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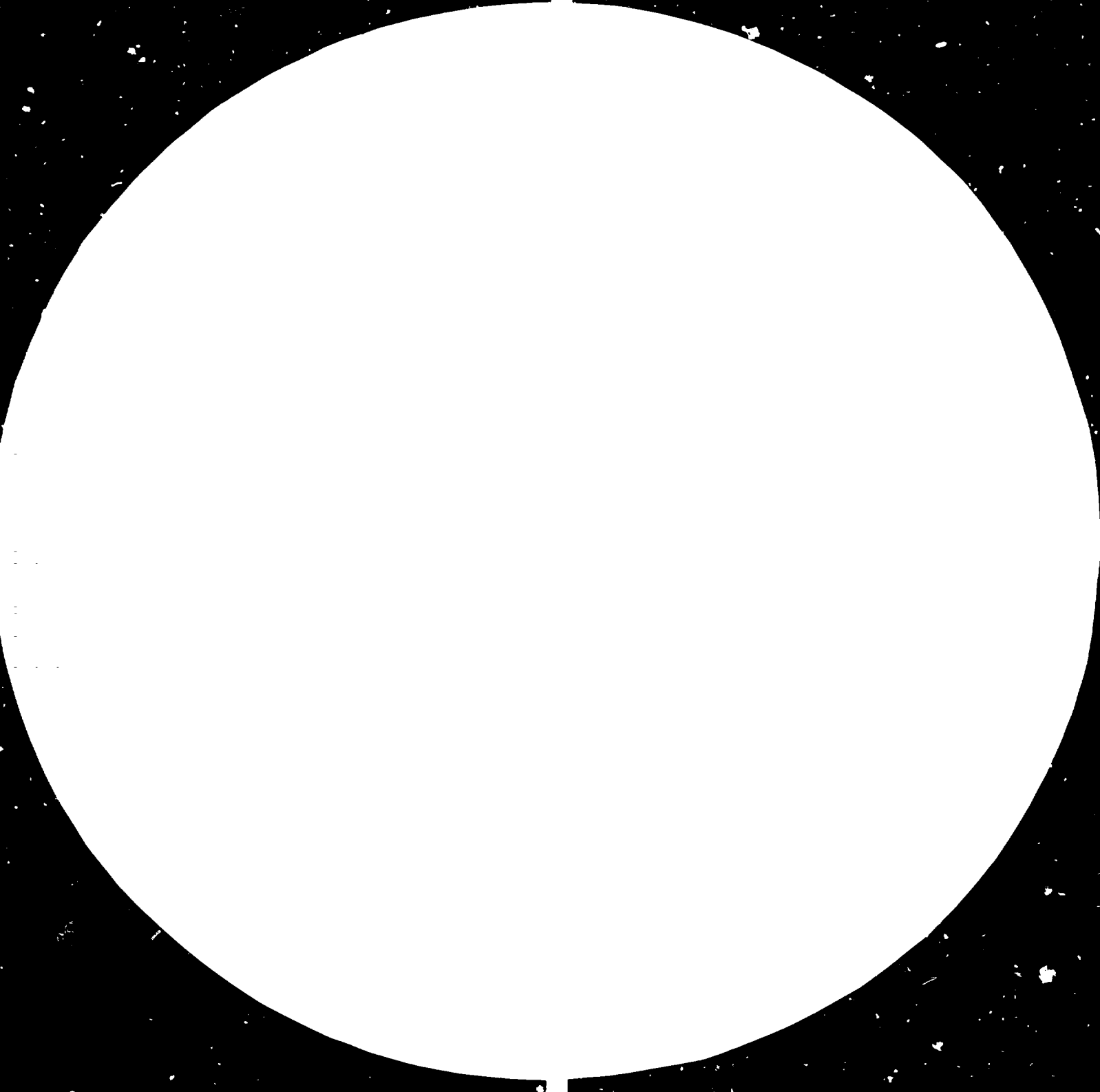

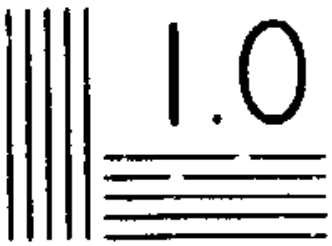
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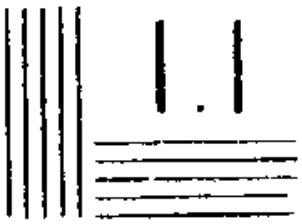
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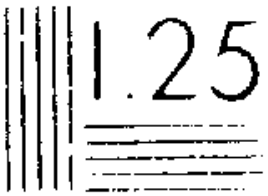
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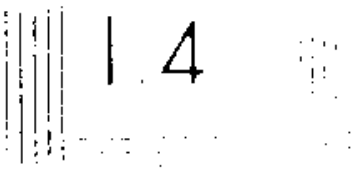
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ASSISTANCE TO THE INDUSTRIAL RESEARCH AND CONSULTANCY UNIT (IRCU)

DP/KEN/75/029

Terminal Report*

Prepared for the Government of the Republic of Kenya
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Ms A. Lerchenberger,
associate expert (Tool Maker) IT/KEN/73/004

United Nations Industrial Development Organization
Vienna

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Terminal Report for UNDP/UNIDO Project:
DP/KEN/75/029: Assistance to the Industrial Research and Consultancy Unit (IRCU), University of Nairobi, Kenya.

I. INTRODUCTION

This terminal report covers the period from August 1981 through July 1982. It will include a summary of the main activities and current status of the IRCU industrial projects, mention of two planned design projects, comments on the Unit's staff situation, a discussion of some problems as I perceive them and suggested recommendations for improvements.

A review of the project (DP/KEN/75/029) including background, findings and recommendations was presented recently in the terminal report written by Technical Advisor, Andrezej Magierski. In general, I agree with his views and would like to emphasize the need for his recommendations to be realized as soon as possible.

This report will focus on those aspects of IRCU's work with which I have been most closely involved:
(1) providing technical engineering services to Kenyan industries in order to assist them in achieving greater self-reliance, and (2) providing training experiences to Kenyan IRCU staff members.

II. SUMMARY OF INDUSTRIAL DESIGN ACTIVITIES

The various design projects undertaken by the Unit are shown on the graph on page 8 . The graph depicts the main projects identified and implemented by IRCU staff members during the past year.

Some aspects of these projects have been described in previous progress reports written by Andrezej Magierski and myself. In this report, the current status of each project will be discussed.

(a) Manually Operated Press: the successfully completed design, which utilizes the welding of locally available materials instead of a more complicated casting process, has been passed on to two enterprises, Kenya Engineering Industries and General System Limited.

It was agreed that in exchange for designing the prototype construction, IRCU staff could have "on the job" experience in assisting with the supervision of the construction. This has not happened yet.

(b) Manually Operated Maize Mill, Pedal Power Mill and Hammer Mill: The completed designs have been sent to Kenya industrial Training Unit (KITI), and follow-up discussions held for special design adaptations. Unfortunately, we have been told that prototype production cannot begin yet because the Institute lacks the funds to acquire necessary raw materials for this stage of the work.

(c) Medium Capacity Bakery Oven: The design initiated by the Unit and introduced to the National Council for Science and Technology with a request for prototype production has been approved. Within the next year the IRCU plans to finalize the drawings, supervise prototype production and, if necessary, improve the design.

(d) Domestic Solar Heater: After initial enthusiasm on the part of several local organizations to build cheap solar water heater, interest seems to have lessened. IRCU staff are now seeking renewed interest and financial support for this project.

(e) Tracer Milling Machine: The design has been passed on to Kenya Engineering Industries. In the near future they will begin prototype production, after final decisions about the design are made.

(f) Green Bean Coffee Dryer: Design discussion have taken place but additional data and measurements are needed from the Coffee Research Foundation before further progress can be made.

(g) Piping Die: The design and accompanying instructions have been passed on to General System Ltd. and IRCU is awaiting a reply from them.

(h) Manually Operated Bending Machine: Several different design types have been completed recently. These were initiated by the Unit because the need became apparent during staff visits to small scale workshops both in Nairobi and the surrounding countryside. The design will now be sent to different workshops with a request for prototype production.

(i) Tractor Trailer: The design has been set to an entrepreneur on his request. However, his financial situation does not allow him to start prototype construction at this moment.

(j) Galena Int. Survey: The successfully completed literature study has been set to.

III. TRAINING ACTIVITIES/CONSULTANCIES

"On the job" training within IRCU was undertaken discussions and supervision of project tasks. However, this was often a time consuming process and not always effective.

In order to establish closer relationship with small scale industries and private entrepreneurs, it was decided to introduce lecturers from the University of Nairobi to IRCU industrial contacts. During these visits, inquiries were made for help with diverse kinds of technologies, for example, a counting and printing process to apply in the wrapping of drugs; a mechanized merry-go-round for children; and a four-way door lock.

IV FUTURE DESIGN PROJECTS

The IRCU will continue to work on two projects already underway: the medium capacity bakery oven and the green bean coffee dryer.

V IRCU STAFFING

After the ending of UNIDO/UNDP assistance, only two Unit staff will remain: Mr. Oduwo Nyangasi, Director, and Mr. Joshua Ochien'g, Research Assistant. It will be extremely difficult for such a small staff to respond adequately to the variety and number of requests received by the Unit, or to initiate technical solutions which are needed by small scale industries in Kenya.

VI SUMMARY OF PROBLEMS RECOMMENDATIONS

Economic Difficulties: The lack of money of both the Kenyan Government and Kenyan industries has an effect on IRCU projects. Agreement for moving to prototype development or to the production stage sometimes must be postponed because, even though many industries are interested in technical assistance, they do not have enough money to invest in each design.

Overall Project Approach: Just as it would take at least five years for a new engineering office to be set up and run successfully in Germany, so too UNDP should allow a much longer time period to establish IRCU as a successful programme.

Visits to several institutes and organizations have shown that each of them has a prototype, designed and constructed by a foreign expert who has since left the country. Therefore, UNDP should make sure there is sufficient funding, outside expertise or training of local people to make sure a prototype is maintained and improved for replication.

Also, it is important to evaluate the real needs of the rural population before selecting design projects. For example, solar water heaters may not be inexpensive or important enough for rural people to buy.

It would be advisable to give more technical assistance to agricultural projects which help Kenya achieve food self-sufficiency and/or earn much needed foreign exchange.

Project Staffing: Experts should be given contracts for at least two year periods. In one year's time it is very difficult to get to know a foreign market, to establish contacts with private industries, and to develop effective trusting relationships with local professional colleagues. In addition, becuase requests for assistance are made from all different sections of the engineering field, IRCU staff should include staff experts in agricultural, electrical, mechanical and process engineering.

Training: It would be helpful if IRCU staff could provide more practical experience as part of its "on the job" training. In any technical education, often words are not sufficient; practical experience and learning from mistakes is necessary. Training of Kenyan staff might be more effective if some proposed design solutions could be tested with real materials in order to better understand the limits and requirements of mechanical factors.

In Kenya there are many mechanics working in workshops who have training with a practical base. They do their work without a theoretical background. A training programme should be offered for mechanics and artisans so that they could both plan and construct improvements on present designs. The training programme should emphasize such aspects of theory as drafting, mechanical maths, how basic mechines function to help local artisans translate their ideas onto paper. Such training should be offered in evening classes and also in the workshop itself so that everyone who wants to improve himself or herself can have the opportunity.

Astrid Lechenberger

COMPLETED DESIGN PROJECTS