.
  - a. selected judging from the contents of GI ( )
  - b. selected without them ( )
  - c. others

List the reasons if it is a. or b. in the above.

5. Do you think the GI of the Group Training Course in Electrical Steel Making Engineering clearly describes the objectives, target of the training and the content of the programme? If you consider the information not clear, could you point them out? Could you tell us your opinions also concerning the timing that GI is sent to your organization?
  
6. Please tell us the procedures until a participant will leave your country for Japan, from the time your organization receives the notice of participant's acceptance, and the time requirement? Please tell us also your opinions about the the timing that your participant's nomination is accepted.
  
7. What reportings will be done to your organization, when the participant finishes the training in Japan and return to your country? Please tell us the methods and content of that reporting. If no reporting will be done, how does your organization confirm the accomplishment of training?

8. With reportings made by participants after finishing the this Group Training Course and return to your country, how does your organization look at the position of this training opportunity in view of the length of training, contents and level of training? Please give us your suggestions and comments of this Group Training Course in Electrical Steel Making Engineering.
9. Indicate your evaluation of the Group Training Course in Electrical Steel Making Engineering in your country.
- a. excellent
  - b. good
  - c. not so good
- Describe the reasons for your above choice.
10. Give your suggestions and comments on the follow-up activities for the ex-paticipants.
11. Give your observations about the future demands for applying to this training course and their back ground information.

Thank you very much for your cooperation!

研修員

所属機関用

(B)  
QUESTIONNAIRE

ON

THE GROUP TRAINING COURSE

IN

ELECTRICAL STEEL MAKING ENGINEERING

FOR

I. The Group Training Course on Electrical Steel Making Engineering, JICA

1. Indicate your evaluation of the course

- 1) excellent
- 2) good
- 3) not so good

any comments

2. Circle one matched with the selection of the applicants for the participation in the course.

- 1) difficult to select one due to the large number of applicants
- 2) easy to select one due to the small number of applicants
- 3) others (list other reasons)

3. Indicate your policy ground for applying to the training course and the selection standard of the applicants.

- 1) selected with policy and standard
- 2) selected without them
- 3) others

any comments

4. Give your suggestions and comments on the technical training.

5. Give your suggestions and comments on the follow-up activities for the ex-participants.



II. General situation of steel in your country and your organization

1. Indicate any probable problem according to the following items, which you think will be a barrier to the development of the electrical steel making industry, and explain them respectively.

(1) raw materials & sub-materials

(2) equipment

(3) energy

(4) talent(technical experts and apprentice etc.)

(5) research, development and training

(6) quality control

(7) marketability

2. Annual demand of steel in your country

1) plain carbon steel \_\_\_\_\_ ton/year

2) other steel \_\_\_\_\_ ton/year

3. Annual production of steel in your country

1) plain carbon steel \_\_\_\_\_ ton/year

2) other steel \_\_\_\_\_ ton/year

4. Annual production of steel in your organization

1) plain carbon steel \_\_\_\_\_ ton/year

2) other steel \_\_\_\_\_ ton/year

5. Number of steel making organizations in your country and their name if possible

6. Number of employees at your organization

7. Number of employees at your plant & engineers at each shop

8. Organizational chart at your plant

III. Technical Matters

1. Steel making

- 1) arc furnace \_\_\_\_\_ ton capacity \_\_\_\_\_ KVA \_\_\_\_\_ furnace diameter (mm)
- 2) ditto
- 3) ditto
- 4) ditto
- 5) ditto

other furnaces

\* problems of furnace, if any

\* electric power consumption / ton of steel \_\_\_\_\_ KWH

\* electrode \_\_\_\_\_ domestically produced \_\_\_\_\_ imported from \_\_\_\_\_

\* electrode diameter \_\_\_\_\_

\* electrode consumption / ton of steel \_\_\_\_\_ kg

\* oxygen consumption / ton of steel \_\_\_\_\_ kg

\* Oxygen lancing pressure \_\_\_\_\_ kg/cm<sup>2</sup>

\* oxygen lancing pipe \_\_\_\_\_ domestically produced \_\_\_\_\_ imported from \_\_\_\_\_

\* lining materials (refractories) \_\_\_\_\_ domestically produced or  
imported from \_\_\_\_\_ & its kind of material

\* life of lining \_\_\_\_\_ heats/roof \_\_\_\_\_ /wall \_\_\_\_\_ /bed

\* refining \_\_\_\_\_ ladle \_\_\_\_\_ vaccum

\* steel scrap \_\_\_\_\_ domesticall supplied \_\_\_\_\_ imported \_\_\_\_\_ %

\* ferro-alloys \_\_\_\_\_ domestically supplied \_\_\_\_\_ imported

eg. Fe-Si

Fe-Mn

Fe-Cr

-Mo

-Ni

\* tap to tap time \_\_\_\_\_ hours (example of type of steel)

\* tapping temperature.... (example of type of steel)

\* problems of steel making if any

\* electric power rate/KWH if possible

Ingot making

Ingot mould \_\_\_\_\_ domesticall produced \_\_\_\_\_ imported from

Life of ingot mould \_\_\_\_\_ kg/ton of steel or \_\_\_\_\_ times of teeming

Size of ingot \_\_\_\_\_ ton

Problems of ingot making if any

If possible, chemical composition of ingot mould

Continuous casting

\_\_\_\_\_ type x lines speed \_\_\_\_\_ M/min.

Water consumption \_\_\_\_\_ M<sup>3</sup> / line

Immersion nozzle \_\_\_\_\_ domestically produced

Problems of continuous casting if any

Rolling .....this is not the main topic for the follow-up team  
however, if there is any problem, please state it  
with back ground information

Chemical composition of steels you produce

Thank you very much for your cooperation!

研修員用

(C)  
QUESTIONNAIRE  
FOR  
Ex-participants  
IN  
GROUP TRAINING COURSE  
IN  
ELECTRICAL STEEL MAKING ENGINEERING

Country \_\_\_\_\_

Name \_\_\_\_\_

Age \_\_\_\_\_ Sex \_\_\_\_\_ M or F \_\_\_\_\_

Home Address \_\_\_\_\_  
\_\_\_\_\_

Year of participation \_\_\_\_\_

Occupations

Name of your organization \_\_\_\_\_  
\_\_\_\_\_

Address of your organization \_\_\_\_\_  
\_\_\_\_\_

Your present post \_\_\_\_\_



QUESTIONNAIRE (C) To ex-participants, Electrical Steel Making Engineering

1. Indicate the usefulness of the technical training course by circling a number below.

(1) very useful

(2) useful

(3) less useful

1-a. Circle any of the following reasons if (1) is chosen.

- a. exposure to the most advanced steel industry in Japan
- b. improvement in the technical knowledge of the steel making engineering
- c. improvement in the electrical steel making engineering
- d. contact with the Japanese culture
- e. others (describe any other reasons below)

1-b Describe your reasons if (2) are chosen.

1-c. Circle any of the following reasons if (3) is chosen.

- a. your job has nothing to do with the study contents in Steel Making Training.
- b. the study contents in electrical steel making training are so much different from your country's situation
- c. the study contents in electrical steel making training are so much theoretical
- d. too high level of the study contents in electrical steel making engineering training
- e. too low level of the study contents in electrical steel making training
- f. others (describe any other reasons below)



3. Describe, if there is any applied techniques to your organization after returning to your county.

4. Indicate your greater emphasis on the contents of the training for its further improvement with the full description of the urgent needs for the technical knowledge, technology, and others. (write the subjects and briefly describe the contents you wish to acquire.

1) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Indicate your hope for the possible participation in the refreshers training course if organized (circle either (1) or (2) .

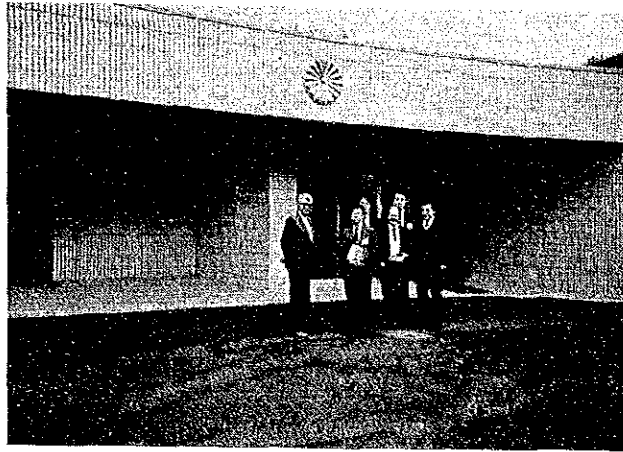
(1) participation in

(2) do not participate in

reasons \_\_\_\_\_

6. Describe all the pending problems you are troubled with in promoting and developing the electrical steel making industry in your country.

Thank you very much for your cooperation!



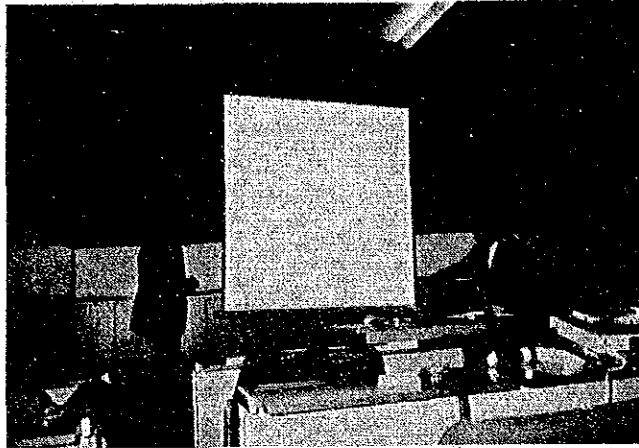
(在トルコ、日本大使館にて)



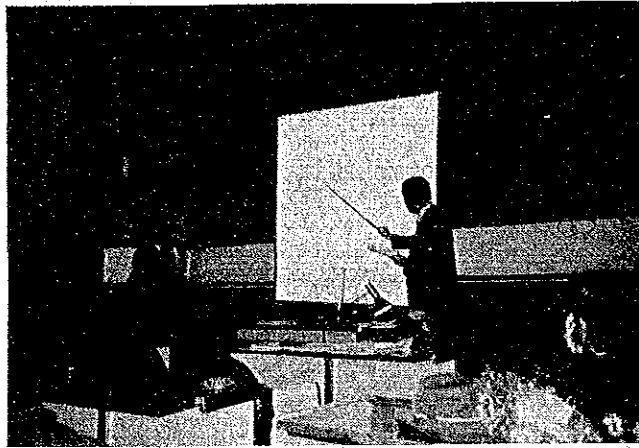
(日本大使館主催パーティー中央は広瀬参事官)



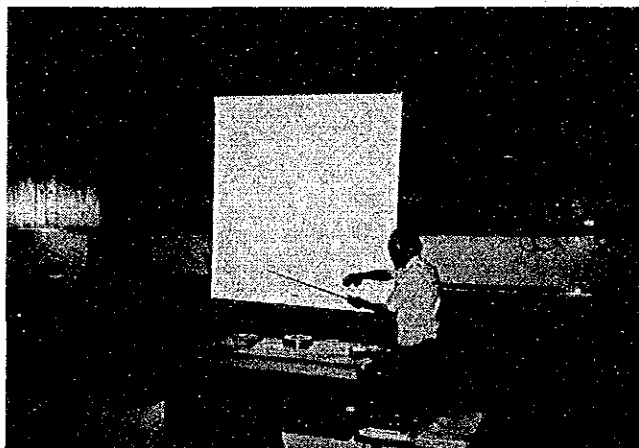
(トルコ製鉄所にて前列右端、副工場長)



トルコ製鉄所におけるセミナー風景



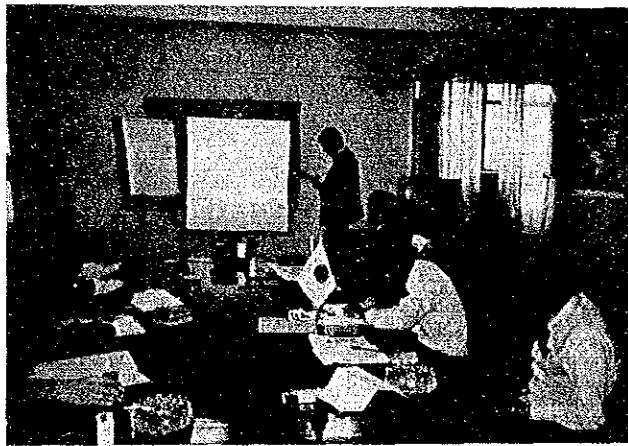
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全上



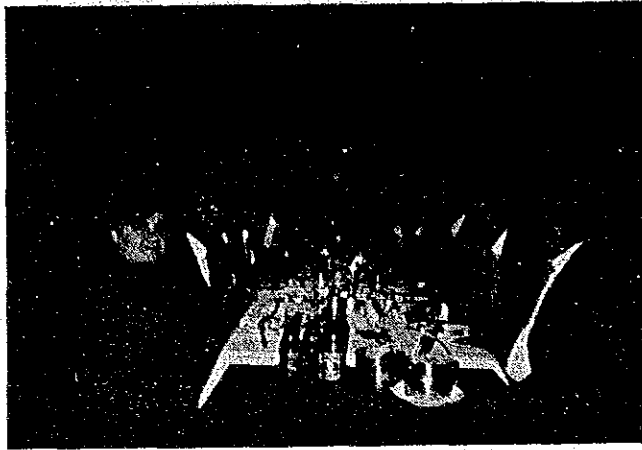
トルコ特殊製鋼公社にて、セミナー風景



全上



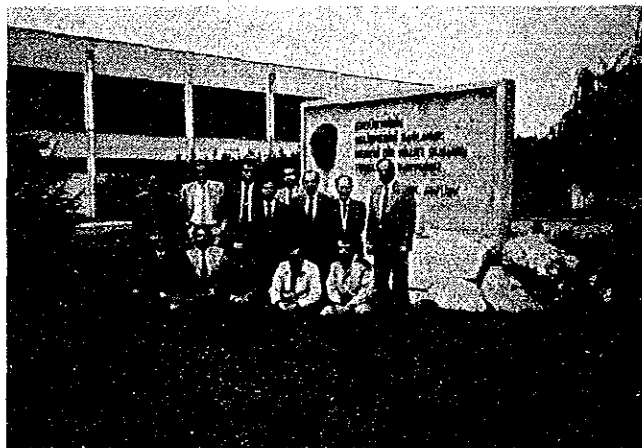
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帰国研修員主催パーティー



M K E Kにて後列中央は副理事長  
前列中央は帰国研修員工場次長



トルコ、特殊製鋼公社にて、後列右から3番目は理事長





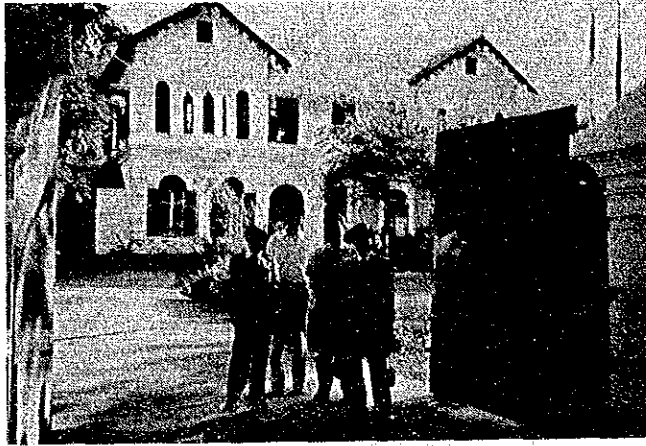
デルタ製鋼所、セミナー、左から2人目、4人目は帰国研修員



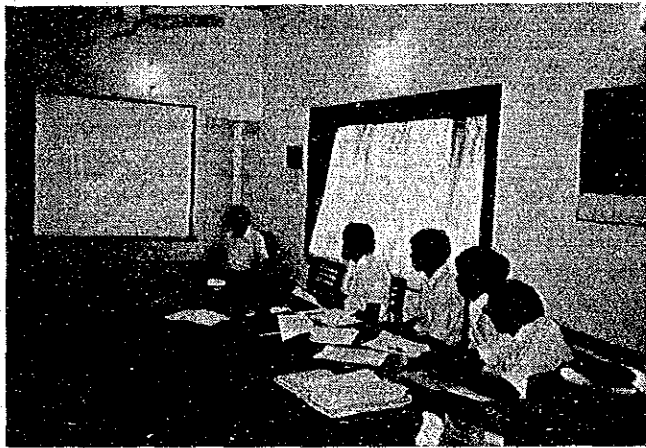
エジプト製鉄所でのディスカッション左から2人目、製鋼本部長  
左から4、5、6は帰国研修員



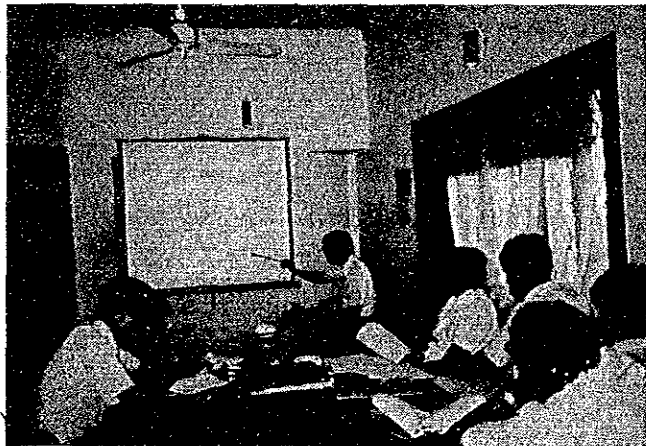
エジプト製鉄所主催、書食会



在スリランカ、日本大使館にて右から2人目は小林書記官



JICA事務所にてセミナー風景



全上



セイロン製鋼公社にて、日本人以外は帰国研修員



指導班主催パーティー、中央女性は同窓会副会長



同窓会副会長宅にて、中央右側及び女性は帰国研修員





