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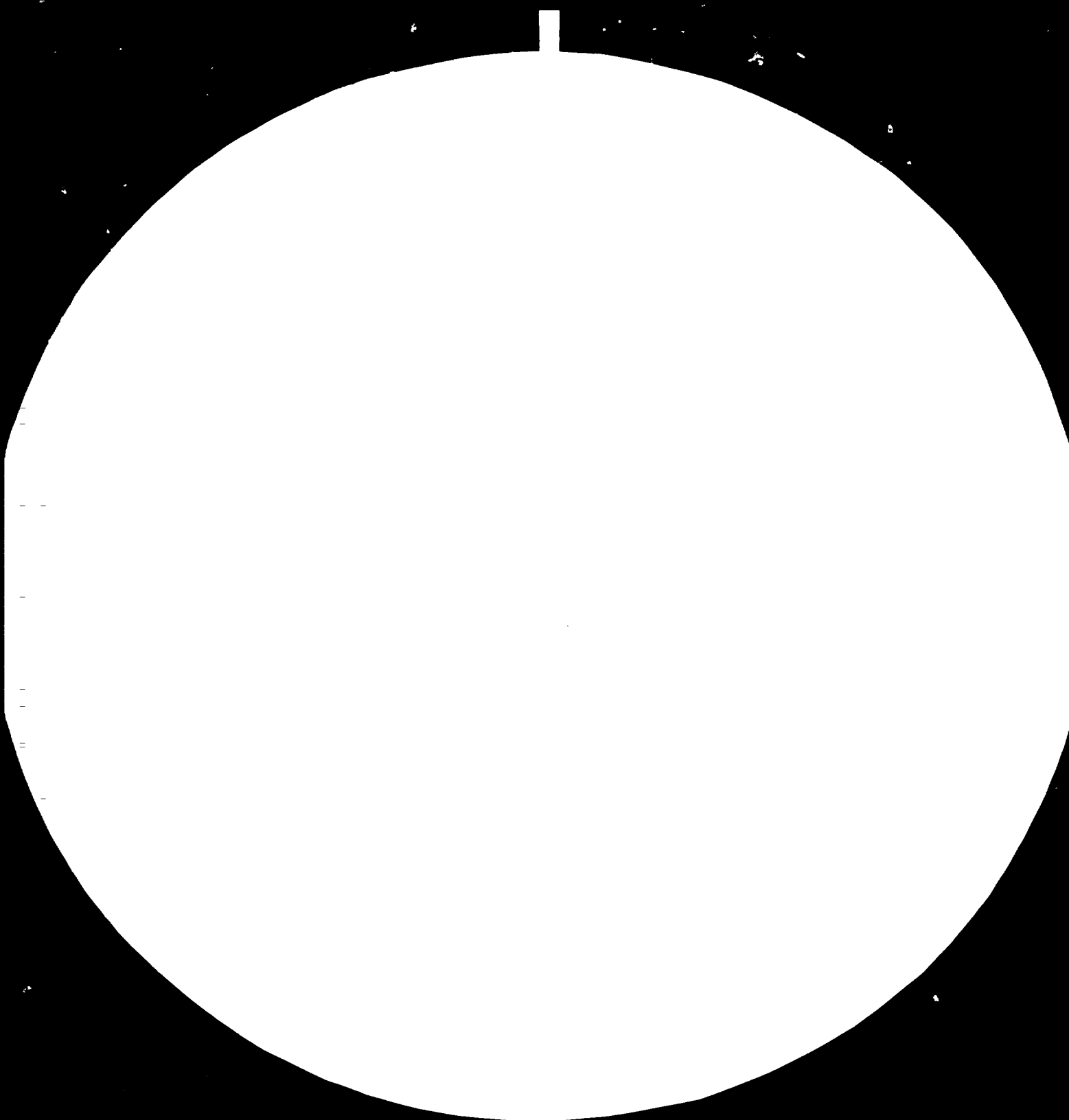

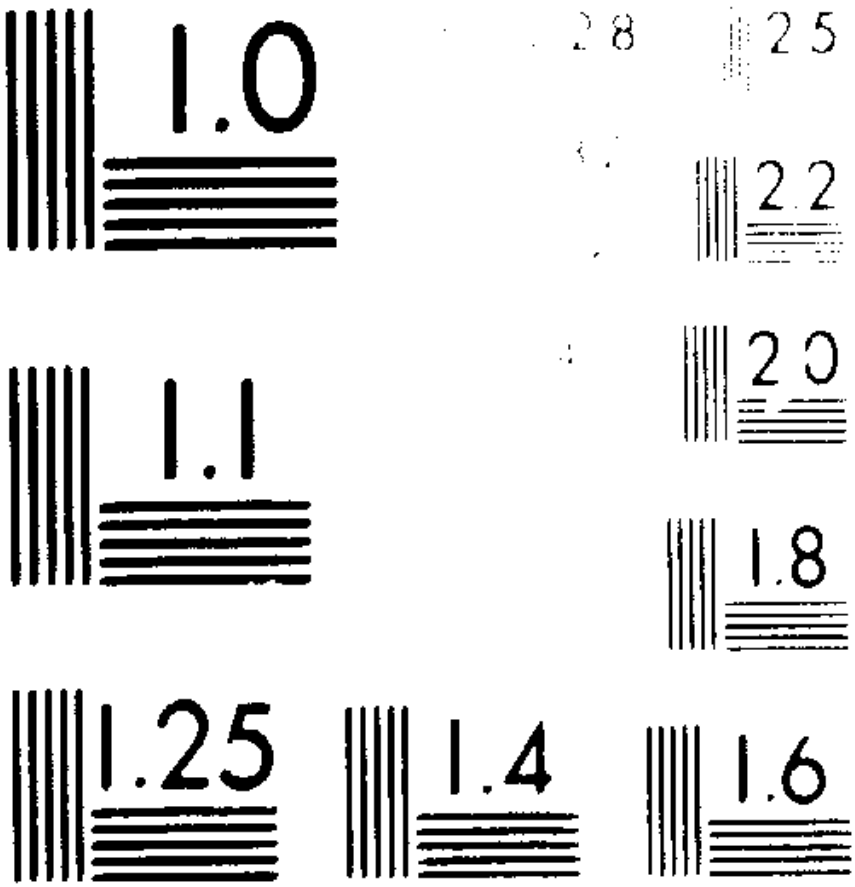
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PROJECT
DP/BOT/72/009/11 - 04
BOTSWANA ENTERPRISES DEVELOPMENT UNIT, Precious stones.
OF THE
MINISTRY OF COMMERCE AND INDUSTRY

Terminal report

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

Based on the work of H.R. Mayrwoeger,
gemstone and silversmithing expert

United Nations Industrial Development Organization
Vienna

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ABSTRACT

The gemstone and silversmithing project BW/ENT/78/C09/11-04 of the Botswana Enterprises Development Unit (BEDU) and the Ministry of Commerce and Industry was formally launched in January 1979 to initiate a small scale gemstone industry, based on the fact that there is a sufficient quantity of agates, carnelians, jaspers etc. available in Botswana.

This report covers the period from April 1980 to September 1982.

The training started in February 1981 and the basic training in gemstone cutting - polishing and silversmithing was aimed to be completed by September 1982.

11 technical skilled ex-trainees in both fields are expecting to start with a limited company in September 1982.

It is anticipated that most production will be sold either locally to visitors and expatriate personnel or to foreign markets in the USA and Europe. If the distinctly Botswana design can be expanded, the export market would definitely show a positive response to such items. It is not the intention to compete with European style with established hundreds of years, that would not make sense at all. The future development of a Botswana design is essential for the project, and the research on that particular subject has up to now been positive. The proposed approach is based on these facts.

Due to the relative complexity of the handicraft and the process of faceting, involving a variety of models to, it is absolutely necessary to continue the technical training (for instance a trainee may work for a period of 12 years; or continuously 8 months to 2 and a half months per year).

It is also very important to continue the design training because a success in both fields of activities can only be achieved if new typical models are introduced to the market.

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INTRODUCTION

The Botswana Enterprises Development Programme was formally launched when in January 1974 an agreement was signed between the Botswana and the Swedish Governments. An additional agreement between the Botswana Government and the United Nations Development Programme was signed in June 1974 covering the provision of four experts to work within the framework of the Programme.

The programme was a direct consequence of the governments four key objectives of National Planning, namely: rapid economic growth, greater social justice, greater economic independence and sustained production. In order to realize these objectives, the government opted for an economic policy which aims at the utilization of earnings from capital intensive mining and certain industrial ventures, for investment in education and training, improvement of service facilities in the rural areas and, most important in the context of the BEDU Programme, the promotion of agricultural and labour intensive manufacturing activities.

In its attempt to promote the development of locally owned and managed industries, government took it upon herself to help local entrepreneurs overcome certain constraints which had been identified as having a retarding effect on the development of a sound cadre of citizen entrepreneurs. These constraints included the entrepreneur's very limited access to financial institutions due to their inability to offer acceptable levels of security; non-availability of factory premises at reasonable rentals, limited (or none) information on the market potential and so forth.

BEDU inputs

The BEDU programme set itself the task to ensure that the Batswana's interests in the industrial sector are developed at the fastest rate possible, so that the attainment of Botswana's greater degree of economic independence will go hand-in-hand with an increasing predominance of Batswana in the industrial field.

The long term objectives were as agreed in the original project document.

1. To assist with the establishment of fully viable enterprises owned and managed by Batswana.
2. To create more employment opportunities in both rural and urban areas.
3. To assist with the establishment of enterprises using locally available raw material and where possible locally available skills.
4. To realize a more equitable distribution of income in particular between the rural and urban areas.
5. To lessen Botswana's dependence upon suppliers in the neighbouring countries for essential consumer goods.
6. To provide a more attractive industrial climate for possible large scale industrial enterprises by encouraging the creation of local sources of parts and services.
7. To assist Batswana entrepreneurs to participate more fully in the development of their own country so that the responsibilities and benefits of political independence should be reflected to an equal measure in the attainment of economic independence.

Government undertook to provide the following activities

Establish industrial estates where Batswana entrepreneurs could lease small workshop or factory shells at low cost.

Advice and guidance to entrepreneurs

Assistance will partly be of a technical and partly an entrepreneurial nature covering such fields as management, costing, accounting, marketing and other areas considered conducive to the potential success of the entrepreneurs. Training and common Facility Centres will be constructed on each of the industrial estates where technical experts will be able to introduce entrepreneurs to more advanced production techniques and equipment use, as well as undertake general technical training activities and prototype production.

Leasing of Common Workshop machinery, equipment and tools

Thus enabling the entrepreneurs to establish themselves with the necessary equipment and machinery without which any form of training input under the Programme cannot be satisfactorily carried out. The leasing/purchase scheme will be administered by the National Development Bank under an agency agreement with the Government of Botswana.
A Loan Committee will be formed to decide on applications.
Bulk purchasing of raw materials for use by the entrepreneurs.

UNDP/UNIDO

Undertook to provide the following technical assistance through four UNIDO experts covering the following fields and by doing so strengthen the Botswana Enterprises Development Unit (BEDU) within the Ministry of Commerce and Industry and to assist the Government in the formulation and execution of the national small industrial development programme.

Marketing
Metalwork
Wood Utilization
Gemstones/Jewellery

Former Gemstones Expert: From 1975-1978 Mrs. Mabel Saavedra was the Colour Gemstones Expert of UNIDO at Gaborone.
BT/BOT/72/009/11-03/11

The second gemstone and silversmithing advisor arrived in Botswana in April 1980 to start a training in both sections.

I. PRODUCT AND MATERIAL COVERAGE

A. Precious and semi-precious stones

"Precious stones" are generally defined as diamonds, emeralds, rubies and sapphires. All other gemstones are considered "semi-precious stones", although in today's market place this term is not appropriate as the prices of many semi-precious stones may be as expensive as the precious stones. The term "semi-precious" is false and unauthorized by the gemological society, however, it is used in the trade.

Rough stones are usually sold in parcels or lots of varying sizes. Usually lots are between 5,000/10,000 carats, but there is no fixed size and they vary considerably by stone and market. Parcels of cut stones vary in size also. Parcels preferably consist of stones of similar sizes, quality and shape but there is no fixed standard. For quality stones or stones at the top end of the market, they are sold individually. For coloured stones there is no fixed grading system like there is for diamonds.

1) Semi-precious stones found in Botswana

The semi-precious stones found in Botswana are classified for commercial purposes as follows:

Agate:

Agate is a variety of chalcedony which shows roughly circular bands of varying colours. In Botswana agates are found in the upper sections of the Karroo basalts. When the basalt was still molten, gas bubbles formed which remained as holes or vesicles, when the rock cooled. Later, silica-bearing water filled these vesicles and deposited the chalcedony on their sides. Layer upon layer of chalcedony was put down until the vesicles became filled and an agate was formed. Trace elements, such as iron, give the bands in the agate their colour. If the basalt vesicles contain crystalline instead of chalcedony which means the agates centre is filled with crystalline, this type is called a geode.

Blue-grey agate:
This is the most common type, usually simply referred to as "agate". It consists of concentric bands of grey-white or blue cryptocrystalline silica, with the bands running generally parallel to the margin of the amygdale. Each band is usually 1 to 3 mm thick. The larger sizes of agates (over 15 cm) are suitable for carving into ornaments etc., provided they are free of macrocrystalline quartz, and are highly prized. Intermediate sizes (4 - 15cm diameter) can be cut and polished into car-rings, amulets, pendants etc. They can also be tumble-polished. This size is still in reasonable demand. Smaller sizes (2 - 4cm diam.) are only usefull for tumbling. As they are relatively common, the market for them is already near saturation. Smaller than 2 cm blue-grey agates are no longer saleable.

Pink banded agate:
This type, known commercially as "Botswana pink" is not found outside the Bobonong area. Apart from their colour, these stones are concentrically banded in exactly the same way as the blue-grey agates. Being less common they are commercially valuable even in the smaller sizes. Stones above 5 cm diameter are uncommon and above 15 cm almost unknown.

Cornelian:
Pale pink to red chalcedony (cryptocrystalline silica) is quite common at Bobonong and elsewhere in Southern Africa. Cornelian differs from agate in not being banded. It is cut and polished or tumbled in a similar way to agate. Stones above 15 cm in diameter are rare and most of the cornelian produced from Bobonong is in the 2-5 cm range.

Moss agate:
This is a slightly more coarsly crystalline form of silica than the three above mentioned forms and is not translucent. It is white with green and brown veins and ramifying tubules in it. Large pieces may be cut and polished, while smaller pieces are tumble-polished.

Iris agate:
This occurs when the banding in the stone is very fine (as many as 7000 bands to the centimeter). When they are this close together the bands break up white light into its component colours (as in chatoyance) and give the iris agate its irridescent appearance.

Jasper:
Green and red are the commonest colours though yellow and brown are also found. Many jaspers are banded or mottled.

Rock crystal:
Well developed crystalline quartz tends to [illegible]r in the larger amygdales. Where these are hollow the quartz usually displays its characteristic crystal form; sometimes the innermost parts of the crystals are purple (amethystine) or red. Rock crystal, in pieces anything from 20 x 10 x 5cm upwards is simply cleaned and sold as an ornament.

Moonstone:
Moonstone is the jeweller's name for an iridescent variety of feldspar, a common rockforming mineral. This iridescence is caused by the interference of light of extremely thin sheets of albite feldspar arranged as layers in the main orthodase feldspar rock.
The Technical Advisor has picked up moonstone pieces up to a diameter of 5 cm in Northern Botswana.

2) Export of semi-precious stones

The export of uncut and unfinished semi-precious stones is not banned in Botswana.
Only a few tons of the approximately 2900 metric tons of usable semi-precious stones still in the Bobonong area (Geological Survey Report, Author: Werner Gwosdz,17 Oct.1979) were exported, mostly to RSA.

Selection of trade channels of semi-precious stones:

1. Potential importers

a. Specialized importers/agents (stone dealers)

There are relatively few stone dealers who deal in semi-precious stones, perhaps 10%; most of the dealers trade diamonds and coloured stones as a primary importance because of the much higher profit and less problems.
There are no "brokers" for agates who sell stones on a commission for the dealers.

b. Jewellery manufacturers

The majority of jewellery manufacturers interested in buying semi-precious stones are small companies and only a few companies have 20 or more employees. Most are family owned companies with limited production.
The manufacturers import a considerable amount of their agates from cutters and dealers in Idar-Oberstein (stone-cutting centre in West Germany), Jaipur, Bombay (India) and Rio de Janeiro (Brasilia).
Only generally good quality stones with a perfect cut and finishing, standardized or fancy slices and rare colours etc. are required on the market.

Most manufacturers are not interested in purchasing large quantities of stones from the producing countries because they do not have the time, connections and expertise.
Further, they emphasized the following problems:

- they purchase relatively small quantities and do not want to make large purchases and maintain large inventories;
- cutting was poor;
- deliveries were not met;
- in many instances they need supplies quickly;
- they have received inferior or poor quality marchandise which was unacceptable and not as ordered;
- problems with formalities of exportation, administration;
- difficulties in finding a good, consistent source of supply.

Furthermore, consignment buying is very common with the jewellery manufacturers and this is more difficult to negotiate in some producing countries, and excluded in others.

For the top end of the jewellery market, there are several manufacturers who produce items for their own retail outlet. Several of these exclusive manufacturers are importing stones themselves for their manufacturing needs and for sale in their stores.

c. Retailers

Most of the retailers do not have the expertise, thus they prefer to trade with dealers. In addition their demands are small and inconsistent.
They would need only small quantities and this is much easier to order by a dealer.

d. Mail - order firms

The mail-order companies buy finished products either directly from jewellery manufacturers or from jewellery dealers. The mail-order firms are not involved in stone buying or manufacturing themselves.

e. Hobby trade

For the lower quality of rough stones there is a limited market for the so-called hobby trade (collectors and souvenir).

f. Costume jewellery firms

Costume jewellery firms buy mostly stones in cheap quality and price. To go into competition with India or Brasilia in this shape of stones would be difficult and nearly impossible because of the expensive electricity supply and wages.

B. Metal

Fine gold. Fine (pure gold) is known as 24 carat gold. Gold is the most ductile and malleable of all the metals. Fine gold is very soft and rarely used for jewellery purposes.

Carat gold. Carat gold is a measure of fineness. Fine (pure) gold is 24 carat gold. If an article is made of 18 carat gold, the fine gold in the article is 18/24 of the total weight. Likewise, if it is 10 carat gold, it is 10/24 fine gold by weight. Metals used in alloying fine gold are silver, copper zinc and nickel.

Coloured golds. The component metals used in various coloured golds are as follows:

Yellow golds for general purposes: gold, silver, copper, small amount of zinc.

Yellow golds for enameling purposes: gold, silver, copper.

Green gold for enameling purposes: gold, silver, small amount of copper.

Green golds for general use: gold, silver, small amount of copper, small amount of zinc.

White gold for general use: gold, nickel, small amount of zinc.

Red gold for general use: gold, copper, small amount of silver.

Fine silver. Fine (pure) silver, like fine gold, is very soft and finds little use in handmade jewellery other than in the making of bezels.

Sterling silver. 'Sterling' is one of the best known and most respected quality markings in use. Sterling silver is made of 925 parts pure silver and 75 parts base metal, which is usually copper.

Brass. Brass is an alloy of copper and zinc. The copper content varies according to the intended use of the alloy. Brass is somewhat harder for the craftsman to work than copper, as it is less malleable and splits easily.

C. Different kind of jewellery

There are two distinct fields of jewellery.

1. Costume jewellery
2. Fine jewellery

Costume jewellery is a type of jewellery that can be broadly expressed in the following way:

- It is designed around cheap materials.
- The pieces produced, in general, have a short fashionable life.
- The pieces made are, in general, cheap to purchase.
- The pieces produced are mainly mass produced.
- The products are geared to fashions, gimcrackery and passing crazes in the main.

Fine jewellery is a type of jewellery that can be broadly expressed in the following way:

- It is designed around expensive, or exclusive, materials.
- The pieces produced, in general, have a long life which is not necessarily related to any passing fashion.
- The pieces made are, in general, expensive to purchase.
- The pieces produced are mainly hand made occasionally utilizing certain aspects of mass, or semi mass production techniques.
- The products are geard to good craftsmanship, excellence of designs, originality and exciting use of materials.

1) Costume jewellery

There are a number of advantages that are directly related to the setting up of a small costume jewellery industry in Botswana:

- The production of costume jewellery is comparatively cheap and easy in relation to fine jewellery. The construction and finish is not so exacting.
- Costume jewellery uses basically cheap materials.
- In the production of costume jewellery few skills are required. However, it must be pointed out that once machinery is introduced on a large scale that this point tends to become redundant.
- If sales can be maintained, a quick turn over of goods is possible.
- On a low level, little basic equipment is required.
- On a low level, the initial costs in setting up are low.

There are also a number of disadvantages:

- Contrary to first thoughts: the production of costume jewellery is not very labour intensive. The whole object of mass producing costume jewellery is to keep labour costs as low as possible.
- Unless the costume jewellery produced in Botswana is highly original: markets outside Botswana will be difficult to enter. Many countries already have their own costume jewellery industries. To enter those markets it would seem likely that costume jewellery produced in Botswana will have to meet demands such as the following:
  i. It will have to be cheaper than most things produced in the host country.
  ii. It will have to be radically different than anything produced in the host country.
  iii. It will have to be better value than anything that is produced in the host country.
- The successfull production of costume jewellery depends almost exclusively upon meeting the ever changing fashions. Doing this requires a great deal of experience as rapid turn over new lines are difficult to gauge with accuracy.

- In general, the making of costume jewellery is boring as little manual and mental dexterity is required.
- Producing costume jewellery necessitates rapid turn over otherwise stocks can build up quickly.
- Any machines that are purchased for the mass production of pieces are going to be expensive and require constant attention.

2) Conclusions concerning costume jewellery

It is unlikely that costume jewellery, as an industry, will expand beyond small scale enterprises. Due to fluxuating demands if it is geared solely to the fashion trade; it would seem more sensible to keep the industry at a fairly low level.

As with any other cheap handicraft industry the main factor controlling success is a constant rapid turn over of the goods produced. This means that there must be a regular flow of new ideas injected into the business. Continuous note must be taken of changing fashions, gimcrakery and passing crazers and a determined effort be made to meet their demands.

Costume jewellery is only intended to last a brief period of time. It is designed to fit in with the fashions of the day. A piece may be worn only once and then discarded in favour of some newer piece. To a degree, this quick replacement, dictate the cost of an item. Few people have the spare money to purchase very expensive costume jewellery.

Gauging changing fashion is very difficult. Even more difficult is creating a passing fashion. Costume jewellery markets can fluxuate wildly and success in such a market depends upon marketing the right type of goods at the right time. This is no easy thing to judge.

As it is be assumed that a high percentage of the costume jewellery produced in Botswana is to be exported: it seems likely that it will be the importer who will dictate, to a large degree, what will be made. He certainly will not purchase goods which he cannot sell and it is likely that he

will recommend lines, designs and price ranges that he knows will sell. This in Itself will tend to limit the type of work that can be produced in Botswana as under such circumstances it is highly unlikely that a type of jewellery that is indictative of Botswana culture and ideas can be created.

It is impossible to force people who buy costume jewellery into purchasing something against their will. They will buy what is in fashion at that moment in time.

A fluxuating market tend to kill any form of constant output. A firm producing costume jewellery must be prepared to change to new lines quickly.

3) Fine jewellery

There are a number of advantages that are directly related to the setting up of a small fine jewellery industry in Botswana:

- In general, fine jewellery, very labour intensive as the vast majority of the work produced in hand made.
- The pieces of work created are generally of inte[illegible] the producer. The varied work output tends to al[illegible] boredom.
- In general there is a low turn over which is set against a high profit margin.
- It is possible to create individual pieces of work that are capable of reflecting the craftsmen concerned.
- Fine jewellery, in its simpler forms, does not require very sophisticated equipment and machinery.
- The almost none use of machinery means that fine jewellery is an ideal craft that can be produced in small workshops.
- If the work produced is of a sufficient high standard it should be possible to sell it outside Botswana.

- If the materials used are limited: it should be possible to develop a unique type of work that is indicative of Botswana culture and ideas.

There are also a number of disadvantages:

- The makers of fine jewellery require considerable training and teaching. This will take time as there are few short cuts that can be taken when it comes to acquiring a skill.
- A high standard of work is essential if success is to be achieved. Obtaining that high standard will be difficult, but it is necessary if work is to be exported.

4) Conclusions concerning fine jewellery

The introduction of a fine jewellery industry is probably a viable proposition providing personnel can be recruited and trained in this field.
The Lentswe La Oodi Weavers Limited is an excellent example of what can be achieved in the field of producing goods of a high quality.

From the initial beginnings standards would have to be high and constant. As a number of skills would have acquired by the trainee it would seem sensible to set certain limits concerning materials and the type of work produced. It may be logical to use only one type of local stone cutting and setting it well rather than attempt to work with a variety of stones. At the beginning it would also seem logical to use only sterling silver and/or brass as a base metal.

There are a number of good reasons for choosing these metals: they are easy to work, have intrinsic value, wastage has high value and silver has a natural beauty which only gold can surpass.

The work that is produced must have life and be exciting so as to attract the purchaser. If these criteria can be achieved the work produced will, in all probability, sell itself.

The packaging of goods must also be of a high standard as well packaged goods tend to set the work off.

The use of silver, and possibly gold, introduces certain problems that would need looking into. Silver is an expensive metal; although the unit cost per item produced is not necessarily high, people buying silver generally would like some proof that the metal is indeed silver.

II. TRAINING

A. Selection of trainees

After an advertisement in the local newspaper and an interview on Radio Botswana there were 421 applicants for this training with the intention to become entrepreneurs.

All 421 applicants (Botswana citizens) had to undergo a simple drawing and intelligence - test and subsequently BEDU/Ministry of Commerce and Industry and the Technical Advisor selected 15 students.

The drawing test consisted of drawing the watchman's hut in front of the estate. (See Appendix A: Photos and some drawings).

The advisor worked out a simple intelligence - test with the help of which three-dimensional power of imagination, simple mathematical knowledges and the logical capability of thought were examined. (See Appendix B: pages 6 and 7 of the test as an example).
Even with the same education level the results differed a lot. This is explainable by the differing quality of instruction received in various schools.

The education level of the selected students was:

	Number of students	School-years
Standard VII	9	7
Junior-Certificate	4	10
Cambridge Certificate	2	12

The Ministry of Commerce and Industry/BEDU and the advisor tried to select not only on the basis of the education standard, test results or drawing abilities, but also great importance was attached to the behaviour of the applicants.

The final selection was agreed by one member of the Ministry of Commerce and Industry and one member of BEDU.

B. Stages of the training

Stage I:

Some modifications of the trainings plan recommended by the Technical Advisor in March 1979 (BT/BOT/72/009/II-05 31.3.) were necessary because of changed outside circumstances (change of training possibilities, lack of hand tools etc.).

The advisor was forced to re-arrange completely the recommended basic training (started 2nd February 1981) as tools and machinery were delayed.

Therefore the first two months of the training consisted nearly exclusively of design and modelling classes (explanations, lectures, preparation of work). This was not too bad on the one hand to show the uninfluenced african feeling of forms (sometimes still existing) in models of clay, plaster of Paris or wax. The problem was how to explain to the trainees the transposition into different other techniques without tools and machinery.

Stage II:

Small hand tools and soldering equipment arrived at the end of March 1981.
With this equipment the advisor was able to realize a limited basic training (filing, sawing, soldering, bending etc.). The progress and results were in stage II very satisfactory.

Stage III:

Machinery and special tools arrived from Italy at the end of July 1981:

Centrifugal Casting
Engine
Wax Spray Gun
India Rubber Press
Muffle Stove
2 Polishing engines

2 Hand drilling engines
1 pair of Scales
1 Rolling Mills for sheet/and wire
1 Wire Drawing Frame
Items for smelting, ingot mould, ring bolts, stamps, draw bench irons etc.

The full training began in August 1981 because of the necessary installations for the machinery.

After the trainees got thouroughly acquainted with the machinery (by the middle of October 1981) the Technical Advisor tried first to give the trainees every possibility to work independently. However the advisor had to stop this after four weeks as the trainees were seldom creative, relying nearly completely on the designs of the advisor instead of producing independent models themselves.

Stage IV:

The production training was quite acceptable when the advisor gave the trainees an accomplished model (or finished parts) and after having shown them repeatedly each stage of work (each trainee one or two processes) trained them in this particular process.

C. Design training

Unfortunately most of the Botswana citizens have almost lost their native feeling for traditional forms.

Only in exceptional cases can you still see in rural areas wall-facings on the traditional round huts or on floors and verandas (forecourts) decorated with traditional ornaments.
Just as rare are ornaments of the boundary walls.

Here (as almost everywhere else) plastic commodities have surpassed the locally produced necessities (pottery, baskery). This means on the one hand an increase of the living standard but on the other hand it is a big loss of the traditional culture.
Only very few forms and lines subsist, which are due to the original (Bushmen, Zimbabwean) culture influences.

The Technical Advisor tried through excavations and studies in rural areas (baskery, pottery, weavery - some of the few original handicraft articles still not succumbing to any European influence) to find a recreation of the traditional forms.

As a result of the prevalence of the rectangular brick houses and western consumer goods, the native african feeling for forms nearly got lost.

Through excursions with the trainees to rural areas the Technical Advisor tried to re-establish or to develop this feeling for forms.

After about 20 to 30 days of design training, spread over a period of 8 months, some of the students succeeded in developing african forms by themselves.

D. Craftmanship

After 20 months of training nearly all students are able to finish a piece of jewellery from the beginning until the final item, following sketches or models.

This includes smelting, bending, setting, polishing etc. Unfortunately the quality is not yet fully acceptable. Some points are still not cleaned or polished properly for example and not enough regard is taken to back-sides or filing marks etc. But this is not explainable by a lack of technical "know how", it is rather a certain laxity in this matter.
Most of the entrepreneurs do not believe that they thereby lose customers, but suppose that they (wholesalers etc.) will send the pieces back to get them finished in a better manner. But this is nearly impossible for overseas wholesalers because of the payments and trade canals (letters of credit and customs regulations).

The finishing of the products caused, and still causes problems. Despite continuous advice given in this matter, the entrepreneurs have not achieved knowledge about the importance which must be given to all categories of customers. Really good workmanship is not yet seen to be essential and everybody making purchases dislikes a botched piece of work.

E. Hallmarking

The Technical Advisor does not believe that a government hallmarking is necessary in Botswana.
Most of the European, American and Middle Eastern importers have their own assay-offices for local, import or export jewellery.

Nevertheless the pieces of jewellery have to be hallmarked correctly in their country of origin (according to their fineness) as most of the European import assay-offices accept only a $\frac{1}{1000}$ error, this means that a hallmarked object (jewellery etc.) with for example a hallmark mark 0.925 (it means Sterling silver, see "PRODUCT AND MATERIAL COVERAGE") might still be 0.924 fine but will be destroyed if the fineness is less than 0.923.

Therefore the Technical Advisor is of the opinion that the entrepreneurs should always alloy at least to 0.930 by this example as little errors cannot be eliminated every time or as the cadmium silver solder is not always correctly alloyed, it means not always correctly 0.925 and the fineness of the whole object would therefore go down.
The price difference for the producer is absolutely insignificant if he puts $\frac{5}{1000}$ more fine silver in this example in, but he has the guarantee to be correct according to his punched fineness at the different hallmarking offices all over the world.

However, the jewellery display has to be marked with a fineness hallmark (0.750/0.585, gold, 0.925/0.900/0.835/0.800, silver) and with a registered name punch (for example Radames Cau = RC or Archibald Bishop = AB).

F. Display and Slideshow

A display and slideshow about the silversmithing and stone-cutting project was held on the 25th and 26th of February 1982 at the Townhall in Gaborone.

The Minister of Commerce and Industry Mr. M.P.K. Nwako and the Resident Representative of the UNDP Mr. Manzur Zaidi gave the opening addresses.

The President of the Republic of Botswana Dr.O.K.J. Masire, most of the members of Parliament, Permanent Secretaries, the Diplomatic Corps and about two hundred invited guests were present.

About fifty models, all produced by the students of the silversmithing training, were exhibited.
Also fifty-six slides with tape-explanations were shown to demonstrate the process of creation and the finishing of a piece of jewellery from the beginning until the final item.
Some workbenches were installed to show the practical realization of some of the processes on the slides.

This display and slideshow was open two afternoons for the public and great interest was shown.

III. RECOMMENDATIONS

A. General recommendations

Factory Shells

The Ministry of Commerce and Industry "Factory Shell" scheme is most important providing simple and low cost work-shops to Botswana entrepreneurs both in the urban, semi urban and rural areas. However, much more effort needs to be put into seeking entrepreneurs who will use-avil themselves of the Factory Shell facilities.

Workshops

BEDU entrepreneurs when allocated workshops space on any of the industrial estates have possibly two to three years to get themselves organized. Such organization includes not only the paying of rentals, electricity, water, insurance, transport, repayments to BEDU, machinery, working capital etc., but also finding sufficient work to create income and pay employees. Soon after these initial years, he is expected to give thought to buying land, building a workshop etc. etc. and make plans to move out of the estate.

Assistance in bulding private workshops

Every assistance should be given to existing entrepreneurs operating from established estates to find either a rented workshop or land on which to build.

In the event, that entrepreneurs are able to purchase land, BEDU should provide professional working drawings covering different standardized workshops at a low charge. This is being processed by the BEDU Construction Estate.
Giving an entrepreneur a chance to take action without the crippling responsibility in each case, needing services of architects, quantity surveyors etc. and the demoralizing high cost of supplying drawings suitable to pass to local builders for costing his workshop.

Counterparts

Top priority and every effort should be given to the recruitment and extensive training of technical advisor counterparts and in many cases, these counterparts should receive some of their training in an industrialized country.

B. Recommendations for the export of semi-precious stones

The collecting, grinding and polishing of semi-precious stones caused and still causes a lot of problems because of the following reasons:

1) After the rainy season the stones are collected by locals and gathered in kraals, without any knowledge of the quality of a stone. The collectors are absolutely uninformed as to whether a stone is worth collecting or not.

2) Two licence holders (See "Dealing in Semi-Precious Stones, Supplement B - Botswana Government Gazette dated 1st July 1977 Part IVA) who brought the collected stones to the depots, had, in spite of training, difficulties to distinguish valuable stones from non-valuable stones.

3) The costs of electricity, labour and rent are extremely high compared with the same cost elements incurred by foreign competitors. For the quality of semi-precious stones found in Botswana (mostly agates) India and Brazil are important competitors. And it should always be taken into consideration that these two nations have been doing this trade for centuries.

4) In the areas where valuable semi-precious stones are found there is still no electricity. This fact increases the cost of the equipment, as generators have to be purchased.

The valuable semi-precious stones found in Botswana (agates, cornelians, Botswana pink banded agates, rock crystals and jaspers) are medium to lower quality stones.
The medium quality market has been developing in recent years while the lower quality market has been declining.

Therefore the Technical Advisor recommends to grind only really good medium quality stones (agates, Botswana pink banded agates).
As far as cut stones from developing countries are concerned, the demand for single high quality stones is still rising and in some cases supply is insufficient. As a result, stones

originating from African countries have growing importance, but they are cut in Brazil or India, as more than 300 cutters in Rio de Janeiro and Jaipur or Bombay are renowned for the high standard of cutting.

Knowledge of the export market is of primary importance for successful export marketing. Because market access is easy and turnover at present is not growing, competition is very keen as regards quality, price, reliability of suppliers, conditions of delivery, etc. Most stone dealers of importance travel at least twice a year to the main overseas supplying countries.

However, the market for cut stones is more difficult to conquer than that of uncut stones. Importers of cut stones have long-established connections with their suppliers. In this trade, trust has considerable influence as well as personal contacts.

Therefore a formal invitation to see the stones offered at the supplier's office is the appropriate way for initiating the necessary personal contact with an interested importer.

Payment terms are usually confirmed by letters of credit, but as in the jewellery trade payment is very slow and sales are even made on a consignment basis, dealers seek to get credit from overseas suppliers whenever possible.

The recommended trade channels to be used by newcomers to the coloured stone and the semi-precious stone market are the following:
Due to the centralization of the trade of both cut and uncut stones in Idar-Oberstein and Brazil, India the exporters have interest in contacting the Diamond and Precious Stone Exchange there.

Direct contact with mail-order houses, retail buying groups for specialized shops as well as with jewellery and watch manufacturers could also be envisaged but only in case an exporter disposes of a variety of stones and can supply the requested quantities and assortment and ensure the quality of his goods.

The availability of uncut stones will in future be more and more limited, some developing countries already envisage banning this export.

There are certain trading requirements which should be observed, but which are not always followed by the exporters. It happens that the shipments do not correspond to the samples presented previously to the importer. The regularity of the stones is also very important to facilitate the automatized industrial production of jewellery. The respect of delivery terms, especially the observation of deadlines are other important requirements.

Certificates attesting the genuiness of a stone or the origin and manual cutting would be important sales arguments.

Although their market share in cut stone imports is increasing, it appears that developing countries do not fully exploit their market potential. Agates could well become increasingly popular. A better finish of the stones, i.e. a better quality of cuttings would easily induce importers to buy more imported finished products.

The value-added initially on tumbled stones is very limited and this tendency is going to be even more emphasized in the future.
Stones are now exported in the rough and a minor portion is tumbled. As has been mentioned above even the tumbled stones fetch a very low price and the revenue the Botswana economy gets from these operations is negligible. Very few of the local gemstones in Botswana are really good and unique to the country. Therefore these stones should be well guarded and worked in the country to fetch a higher price. This is not possible with a costume jewellery approach. The fine jewellery approach which diminishes the demand of a scarce source will create profitable result for the country in every respect.
The development of the gemstone processing must be diversified to meet seasonal fashions and economical fluctuations. Botswana is in no position at the moment to follow these fluctuations and has no opportunity whatsoever to influence such developments.

C. Recommendations for fine and costume jewellery

Fine jewellery will in most cases satisfy the criteria far more efficiently than the costume jewellery based on tumbling of the stones. This will be elaborated on more in detail below. Fine jewellery in this context will be used as a concept to contain silver plating, copper smithing, gemstone and ivory cutting.

Raw materials locally available in Botswana is a major consideration. Copper, gemstones and ivory are all abundantly in Botswana. Certain kind of hard wood to be used in combination with other materials is also available in sufficient quantities. Silver has to be imported at an international price. However, this does not represent a major problem as the silver content cost is a very minor part of the finished product in jewellery. It represents something like 10% of the final price that a piece would fetch. Furthermore there is no scrap cost involved. The silver can be used over and over again. Also a finished product which cannot be sold because of consumer resistance can be used again for a new production. Thus the importation of small quantities of silver is of no significance as compared with all kinds of other advantages one would get from a fine jewellery in silver.

The market for custome jewellery and tumbled stones is extremely vulnerable in many respects, notably because of:

The price-asticity is very high. As there is no secondhand value worth mentioning in costume jewellery the demand is subject to drastic changes once the economy is in recess on the world market. People prefer to buy jewellery which gives them values which are not subject to changes because of inflation and other economic developments. At times when there is a boom on the market, custome jewellery can easily fetch a big demand. At the moment, however, there is no real sign of a recovery from the recession and it would therefore be completely out of the question to suggest an expansion of the present production.

To create an equitable distribution of Income between urban and rural areas.
This of course is very difficult to determine in a case like this. Most likely the participants in a training programme of this nature would be people without necessarily having any links with the rural development. On the contrary they would normally be fairly young people with a secondary school education and as such part of the urban development.

Growth Potential. There is a growing interest throughout the world for handicraft production of this kind and fine jewellery is always in demand. This of course is partly due to the fact that the craftmanship needed for the production is not easy to find and there is very little systematic training for them. For the public it is also one way of safeguarding their money towards inflation. Sentimental reasons as well as a quality consciousness in certain sections of the public is also pushing the demand continously higher.

Labour intensive methods. The production techniques are highly labour oriented with very little capital input needed. The aggregate demand for manpower is difficult to determine as this is a skill that cannot easily be taught to people unless they have the artistic feeling necessary for the creation of work fine jewellery represents. In other words the extent to which the labour intensive methods can be applied is unlimited. The basic problem is to identify people suitable to train.

To Create Employment Opportunities. Working with fine jewellery as defined above does not instantly give employment to a lot of people. However, it gives employment by using very labour intensive methods. In the long run, if demand of Botswana jewellery is up to expectations and consumer demand, a lot of employment will generate out of the business.

Value added is a most important criterion for the development of trade and industry in Botswana. As such fine jewellery is exceptional. With an input of raw materials of roughly

10% of the consumer price the value added in far beyond what any other production line could possibly fetch. Even more important is the fact that most of income accruing from this kind of operation will flow into the country from external sources and remain in Botswana. The operation will have a definite and positive impact on the balances of trade and payment.

In all probability there is room in Botswana for both small costume jewellery and small fine jewellery industry. Both have definite roles to play covering totally different fields. It must be realized that the two cannot be done together although there are certain areas where overlap is possible such as the use of stones and some manufacturing processes.

D. Recommendations: Selection of trainees

With all the equipment the qualifying period should at least take two months before the trainee gets a contract. (This was impossible to realize in this project because of the delay of tools and machinery).

Only after this period the Technical Advisor is really capable of estimating properly the willingness and receptivity.

The willingness to work in a group should be particularly examined.

More simple tests should be submitted with for example simple mathematical problems (the four rules, percentage calculations, decimal points) which have to be explained before and also after the test.

For example: 761 : 0.900 (necessary to find the silver fineness for Sterling silver for example)

or: 3% of 100 = 3, so
24% of 100 = ? etc.

This was required so that it would not be necessary to spend days with these problems during the following training period.

In the second month of this qualifying period models of clay, plaster of Paris and wax should be produced to enable the advisor to see the absolutely necessary design capability of each trainee.

5. Recommendations: Design

Apart from the quality of the final item, great importance has to be given to design.

This is extremely necessary as entrepreneurs or the formed Limited Company are after one and a half years training of course unable to go into technical and design competition with specialist silversmiths or gemstone-cutters world wide.

More typical Botswana designs, easy to produce technically should be developed.
This will probably present difficulties for the next two or three years, in the case where new models are not only reproductions, but independant creations.

Therefore: Extension of the existing little Library.
Books about African Art, fashioning.
Subscriptions to Silversmith Magazines.
Subscriptions to Lapidary Magazines.
(see Appendix C).

The entrepreneur should continue, at least two hours per week to extend their design capability and, at the same time, to draft technical drawings (this means possibilities to present the design in a technical graphic way).

<u>The explanation of a design to a customer is only possible with the help of a drawing.</u>

This is particularly necessary at the beginning of a company's formation, for the following reasons:

a) Mostly there cannot exist enough models due to a lack of time of preparation.
b) Costs of material, unused, would be high.
c) Many estate customers have special requests. In this case wholesalers and retailers profit would be eliminated in favour of the profit of the Company.
d) Relationship between customers and Company must be developed by creating consistently confidence in skills.

The main danger in introducing fine jewellery into a developing country is that, in the main, there tends to be an importing of foreign designs as well. This importation of ideas kills off, unless carefully watched, all original ideas on the part of the indigeneous people. Local craft work is already a scarce commodity and it would seem to be important, that local ideas should be retained and allowed to grow.

F. Recommendations: Craftmanship

Quality control:
Quality control is an absolute necessity and the Technical Advisor or/and the Board of members of the Limited Company should have the power not to allow items to be delivered, if they do not correspond with the requirements of the customers.
However, greater difficulties are to be overcome in the design and the finishing of new models as well as in job-work and repairs.

Twenty months is a relatively short period to master completely such a complex craft, but the market in Botswana is fully open for it and offers excellent possibilities for a good living for the entrepreneurs.
For example:

a) There are no goldsmiths or silversmiths in Botswana. This means that all repairs have to be sent to the RSA or overseas (such as riped chains, ring size modifi - cations, re-setting of lost stones, soldering of broken parts, polishing and cleaning etc.). All these repairs could be done easily by the entrepreneurs with the available equipment and tools.
With an estimated number of 5000 expatriates and ten thousand Botswana possessing jewellery, there would be, for example in the repair sector alone, a good income for at least eight trained goldsmiths or silversmiths.

b) Job-work:
In connection with an operating stone-cutting section the company would be able to produce typical Botswana jewellery pieces and display-pieces, for the local market, including tourists and expatriates. Everybody would like typical Botswana items, purchased locally and not in Paris, New York, Rome etc.
This would provide more profit for the Company as wholesalers and retailers are in this way naturally eliminated.

RECOMMENDATION: FUTURE TRAINING REQUIREMENTS

One of the most important requirements would be technical and design assistance for the entrepreneurs. As the Technical Advisor pointed out in the general craftsmanship and design recommendations, the new entrepreneurs are able to do basic silversmithing independently but to create new designs requires different techniques.

Therefore, future technical assistance is necessary. This assistance does not need to be full time - maybe three months per year for three years would be sufficient.

This assistance should develop the capability of producing new designs relating to new fashion trends, and also develop independence in dealing with daily technical problems.

However, in addition to technical skills, it must be emphasized that marketing is of paramount importance. Botswana entrepreneurs will be competing with long established businesses. Therefore, they must have specialist marketing staff knowledgeable of market fluctuations, changing trends, and specialised knowledge of silver, gold and stone quality.

Funds should be available for participation in international jewellry exhibitions. This is the cheapest way to develop international business.

Extension of the workshop will be necessary to accomodate the successfull trainees in repair and job work.

A show room will help the entrepreneurs to eliminate the profit of the wholesalers and to make over the counter sales.

The Technical Advisor recommended in March, 1981 to put two or three typical African roundevales (round huts) in front of the estate and using this for display purposes, and extending the workshops.

Overseas training will be necessary for the new entrepreneurs to see different techniques and recognise the importance of the timing of each element of the production process. This will help for a time and profit calculation.

...../cont.

The Botswana entrepreneurs in stonecutting and stone polishing have extreme competition from Brasilia and India and they should be aware of market fluctuations. The Technical Advisor also recommended a collection centre in Bobonong to eliminate illegal export of Botswana stones. This would also help the entrepreneurs to maintain stock of raw materials.

IV. FINDINGS

When the Technical Advisor arrived in Botswana in April 1980 there were only two gemstones entrepreneurs in business.

1) "Kalahari Gemstones" Gaborone: (established in 1974) basically only doing some tumbling of the stones and gluing the stones into very cheap fittings.
2) "Airport Jewellery Shop" Gaborone: only selling; most of the items are imported; cheap price jewellery, ostrich eggs, souvenirs.

Only one dealer in semi-precious stones with a licence stand in Selebi-Phikwe, but he did not operate. (See "Dealing in Semi-Precious Stones, Supplement B - Botswana Government Gazette dated 1st July 1977, Part IVA").

According to the Mining Annual Report 1981 508 metric tons with an estimated value of P. 169.000 were mined between 1968 and 1980.

This means for example: 1 kg of diverse semi-precious stones was classified with 0.50 Pula in 1968.

1 kg of diverse semi-precious stones	0.66 Pula	1969
-"-	0.48 -"-	1975
-"-	0.23 -"-	1976
-"-	0.20 -"-	1979
-"-	0.20 -"-	1980

This indicates that the stone quality on the surface is continually decreasing, particularly as during the same period international prices were increasing substantially. For instance the price for agates rose about 200% on the Idar-Oberstein (West Germany) stock-exchange between 1975 and 1980.

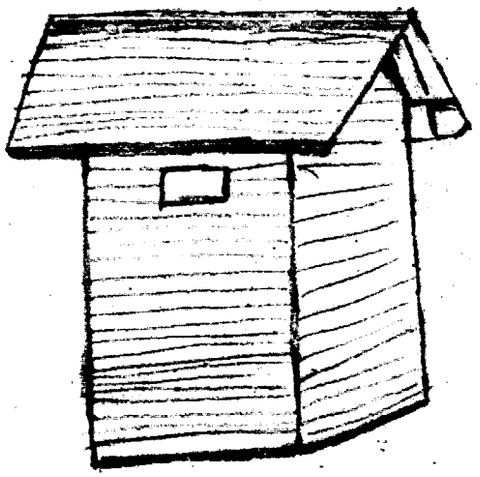
In the view of the experts from the Geological Service Lobatse machinery digging (caterpillar-digging) would lead to a financial success only in one or two places of discovery. At the moment the collecting of agates in the Bobonong area takes place only after the rainy season as bigger stones become detached from the subsoil and are in this way

noticeable without effort.

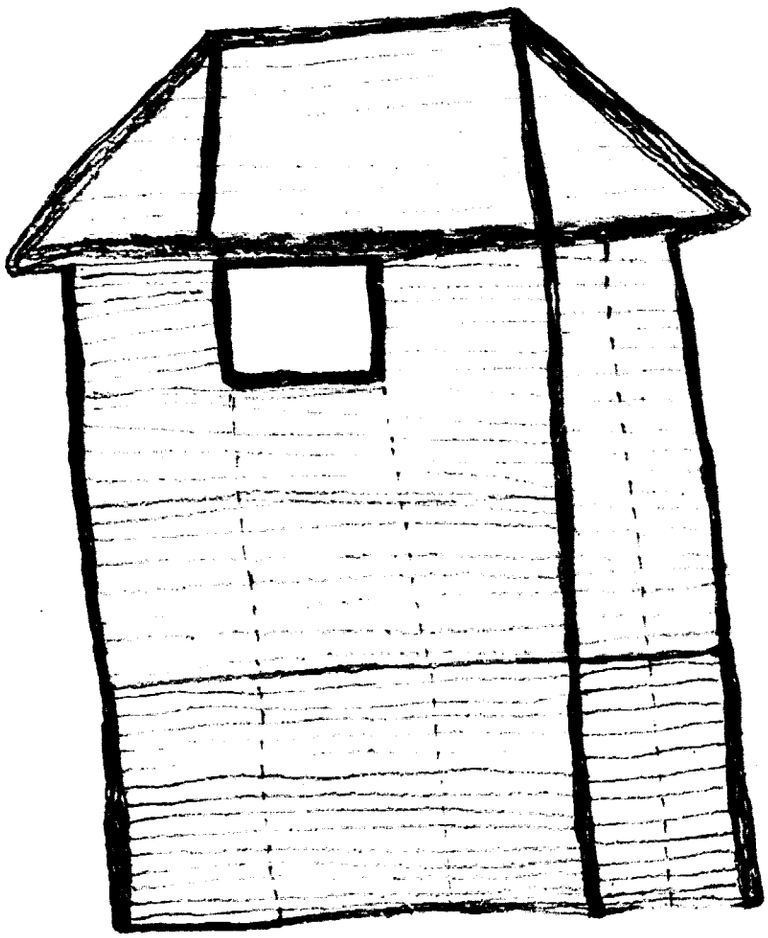
There were no operating silversmiths or goldsmiths in Botswana.

Appendices

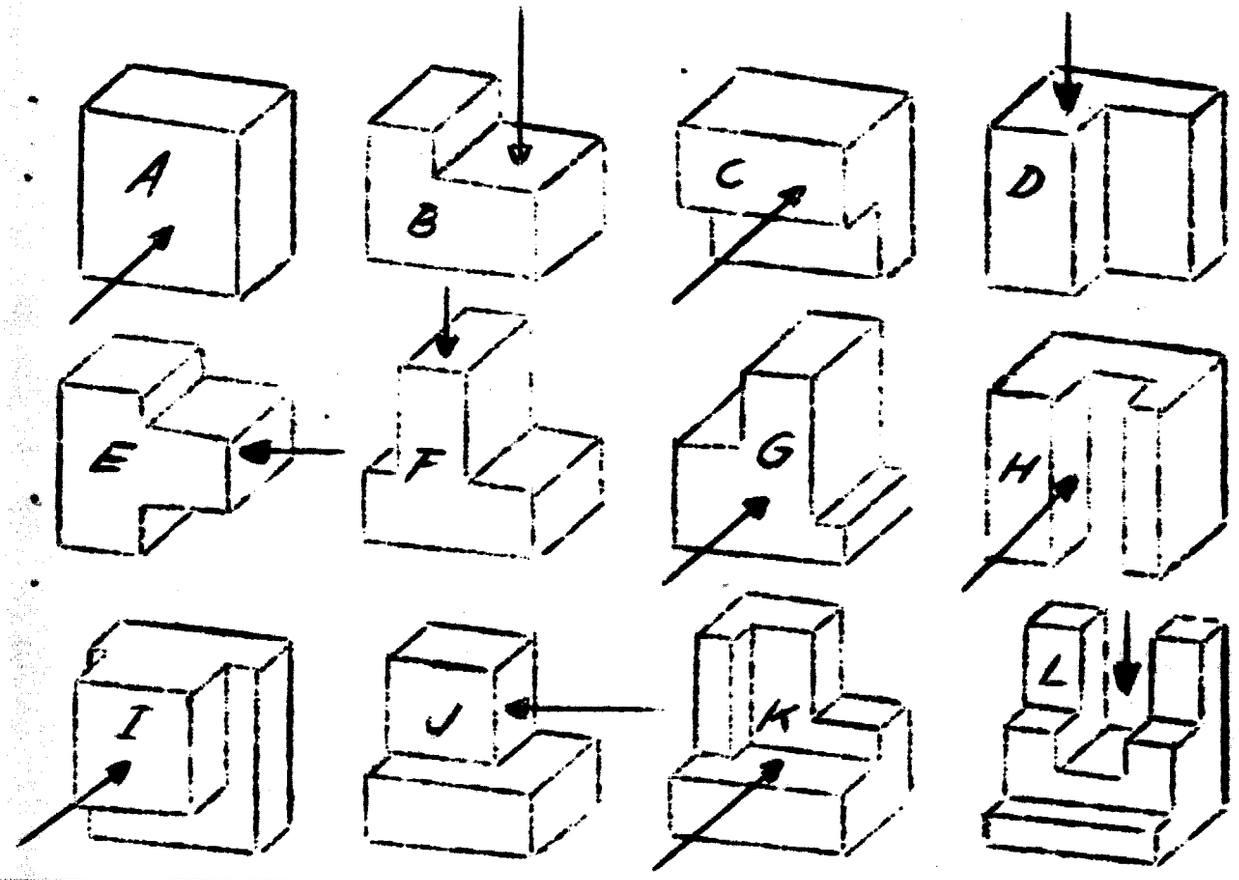
Mokumiryasa Kenasi
Mokumiryasa Kenasi

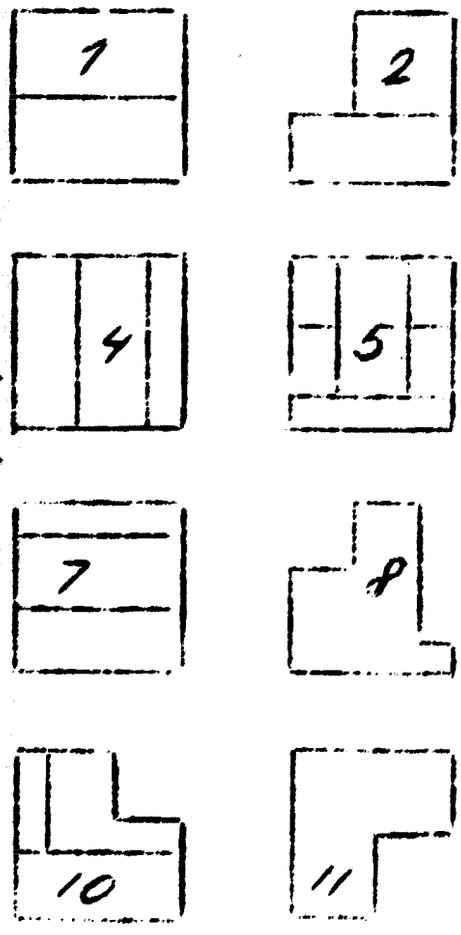


Lydia Sekpinsko



Which of the views shown below corresponds with the views indicated by the arrows on the shapes above.

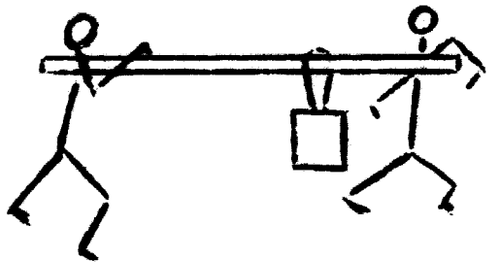




A	1	6	3
B	11	12	3
C	12	1	3
D	4	11	6
E	5	6	12
F	1	2	7
G	9	8	11
H	4	12	5
I	9	2	11
J	2	8	10
K	3	9	10
L	5	7	9

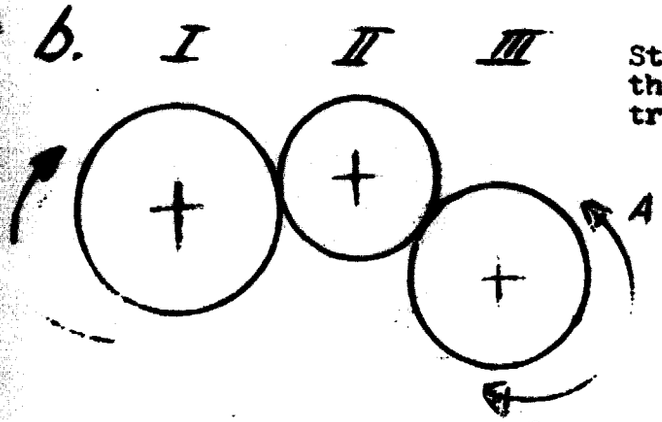
Write the letter for the correct answer into the box on the right below.

a.



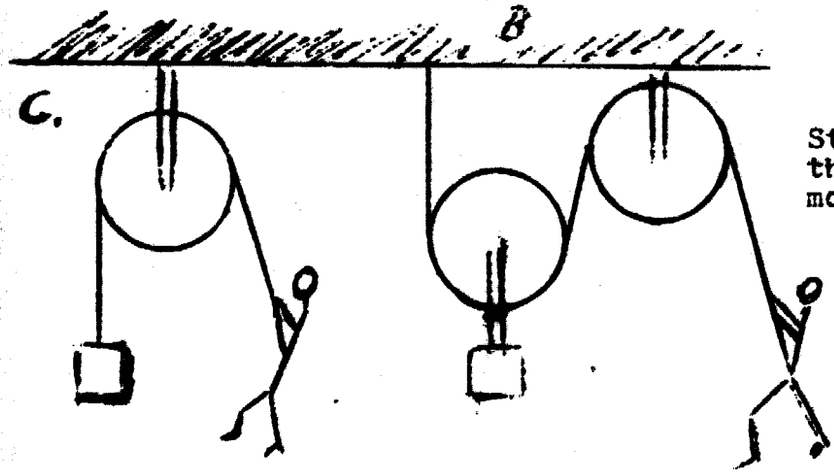
Which man carries more weight?

b.



State the direction in which the gear III of the sketched transmission turns

c.

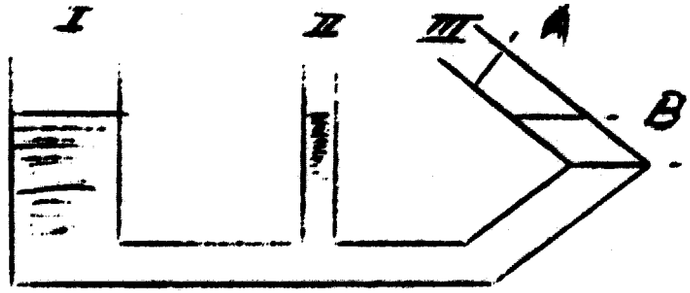


State on which rope the man has to pull more

equal weight

explanation

d.



Indicate the waterlevel in section III,

A, B or C

explanation

TRADE FAIRS AND EXHIBITIONS

- German Exhibition of Precious Stones, Exhibit Manager
  (yearly in July)

  Hamburg Messe und Kongress GmbH
  Jungiusstrasse
  Postfach 302360
  2000 Hamburg

- Permanent Exhibition for Specialized Traders

  Diamond and Precious Stones Exchange
  34, Mainzerstrasse
  6580 Idar-Oberstein

- International Trade Fair in Frankfurt (twice a year)

  Messe und Ausstellungs GmbH
  Postfach 970126
  6000 Frankfurt 97

- International Souvenir and Gift Show in Wiesbaden
  (yearly in July)

  Mauritius-Verlags - Messe und Werbegesellschaft mbH
  10, Wittelsbachstrasse
  6200 Wiesbaden

- The Swiss Industries' Fair (annually in April), (incorporating the European Watch and Jewellery Fair), Basle, Switzerland.

  Organized by:

  Swiss Industries Services Ltd
  Schweizer Mustermesse
  4021 Basle

For the jewellery manufacturers and wholesalers:

- UPAFI (February and September)
  Brussels

  For information:

  Mr. Ignace van Geyseghem
  48, rue Antoine Dansaert
  1000 Brussels

- Inhorgenta Munich International Trade Fair (yearly)
  (for watches, clocks, jewellery, precious stones and silverware, and their manufacturing equipment)
  Münchener Messe und Ausstellungsgesellschaft mbH
  Postfach 121009
  8000 Munich 12

- Jnhorgenta Fair
  International special fair for watches, jewellery, precious stones, silverware, etc., held annually in February at Munich
  Organizer: Münchner Messe- und Ausstellungs GmbH
  Messegelände
  Postfach 12 1009
  8000 Munich 12
  Germany, Fed.Rep.

- Bijorhca Fair
  Special fair for bijouterie, jewellery, etc., held annually in January and September at Paris.
  Organizer: Chambre syndicale, BOCI
  26, rue du Renard
  75004 Paris
  France

- Juwelia Fair
  Special fair for jewellery within the International Autumn Fair of Vienna, held annually in September at Vienna.
  Organizer: Wiener Messe AG
  1, Messeplatz
  1071 Vienna
  Austria

- Chibicar Fair
  International fair for gifts, bijouterie, jewellery, etc., held annually in January at Milan.
  Organizer: OMS
  10, Via Monferraro
  20144 Milan
  Italy

Magazines:

Uhren Juwelen (monthly)

Published by: Österreichischer Wirtschaftsverlag
7-11, Nikolsdorfgasse
1050 Vienna
Austria

Goldschmiedezeitung - European Jewellery (monthly)

Ruhle-Diebner Verlag KG
5a, Wolfschlugener Strasse
7000 Stuttgart 70
Germany, Fed.Rep.

Gold und Silber, Uhren und Schmuck (monthly)

Ernst - Mey
Kohlhammer Strasse
7022 Leinfelden
Germany, Fed.Rep.

Jewellers Circular Keystone (monthly)

A. Chilton Co. publication
Chilton Way
Radnor, PA 19089
United States

Lapidary Journal

3564, bd Kettner
San Diego, CA 92138
United States

READING LIST FOR THE SILVERSMITHING TRAINING

Books:

ABBEY, Staton: The Goldsmith's and Silversmith's Handbook.

BOVIE, Hamish: Jewellery making.

BRUNNER, Irena: Modern Jewelry-Design & Technique.

CENTELLE, Thomas: Jewellery: a complete introduction to the craft of jewellery.

CHAMBERLAIN, Marcia: Metal jewelry techniques.

CLARKE, Patti: Jewelry in easy steps.

CRAWFORD, John: Introducing jewelry making.

CUZNER, Bernhard-MARTON, Herbert: A Silversmith' Manual.

DAVIDSON, Ian: Ideas for Jewelry.

EDWARDS, Keith: Lost wax casting of jewellery: an introduction to investment casting.

FISCH, Arline M.: Textile techniques in metal for jewelers, sculptors and textile artists.

GOODDEN, Robert: Silversmithing.

MEYEROWITZ, Patricia: Jewelry and Sculpture through Unit Construction.

MORTON, Philip: Contemporary Jewelry: A studio Handbook.

RICHARDS, Alison: Handmade jewellery: techniques and designs.

SMITH, Keith: Practical Silversmithing and jewelry.

SOMMER, Elyse: Contemporary jewelry: a multimedia approach.

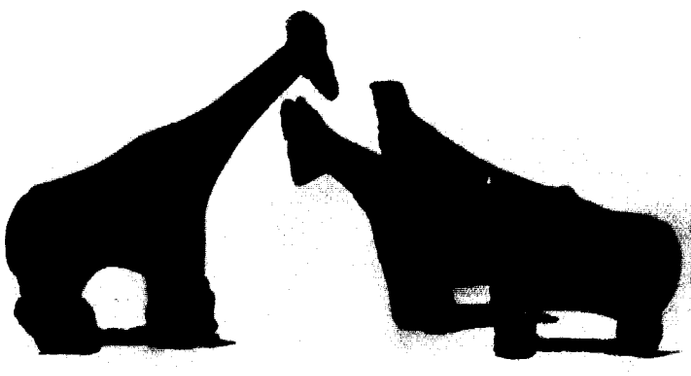
TOTHAM, Philip: Oxford paperbacks Handbooks for Artists.

WADA, Takashi: The art of making jewelry.

WICKS, Sylvea: Jewellery.

WILSON, Henry: Silverwork and jewellery: a text-book for students and workers in metal.

BEDU
SILVERSMITHING
GABORONE
BOTSWANA



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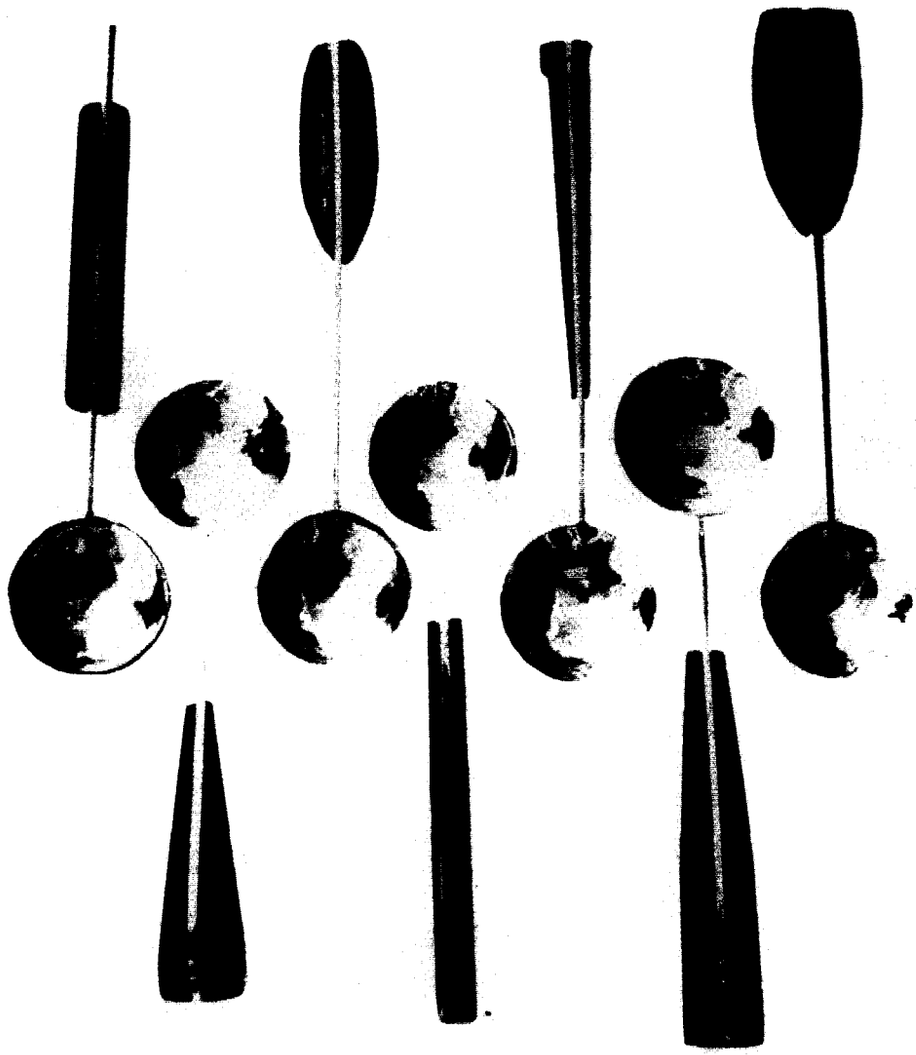
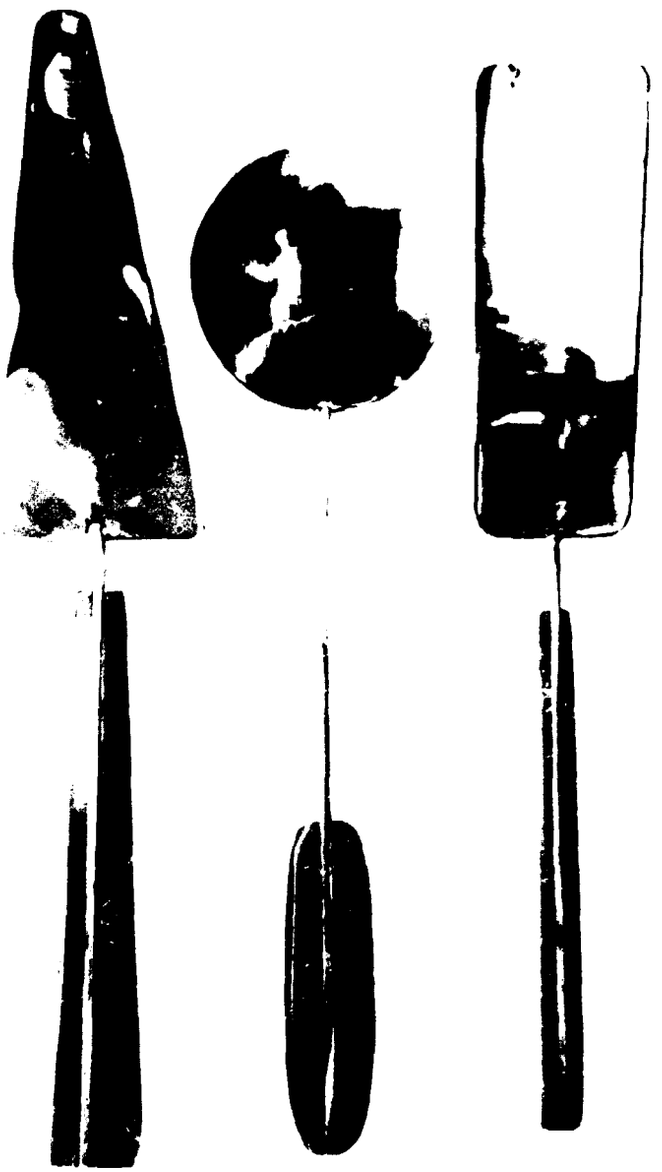
Printed by Printing & Publishing Co. Botswana (Pty.) Ltd., Gaborone



A1 A2 A3 A4

A5 A6 A7



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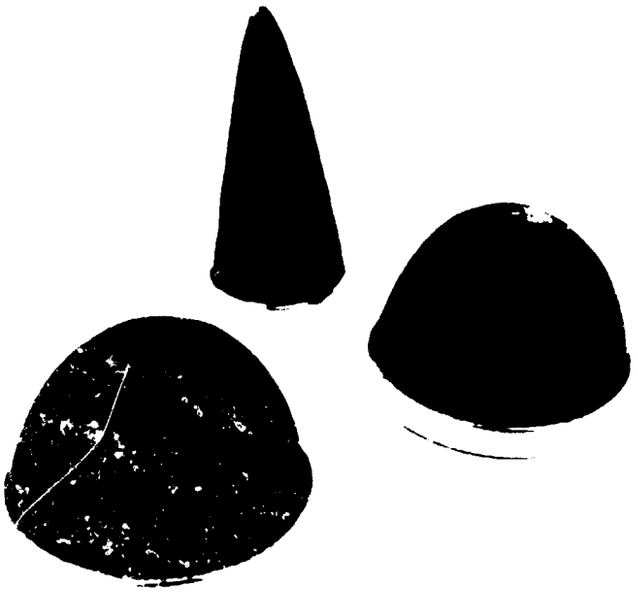


A51

A50 A50

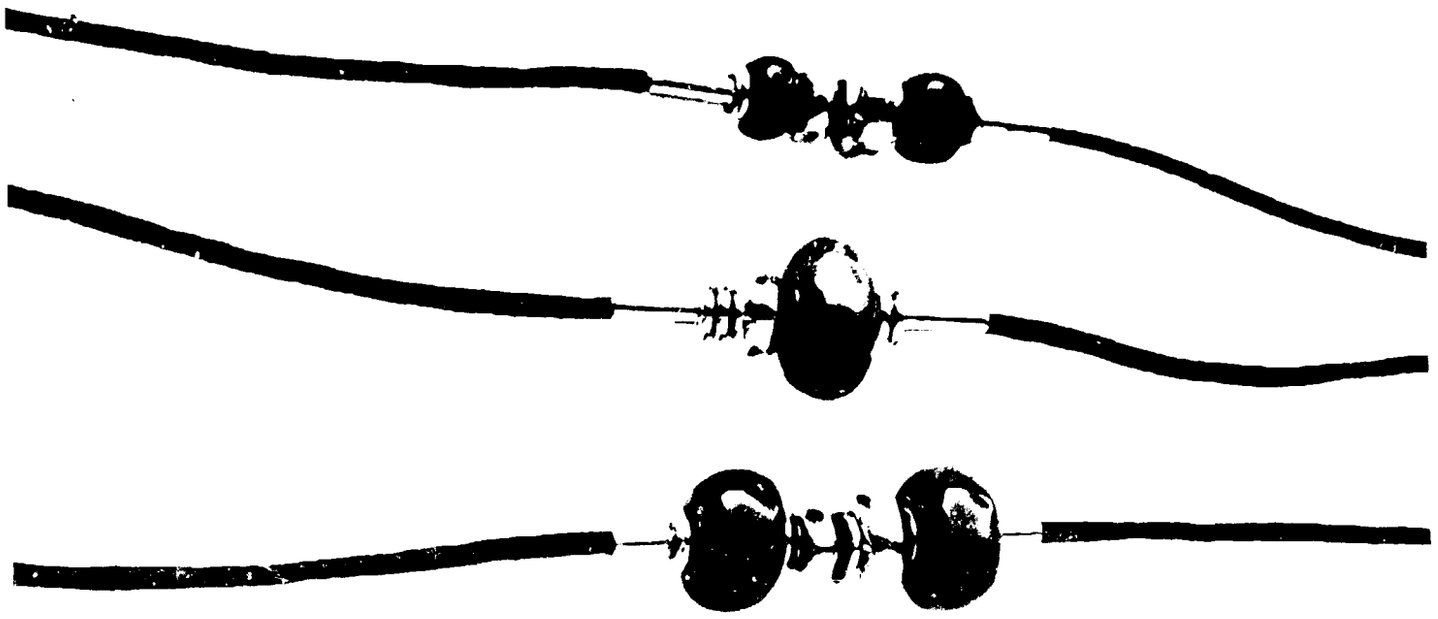
B1 B2 B3

B4 B5

B6 B7

C1 C2

C3 C4



D1

D2

D3