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PROSPECTS FOR THE ESTABLISHMENT OF AN INTEGRATED ELECTRONICS INDUSTRY IN THE NORTH AFRICAN SUB-REGION

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1. METHODOLOGY

1. This study deals with the demand for and production of, in North Africa, the industrial products which fall within Group 370 of the International Standard Industrial Classification (ISIC).

So that this study may provide guidance for future work, and find its place in a wider framework comprising other headings in the classification, it has been considered necessary to show the exact extent to which Group 370 is covered by the Customs nomenclatures of the five countries to which the study relates: Morocco, Algeria, Tunisia, Libya and the Sudan.

Annexes I (List of products classified in ISIC Group 370 and their corresponding classification in the BTN and the SITC, Revised;

and II (Correspondence between the Algerian, Moroccan, Tunisian, Libyan and Sudanese Customs nomenclatures for products classified in ISIC Group 370).

provide an accurate inventory of the industrial products examined.

Though the omission of a number of products from this list may be regretted, it has been preferred to use the ISIC classification without change, despite certain anomalies, in order to avoid encroaching on sectors covered by other studies, for this would have led to duplication.

Such items as plastic parts for electronic equipment, wooden cabinets for radio and television sets, dictating machines and various scientific appliances have therefore not been included in this study.

2. The analysis of current demand is based on foreign-trade statistics, available for the five countries and covering the recent period up to 1965.

These statistics provide import and export figures. They revealed after compilation that exports in the electrical and electronics sectors accounted for less than 1 per cent of the value of imports; it was therefore decided to ignore them.

To make the figures comparable, calculations were based on the only accounting unit which appears in the statistics of all five countries, namely the value of the product. In some cases, quantities are added, to provide additional information (number of radio sets, valves, etc.).

To offset the effect which abnormal import figures for one year might have, figures for the latest two available years (1964 and 1965) were taken, and the causes of any disparities were investigated.

Furthermore, since in some countries some of the items are not sufficiently broken down, the proportions observed in other countries between a Customs group as a whole and those of its constituent products with which the present study is concerned had to be extrapolated.

As it is Algeria which has the most detailed Customs nomenclature, the proportions observed in that country often had to be extrapolated to the levels of the aggregate figures given by the others.

To make this extrapolation as valid as possible, import figures for 1963, were collected for Algeria alone, and averages were thus calculated over three years instead of two.

Local output must be added to imports. In most cases, the former accounts for a very small percentage of consumption. Furthermore, many of the enterprises concerned are of recent origin, and only began operating in 1966.

Annex III provides detailed import statistics, on a year-by-year and country-by-country basis.

Annex IV sets out the calculations leading to the extrapolations referred to above.

Annex V provides aggregate import figures for the five countries as a whole.

3. The analysis of local industrial production concerns 1966. In fact, as stated above, many enterprises have only recently gone into production, and output in 1964 and 1965 was not of any consequence. Rather, therefore, than merely adding annual output to the import, figures, it would be more appropriate to estimate the extent to which imports in 1964 and 1965 were replaced in 1966 and early 1967 by local products (it will be possible to verify this estimate as soon as the foreign trade statistics for 1966 are available).

It is as an inventory brought up-to-date in the first half of 1967 that this analysis may be of greatest service. The aim was to make it as comprehensive as possible, and no enterprise whose products are in any way related to the sector concerned has been neglected.

For each enterprise, an identification card was made out, mentioning all the information which might have a bearing on the conclusions of the present study. So as not to overburden the report, it seemed prefereable to arrange the information by type of activity, and to provide agregated figures for each country and each group of articles.

Some of the figures, of course, have been obtained by more or less precarious extrapolation, either because the information requested of enterprises could not be supplied or because it was obviously erroneous.

4. The projection of demand in 1980 and the recommendations for the development of the industry have been prepared on the strict assumption of co-operation between the Maghreb countries - a co-operation such as might possibly be extended to all North Africa, or even Africa as a whole.

For the viability of the electronics industry will depend above all on the size of the market open to its products; and the manufacture of electronic components in particular can only be undertaken within a system of standardization agreements, with free trade between the countries concerned.

Any political development in a contrary sense would upset the development and the balance of this industry, which, because it is a new one, requires proper care and attention.

2. GENERAL

A. Tentative description and classification of the electronics industry

The industrial sector covered by the present study is extremely diversified, covering not only electronic instruments but also electric appliances and such accessories as batteries, accumulators, wires, etc.

To provide as valid a description as possible of the manufacturing processes and technical characteristics of the products in question, these appliances have been systematically arranged in four groups, each containing products which have certain features of operation or manufacture in common.

The first group includes all appliances, and parts thereof, in which the electronic circuit is of primary importance.

The second group includes electric appliances, and parts thereof, whose electrical element is relatively simple and generally powered by low voltages.

The third group includes appliances for the production of electricity (generators), the utilization of electric power (motors) or the transformation of voltage or power (transformers); this equipment frequently employs high voltages.

Lastly, the fourth group, which will be headed "miscellaneous", includes batteries, accumulators, electric wires, etc.

In the first three groups, a distinction must be made between consumer products and industrial equipment. Consumer products are generally the object of heavy demand, and are produced in large series (radio and television sets, etc.). Industrial equipment, on the other hand, is produced in smaller series (transmitters, telecommunication equipment).

A further distinction must be made between the manufacture of the components of such products and the assembly of an appliance from its component parts.

Lastly, components should be divided into two categories:

Mechanical parts;

Electronic parts.

Four types of industrial activity will therefore be considered in turn for each group:

1. The production of electronic components;

2. The production of mechanical components;

3. The assembly of consumer products;

4. The assembly of industrial equipment.

Group I

Appliances, and parts thereof, in which the electric circuit is of primary importance

The articles listed below may be included in this group. The corresponding Brussels Nomenclature headings are given pro memoria:

Electronic computers	84.52
Electronic statistical machines	84.53
Electrical telecommunication apparatus	85.13
Microphones, loud speakers, amplifiers	85.14
Radio and television transmitters and receivers	85.15
Capacitors	85.18
Thermionic valves and transistors	85.21
Electro-medical apparatus	90.17
Deaf aids	90.19
X-ray apparatus	90.20
Sound recorders and reproducers	92.11
Parts for electronic musical instruments	92.10

To this group may be added the following, whose manufacture is more or less similar to that of the components of the articles listed above:

Carbon articles for electrical purposes	85.24
Insulators	85.25 26/27
Lamps for lighting purposes	85.20

1. Electronic components (transistors, thermionic tubes, cathode tubes, resistors, capacitors and certain parts intended specifically for television equipment are, in the industrialized countries, made in

highly automated factories by machinery designed to produce millions of items a year. The production of such articles in small series by artisanal methods is unthinkable, for they would not be competitive on the world market in terms either of cost or of quality.

This industry is capital-consuming. Only relatively small quantities of raw materials and labour are needed. The basic criterion by which the profitability of a production branch may be assessed is the level of output at which the equipment can be amortized.

The relative importance of the production factors may be estimated as follows:

Raw materials	20 per cent
Capital	60 " "
Labour	20 " "

Electronic parts are "standard", i.e., produced according to fixed norms and performing a specific function. Identical resistors and identical capacitors are used in hundreds of different appliances because the technicians responsible for designing circuits generally select the parts which they require from lists of available components.

2. Mechanical components (metal and plastic parts, wooden cabinets, printed circuits, coils, etc.), on the other hand, are specific to a given appliance and are only rarely interchangeable. For this reason such components are produced in smaller quantities.

The technology of their production, moreover, is generally easier to master than that of electronic components. The equipment used in their manufacture varies according to the series produced.

In some cases, they may be manufactured by artisanal methods. For example, a small workshop can easily be set up to produce printed circuits or coils by manual processes requiring little investment but a fairly considerable amount of labour.

In the industrialized countries, where output is on a relatively large scale, these parts are of course manufactured by automatic machinery. Here, the manufacturing cost is directly proportional to the quantity produced, as in the case of electronic parts.

If artisanal processes, on the other hand, or any processes adapted to the quantity produced, are employed, the cost may be held at a level similar to that for large series. No averages can be calculated for the relative importance of the factors involved in the production of these articles, since metal, plastic and wooden parts, etc., cannot be reduced to a common denominator.

From analysis of the composition of appliances, the value of the electronic components can, for Group I as a whole, be estimated at about 60 per cent of the cost of the complete kits.

3. and
4. As stated above, appliances are assembled either in large series, as for consumer products, or in small series, as for industrialized equipment.

In both cases, this activity is labour-consuming. Labour must, therefore, be made as efficient as possible, and its efficiency will of course be directly dependent on the size of the series. In fact, in the case of large series, assembly operations may be divided into a large number of jobs, so that each worker (man or woman) is given a limited number of tasks, easy to memorize and perform automatically.

In the case of small series, the number of operations per job will be greater, and each separate operation will take longer to perform.

Less capital is needed for the assembly of consumer products than for that of industrial equipment; firstly, because the plant required for the former (instruments, tools, etc.) does not have to be of high precision and is thus relatively cheap; and secondly, because it can be amortized through large-scale output.

Industrial equipment, on the other hand, not only requires much more precise instruments and tools, produced to stricter specifications, but this equipment will be amortized over a smaller output, and it will therefore have a much greater effect on the cost.

In addition, expenditure on research must be regarded as amortiz capital.

The electronics industry has boomed during the last few years. Only one or two big companies can pioneer research on the subject, spending huge sums every year for that purpose.

If a comparison is made between the relative costs of research in the cases of industrial equipment and consumer products and these costs are related to turnover, research will certainly be found to be much more expensive in the former than in the latter case.

This should also be borne in mind, therefore, in estimating the relative importance of the various production factors.

In order to clarify the relationship between these factors, capital and labour may be said to represent roughly (no accurate calculation being possible, since the relations vary from one type of appliance to another) the following proportions of the value added:

	Capital	Labour
Consumer products	40 per cent	60 per cent
Industrial equipment	40 " "	40 " "

It may be added that raw materials account for about 70 per cent of the manufacturing cost of the assembled appliances. As has been seen, electronic parts account for 60 per cent of the value of each kit. The manufacturing cost of the articles in Group I may therefore be said to be made up as follows:

	Consumer products	Industrial equipment
Electronic components	42 per cent	42 per cent
Mechanical components	28 " "	28 " "
Capital	12 " "	18 " "
Labour	18 " "	12 " "

Group II

Electric appliances, and parts thereof, whose electrical element is relatively simple and powered by low voltages

This group contains the following appliances:

Electro-mechanical domestic appliances	85.06
Shavers and hair clippers	85.07
Electrical lighting and signalling equipment	85.09
Portable electric lamps	85.10
Electric domestic heating appliances	85.12
Electric traffic control equipment	85.16
Electric sound signalling apparatus	85.17
Electrical apparatus for making connexions to or in electrical circuits; switchboards and control panels	85.19
Photographic flashlight apparatus	90.07
Time switches	91.06
Electrically warmed articles of bedding	94.04

All these appliances have the following characteristics in common:

A simple electrical element (motors, heating resistors, etc.);

A generally rather complicated mechanical element, of primary importance to the operation of the appliance.

What has been said above on the subject of appliances in which the electronic circuit is of primary importance may, on the whole, be repeated for this second group of appliances, which, indeed, contains both electrical and mechanical components.

The proportions in which these components are represented are probably in the neighbourhood of 20 per cent and 80 per cent respectively.

Although the manufacture of the electrical components differ from that of the electronic components in Group I, the two may, nevertheless, be compared. The Group II items (small electric motors, circuit-breakers, switches, resistors, etc.) are relatively easier to produce than transistors or cathode tubes, but they are also manufactured in very large series in the industrialized countries, and their manufacturing cost depends directly on the number of articles produced. The influence of capital on the cost will be slightly less than in the manufacture of electronic components, but it will still predominate over other production factors.

As regards the manufacture of the mechanical components, a comparison may be made with Group I. Appliances of this type, however, often have large but roughly finished metal parts. Such parts are easy to make, even with simple tools, and if sheet metal is locally available, this branch of manufacture will be profitable, for it will lead to savings in transport costs, which are high.

The assembly of these appliances is generally less complicated than that of electronic appliances, requiring, above all, mechanical skills. Articles are produced both in large series for mass consumption (electric fans, razors, etc.), and in smaller series for industrial use (switchboards and control panels, signalling and public lighting equipment). As a rule, the instruments needed will not have to be very accurate or expensive (unlike those used for electronic assemblies);but on the other hand, complicated tools will be used in the assembly of mechanical components.

Group III

Appliances for the production, utilization, and transformation of electric power.

This third group comprises:

Generators, motors, transformers, etc.	85.01
Electro-magnets	85.02

Electrical starting and ignition equipment	85.08
Electric welding equipment	85.11

This material is general heavy, making practically no use of electronic components. As a rule, its electrical operation is based on a coil winding. The greater part of this equipment is for industrial use, and its manufacture is a branch of mechanical engineering.

Articles are frequently produced in rather small series. The labour intensiveness will thus be rather high. Much "research" capital will also be needed.

Group IV

Miscellaneous

In this last group are included three types of accessory which could not easily be placed in the preceding three. They are batteries, accumulators and wire, whose production requires a special technique which is well within the reach of countries in the process of industrialization.

North Africa does, in fact, currently produce enough accumulators to meet almost all the needs of Morocco, Algeria and Tunisia; and enough wire to meet almost 75 per cent of the requirements of Algeria and Morocco.

On the other hand, only perfunctory efforts have so far been made to produce batteries, and these have met with failure, probably because the quantities produced were insufficient. Modern battery production is based on automatic processes, and only a relatively small investment is required to produce five million batteries of a given type.

The incidence of the production factors may be estimated as follows:

± 70 per cent	raw materials
20 " "	labour
10 " "	capital

Outputs of less than five million require practically the same amount of investment and labour, and this obviously means quite a steep rise in costs.

Manufacture by artisanal methods cannot be envisaged, for it could not compete with automatic production in terms either of quality or of cost.

As to wire, a distinction must be made between the manufacture of bare wire, conductor wire and telephone wire, the characteristics of production being different in each case. As, however, a discussion of these distinctions would be rather superfluous in the present report, all that will be done is to estimate the relative importance of the three production factors in the manufacture of wire as a whole.

Their incidence is as follows:

50 per cent	raw materials
25 " "	capital
25 " "	labour

Lastly, as to accumulators, the process of manufacture generally employed is substantially more artisanal. The incidence of the production factors may be estimated as follows:

70 per cent	raw materials
25 " "	labour
5 " "	capital

N.B.: The percentages quoted for the groups of equipment are averages. They will obviously not always be valid for individual articles, for which the real percentages display considerable variations.

B. The state of the electronics industry in the world at large

The great diversity of the electronics industry makes it somewhat difficult to describe the world market situation. On the whole, however, this industry may be regarded as having one of the highest growth rates in the world.

The main producers are the United States, the European countries, Japan and a number of Far-Eastern countries (Hong Kong, Formosa, South Korea).

The industrialized countries are also the biggest consumers, with industry itself absorbing large quantities of electronic products.

The demand for consumer products varies according to population, but also depends, of course, on per capita income levels. As the industrialized countries have the highest incomes, they are also the largest consumers in this field.

The main producing countries are also the main exporters. The main importers are the countries in process of industrialization, where local production has not yet as a rule progressed beyond the assembly of consumer products.

There are, however, some exceptions. A number of countries which, according to other criteria, still belong to the category of countries in process of industrialization already possess a considerable electronics industry, and even produce a large proportion of the components which this industry requires. As a rule, the import of such components is prohibited in these countries. Such is the case in India, Brazil, Mexico and Argentina.

There has been a marked decline in recent years, in world prices for the main products of the electronics industry, mainly because both components and appliances are now being produced in large series.

Long-term projections of the production and consumption of electronics products throughout the world are extremely hazardous in view, above all of the technical developments which in the next few years will undoubtedly upset all forecasts.

On the whole, the electronics industry may be expected to show an annual growth rate of about 20 per cent.

3. ANALYSIS OF CURRENT DEMAND AND OF EXISTING INDUSTRIES

A study will be made of the demand for electronic products in the Maghreb, the products being classified according to the main features of their manufacture.

In each group, imports will be compared with local products, and the present conditions of local production will be considered.

In some cases, certain immediate improvements which might promote local manufacture will be suggested.

A. Electronic domestic appliances

This group includes radio and television receivers, amplifiers, sound recorders, electric gramophones and deaf aids, i.e. some of the appliances and parts listed under headings 85.14, 85.15, 85.18, 90.19, 92.10, 92.11 and 92.13 of the Brussels Nomenclature.

If industrial appliances, which may be estimated at about 20 per cent of all imports, in this group are excluded, figures are obtained for imports of electronic domestic equipment (see section D, below).

For the five countries as a whole, these figures are $15.2 million and $15.9 million for 1964 and 1965 respectively. Spare parts are included in this total; it is interesting to note the proportion they represent, and particularly the increase in that proportion between 1964 and 1965.

In the three countries which have assembly industries, imports of parts totalled $4 million and $5.5 million in 1964 and 1965 respectively. Calculations based on production figures indicate that in 1966 parts to the value of about $6.4 million were imported. It may thus be said that at present about 50 per cent of all imports in this field consist of parts intended either for the assembly of appliances or for after-sales servicing; and the upward trend which has been noted points to a great increase in assembly during the last three years. There are 22 assembly plants in North Africa, and this may therefore be said to be the main industrial activity in electronics.

It will consequently be studied in detail.

	Algeria	Morocco	Tunisia
Number of works	8	12	2
Share capital:	7,192,000 dinars	9,870,000 dirhams	300,000 dinars
Fixed capital:			
Buildings	900,000 "	2,250,000 "	80,000 "
Equipment	2,500,000 "	3,630,000 "	55,000 "

N.B. The marked difference between share capital and fixed capital is due to the fact that most of the companies concerned are engaged in several activities, almost invariably including the operation of a trading organization. The only industrial fixed assets included are factory buildings (including warehouses, offices, laboratories, etc.), directly concerned with production. It should also be pointed out that more than half the premises were rented.

Production in 1966: If the output figures announced for each works are added together, the following totals are obtained:

Algeria		Morocco		Tunisia	
Television sets	Radio sets	Television sets	Radio sets	Television sets	Radio sets
2,850	133,000	22,870	103,700	7,500	6,000
+ 8,000 electric gramophones		+ 6,400 electric gramophones		+ 3,000 electric gramophones	

N.B. Production capacity here is a very uncertain thing. If the work cycle were broken down, or a few additional electricians, and perhaps also a technician qualified to adjust the appliances, were recruited, or if one or two additional measuring instruments were acquired, the output of most of the works included above could, in fact, be increased by 50 - 100 per cent. On the whole, almost all the companies visited may in present conditions be said to be working below capacity.

Forecasts of output in 1967:

Algeria		Morocco		Tunisia	
Television sets	Radio sets	Television sets	Radio sets	Television sets	Radio sets
± 12,000	± 110,000	± 40,000	± 100,000	± 30,000 8,000 electric gramophones	± 16,000

N.B.: The figures for Algeria are mostly the result of general impressions for pending the outcome of an invitation issued by the Government for foreign tenders for a national assembly plant for radio and television sets, none of the companies has been able to fix precise targets for 1967.

Average value added locally

Algeria		Morocco		Tunisia	
Television	Radio	Television	Radio	Television	Radio
25 to 30%	10 to 25%	25 to 30%	10 to 15%	15 to 20%	

N.B. Television cabinets are locally produced in Algeria and Morocco, but not in Tunisia. In the case of radio sets, the value added locally depends above all on the type of set. In the case of small and very simple portable, one- or two-waveband sets with imported plastic cabinets, it is very low (up to 7per cent or 8 per cent). In the case of more complicated sets, whose wiring takes longer and whose cabinets are sometimes produced locally, the value added may reach 20 per cent or 25 per cent.

Integration

This is almost non-existent, except for wooden cabinets for television sets, some wooden cabinets for radio sets and some plastic cabinets for radio sets (sub-contracted to a plastic-parts manufacturer).

	Algeria	Morocco	Tunisia
Floor space:	12,800 m^2	10,980 m^2	1,900 m^2
Number of workers	416	445	132

There are thus 22 factories in the Maghreb, with a total output in 1966 of 242,000 radio and 33,000 television sets. Provided that the situation in Algeria does not change fundamentally in 1967, output in that year should reach to approximately 225,000 radio and 82,000 television sets. The 22 companies in question employ 1,000 workers, including about 70 technicians; their workshops, warehouses, offices, etc., occupy a floor space of 25,000 m^2. They have invested + $2 million in buildings, electronic instruments, furniture, miscellaneous plant, woodworking equipment, injection moulding equipment for plastics, etc.

The value of their output in 1966 may be set at about $8 million (in terms of import prices minus duty and wholesaler's and retailers' profit), with $6.4 million representing expenditure on imports of raw materials, parts, etc.

These industries therefore realized a currency saving of about $1.6 million, or 20 per cent.

If output in 1967 reaches the figures forecast above, its value will be $10.8 million, of which $8.4 million will consist of imports, with a currency saving of $2.4 million, or 22.2 per cent.

The assembly industry is more or less maintaining the rate of development achieved during the last three years.

Observations:

1. One or two observations may be made concerning the output of these 22 factories, and in particular concerning their future plans.

In Tunisia, television sales will probably outstrip radio sales in 1967 (although the figure of 30,000 mentioned above is, perhaps, a little too optimistic). This is because television sets are exempt from duty, whilst the duty on radio sets is heavy, with the result that the public is offered 23" television sets at prices which are only about double those of good-quality, 3-wave band, portable transistor radio sets. Many customers choose television.

Moreover, and despite the presence of a local industry, the Government has on several occasions imported cheap, ready-assembled sets of Italian or Yugoslav origin, with the result that retail prices have been held below the world level.

In Algeria, it is particularly difficult to distinguish a trend, for despite the existence of eight factories, most of which are at present working below capacity, at least as far as the production of radio sets is concerned, the Government has recently invited foreign tenders for the establishment of a factory capable of saturating the national radio and television market (200,000 radio and 50,000 television sets). This invitation is apparently designed to secure:

A reduction in retail prices;

The local manufacture of parts, so that approximately 40 per cent integration may be achieved as rapidly as possible;

Control over radio and television as media of mass communication and education (the State has recently invested $13 million in a TV transmission network).

Until the results of this call for tenders are known, it will obviously be difficult to gauge the size of the future market, which will mainly depend on retail prices.

It should be pointed out that the Customs duties and charges levied on imported materials of this kind are very heavy, and that their reduction would have a greater effect than any squeezing of profit margins or lowering of production cost in the existing industries.

It should further be noted that tenders have also been invited for 10,000 ready-assembled television sets, and that the import of these sets will have a negative effect on local manufacturing possibilities.

Lastly, in Morocco, there is a steady sale of television sets at Government-controlled prices, and the six companies which assemble these sets are optimistic enough to predict that 1967 output will almost double that of 1966.

The figure of 40,000 television sets nevertheless seems to be a maximum target, which will be difficult to attain. Moreover, even if it were attained, there would probably be a decline in subsequent years due to the saturation of the market serving the classes wealthy enough to purchase television sets at those prices. The optimism of the television manufacturers therefore needs some toning down.

Furthermore, there is fairly widespread concern among the ten companies assembling radio sets, for they are being faced with steadily declining prices. Some say that there is an active contraband trade in very cheap sets smuggled in from the Far East. Although that possibility cannot be ignored, there seems in any case to be a decline in demand, due among other things to poor harvests and the low money earnings of the 70 per cent of the population engaged in agriculture.

This decline in demand has led to ever-keener competition among retailers, resulting inevitably in a collapse of prices. The indications are that at the present price levels, some workshops will have to close down.

2. The Algerian call for tenders for the establishment of a national radio and television factory faces the North African electronics industry with a problem of extreme importance. This move will have such an effect on the development of the industrial sector concerned that a consideration of its advantages and disadvantages may be helpful.

Advantages:

Absolute control over the radio and television market and, probably, of distribution networks, and the possibility of manipulating retail prices;

Increase in the size of production series, probably resulting in improved organization, lower manufacturing costs, and the possibility of some measure of integration;

Establishment of a production unit of reasonable size, approximating to that of factories in the industrial countries, with all the attendant advantages of more advanced vocational training, the formation, among management and others, of an industrial attitude, the spread of that attitude, etc.

Disadvantages:

The chief disadvantage will be the discouragement of existing industries, which, after overcoming their initial difficulties, have now got into their stride and could begin integrating their production. When faced with competition from a big, Government-sponsored factory, it is natural that such enterprises should consider closing down and start a cautious process of disinvestment. This means that workers will be laid off, that investment and experience will be wasted, and that some 50 per cent of the enterprises in the electronics industry will drop out. In any case, the result of the Government's initiative will certainly not be to encourage private investment in this sector. And, as has been said above, such investment is absolutely necessary if production is to be integrated and the conditions of production improved.

Lastly, it is to be feared that, if a factory of this size is started without passing through any initial phase of preparation and staff training, it will run into many difficulties. Probably, therefore, it will have to repeat all the stages passed

through by the existing industries, and undergo the same experiences before achieving integration and the anticipated lowering of production cost.

B. Accumulators

The five countries together imported accumulators and accumulator parts to a value of $1.8 million and $2 million in 1964 and 1965, respectively. Parts probably account for more than 50 per cent of these totals.

Separate figures are available for parts and complete accumulators only in Algeria and Morocco. For these two countries together, the proportions in 1964 and 1965 were as follows:

	1964	1965
Parts	3,009	4,453
Complete accumulators	2,189	1,960

The difference in the proportion between 1964 and 1965 may be noted; it indicates that local manufacture increased in 1965. It may be deduced from these figures that the total market for the five countries is of the order of 500,000 accumulators per year (6 V - 90 A).

Local production began some years ago, and there are at present eight quite large factories, together producing about 330,000 accumulators. To these should be added a few small workshops which either recondition worn accumulators or assemble new ones, but in small quantities. Seven of the eight factories were visited. The total investment in these establishments is of the order of $1.3 million. There are about 9,000 m^2 of floor space, and the eight factories have a staff of 350. The output of 330,000 accumulators represents a turnover of some $3.5 million and the average value added locally is 70 per cent, representing a currency saving of about $2.5 million.

Observations

There is one observation to be made on the quality of locally produced lead. A number of manufacturers have complained about the inferior quality of lead produced in the Maghreb, and some of them still import part of the lead they need. This is obviously detrimental to local development; and as lead is one of the minerals extracted in North Africa, it is a great pity that local requirements have to be partly met through imports.

The problem is merely one of refining, and the lead producers could probably do something to remedy the situation.

C. Manufacture of bare wire telephone wire and conductor wire

Imports of wire of all types in the five countries totalled $6.5 million and $7.5 million in 1964 and 1965 respectively. In per capita consumption of wire, Libya is far ahead of the other countries (consuming approximately ten times more), probably due to the large-scale development of the infrastructure that is taking place in that country. Next comes Tunisia, spending about $0.45 per inhabitant and then - at more or less the same level - the Sudan, Algeria and Morocco, each spending about $0.08 per inhabitant.

The low consumption of the Sudan, however, must clearly be attributed to the relatively low standard of living, whereas the low imports of Morocco and Algeria are due to local manufacture. In any case, it is difficult to extrapolate the markets from one year to another since this type of material is for the most part consumed by official bodies and is the object of invitations to tender issued by the Ministries concerned when large-scale works are decided on. Consumption therefore depends on the scale of the works decided on each year (cf. in this connexion the cases of Algeria, whose imports ranged from 12 million dinars in 1963 to 4 million dinars in 1965, and of Libya, whose imports rose from £L400,000 in 1964 to £L 1 million in 1965).

Five factories in Algeria, Morocco and Tunisia are engaged in local manufacture. The greatest degree of integration is to be found in Algeria, where three factories are specialized, the first in the manufacture of bare wire (rolling mill and drawing mill), the second in the manufacture of power cable (paper-, plastic- and rubber-insulted), and the third in the manufacture of telephone cables (twisted, stranded, coaxial, etc.).

A small factory has recently been opened in Tunisia, and produces small-diameter wires for currents of less than 500 volts.

In Morocco, the CGE company meets about 75 per cent of the national demand for electric cables. Together, its five factories have invested approximately $6.5 million. They have a floor space of 40,000 m^2 and employ about 1,000 workers. Their total output may be estimated at approximately $8 million at import prices; and since the value added locally averages 50 per cent, this manufacture represents a currency saving of $4 million.

D. Industrial electronic equipment

Under this heading are included electronic calculating machines, electronic statistical machines, electrical telecommunication appliances, industrial amplifiers, industrial radio and television transmitters and transmitter-receivers electro-medical appliances, X-ray apparatus, and industrial sound-recording and -reproduction apparatus.

It is, unfortunately, difficult to gauge with accuracy the specific demand for industrial equipment, since most Customs nomenclatures makes no distinction between industrial apparatus and apparatus for domestic use.

Calculating machines, electronic statistical machines, electric telecommunication appliances, electro-medical appliances and X-ray apparatus, however, are of course only for industrial use.

There may be some confusion between domestic and industrial use under headings 85.14,(amplifiers), 85.15 (radio and television transmitters and receivers), and 92.11 (sound-recording and reproducing apparatus).

Again on the basis of the Customs statistics of Morocco and Algeria, which are the most detailed and which distinguish between consumer products and industrial equipment, the proportion of imports accounted for by the latter may be estimated at about 20 per cent under headings 85.14, 85.15 and 92.11 calculations made with the use of this factor show that imports of industrial equipment in the five countries were to the value of $12.4 million and $11.3 million in 1964 and 1965 respectively, more than 80 per cent of these totals representing imports of electric telecommunication appliances, radio and television transmitters and industrial transmitter-receivers.

What was said about the demand for electric wire may be repeated here. The market varies from year to year, according to governmental decisions regarding large-scale works and improvements in the telecommunication infrastructure. Something will be said later about the effect which may be expected from the large-scale infrastructural works that are likely to be carried out in the next few years.

Local manufacture of this type of equipment encounters numerous difficulties, due first of all to the diversity of the equipment and second to the smallness of the series that can be produced. There are altogether six enterprises in the Maghreb which have at some time or other produced industrial equipment and which are still doing so. Another enterprise intends to begin manufacture of such equipment within the next few months. Four of the factories are in Algeria, two in Morocco and one in Tunisia. They are all branches of large foreign groups (CSF, Thomson Houston, TRT, ITT, etc.) and assemble parts provided by the parent body.

As a rule, all these companies may be said to be working below capacity, for many reasons, which will be enumerated below. Taken as a whole, the six companies which are working or have worked in this branch have invested about $1.3 million. They have a floor space of 10,000 square metres and employ 450 workers. 1966 output may be estimated, in terms of import prices, at $1.6 million, with a value added locally of the order of 50 per cent, i.e. a currency saving of $0.8 million.

If this output is compared with the 1965 import figure of $12 million, it will be noted that local production meets only 10 per cent of demand; as for value added locally, it represents a saving of 5 per cent of the currency spent on imports.

E. Electric motors and transformers

Under this heading will be included all the equipment which was classified in Group III of the introduction, namely: generators, motors and transformers, electro-magnets, starting and ignition equipment and welding equipment, i.e. items 85.01, 85.02, 85.11 of the Brussels Nomenclature.

In 1964 and 1965, imports of this equipment in the five countries amounted to $20 million annually. Electric motors, generators, transformers, coils, etc., account for 85 per cent of this total. Imports vary little from one year to another in any of the countries. On the other hand, the ratio of imports to population varies considerably from one country to another, Libya being far ahead of the others with a consumption of $4.50 per inhabitant for motors, transformers and generators, a figure which may be compared with the $0.75 per inhabitant for Tunisia, $0.40 for Algeria, $0.25 for Morocco and $0.10 for the Sudan.

In the case of Libya, the equipment is probably intended for the oil companies for the construction of pipelines, and for the installation of maintenance and supervisory services.

Local manufacture is practically non-existent, except in the case of transformers, the manufacture of which has been undertaken by a number of workshops. There are four such workshops in Morocco, producing industrial transformers whose capacity may reach 1,000 kVA, one in Algeria which at present produces only small transformers of up to 3 kVA, and one in Tunisia which has just started operations and is capable of producing transformers of up to 160 kVA.

Taken together, these six workshops have invested $0.7 million. They have a floor space of 6,500 m^2 and employ 140 workers. Output in 1966 for the four Moroccan factories (Algerian and Tunisian production cannot be included, for it has only recently begun) may be estimated in import prices at about $0.7 million, with a value added locally of the order of 50 per cent, permitting a currency saving of $0.35 million. Furthermore, there are a number of coil-winding or -rewinding workshops and of worshops making motors, alternators, etc. Only one factory in Algeria has given serious consideration to the large-scale output of small electric motors and alternators. This company, and two or three small coil-rewinding workshops, have invested about $200,000. They have a floor space of 1,500 m^2 and employ 55 workers. Their total turnover is of the order of $400,000 with a value added locally of of approximately 40 per cent, i.e. a currency saving of $160,000.

Under this heading should be included a manufacture which is quite different, but which nevertheless belongs here, namely sparking plugs. These account for about 25 per cent of the imports classified under

heading 85.08, which, for the five countries, totalled $2.5 million and $2.7 million in 1964 and 1965 respectively. There is some local manufacture in Tunisia. Investments are of the order of $100,000. Output in 1966 was approximately 120,000 plugs; in 1967 it may well reach 180,000. Total production capacity is, however, much greater, and output will probably increase again next year.

The total Tunisian market is valued at $250,000; as for the Maghreb market, its capacity certainly exceeds 2,000,000 plugs.

Value added locally in the Tunisian factory is of the order of 50 per cent. The factory has a floor space of about 1,200 m^2 and employs 25 workers.

Observations

A start is being made with the manufacture of small transformers(up to 3 kVA) in Algeria, but the factory is faced with heavy duties. The duties on enamelled wire and magnetic sheet metal are, in fact, higher than the duties on assembled transformers, so that transformers cost far more to manufacture locally than to import. This is protection in reverse, and is absolutely unjustified, since neither enamelled wire nor magnetic sheet metal is at present produced in Algeria.

F. Electrical apparatus for making connexions to or in electrical circuits, switchboards and control panels, and apparatus for making and breaking electrical circuits

Imports of this type of equipment into the five countries amounted to about $9 million and $13.5 million in 1964 and 1965 respectively. In per capita terms, Tunisia is the main customer. Importation is somewhat irregular, since the equipment, which is expensive, is ordered when a factory, pumping station, electric power station, etc., is being installed.

Tenders are therefore invited, and the market may increase four-fold from one year to another, as in Libya, where imports in 1964 totalled £L91,000, and in 1965 £L386,000. Similarly, the figures doubled in Algeria between 1963 and 1964 and in Tunisia between 1964 and 1965.

Local production of this type of equipment has begun in eight workshops (four in Morocco, two in Algeria and two in Tunisia). The wiring of control panels is done locally, and the metal parts cabinets, frames, etc. are also made locally. Generally speaking, integration so far as concerns this type of equipment naturally varies from one control panel to another according to the number of appliances and instruments incorporate. As a rule the total value added may be estimated at about 35 per cent.

Taken together, the eight companies have invested ± $1 million. They have a floor space of 8,000 m^2 and employ 800 workers. The total turnover in 1966 in import prices can be estimated at ± $2 million. The 35 per cent of value added locally is equivalent to a currency saving of $700,000.

G. Filament lamps and discharge lamps

Imports of lamps of all kinds into the five countries amounted to about $2.5 million in 1964 and 1965.

Some Customs nomenclatures refer to the quantity of lamps imported. such figures must, however, be interpreted very cautiously, for in some cases the lamp imports listed are massive quantitatively, but insignificant in terms of value.

The items in question are probably small pocket-torch or bicycle-lamp bulbs, which for one reason or another have been imported in massive quantities at competitive prices. It is obvious, however, that such quantities cannot be used as a basis for calculating local output.

Roughly speaking, and still on the basis of the Algerian statistics, which are the most detailed and distinguish between "standard" lamps (25 - 100 W) and the others, it can be said that about half the imports could be produced locally.

For the five countries taken together, this represents sums of the order of $1,250,000 and quantities of 10 to 12 million standard lamps.

There are plans to manufacture filament lamps in each of the countries, but none of them has yet reached the execution stage. On the other hand, there are four small workshops manufacturing discharge lamps for luminous signs, one in Morocco, one in Algeria and two in Tunisia. Their total turnover is of the order of $200,000 with a value added locally of 50 per cent. There is thus a currency saving of $100,000. These workshops have a floor space of about 1,500 m^2, they employ some 50 workers and the investment they represent is of the order of $80,000.

H. Insulators and insulating fittings

This manufacture is purely accessory in the electricity and electronics branch, and the processes are quite distinctive.

As parts made of porcelain, glass, ceramics, etc., are excluded from ISIC Group 370, only parts made of rubber, synthetic materials, etc., will be considered.

Roughly 90 per cent of these accessories are made of plastic. A distinction should also be made between injection moulding processes (thermoplastic materials) and the "thermo-seeting" process by which plastic materials are manufactured under pressure and at a comparatively high temperature, undergoing an irreversible chemical change during the moulding process. In electricity, use is generally made of parts produced by the thermo-setting process, since these are more reliable from the point of view of insulation than the "thermoplastic" materials. The latter are used, for example, in the manufacture of television or radio set front panels, switch buttons, etc.

Insulators come under headings 85.25, 85.26 and 85.27 of the Brussels Nomenclature. Imports of these products into the five countries in 1964 and 1965 amounted to no more than some $360,000 a year.

There are said to be two factories producing plastic parts by the thermo-setting process in North Africa - one in Tunisia, and the other, just starting up, in Algeria. In these two factories the manufacture of plastic parts by the thermo-setting process is an accessory to the main activities. The thermo-setting departments have a floor space of between 200 m^2 and 300 m^2. About 30 workers are engaged on this work, and output may be valued at $200,000 - $300,000; with a value added locally of the order of 65 per cent, representing a currency saving for the country of about $15,000. Total investments are probably of the order of $200,000. All these figures are very approximate, for its is extremely difficult to divide up the aggregate figures communicated for a factory among its different activities.

Observations concerning local manufacture

There is disproportion between the aggregate import figures for the five countries ($350,000) and the figures given for local production ($200,000 to $300,000). The fact is that local production of these articles is just starting and there are no exports. This anomaly seems to have arisen because the factories in question, seeking to diversify their output, produce plastic parts for uses other than electrical, and have included these in their output figures.

A corrected figure will therefore be given for total demand in 1966:

Imports 1965:	$350,000
Output 1966: ± 25 per cent of the figures quoted	$ 50,000
Total:	$400,000

1. Domestic heating appliances

Imports of these appliances, which are classified under heading 85.12 of the Brussels Nomenclature, totalled $1.3 million for the five countries combined in each of the years 1964 and 1965.

All these appliances are electric: e.g. storage or instantaneous heaters, dish-warmers and smoothing irons.

The principle of manufacture is always the same; heating resistors are fashioned and incorporated in a sheet-iron or cast-iron assembly together with insulating material to reduce calorific losses.

The main imports are, in decreasing order: smoothing irons, electric space-heating apparatus, and water-heaters.

Imports of electric cookers, dish-warmers and other similar accessories are very small.

Electric water-heaters and electric space-heaters are made in Morocco.

Gas cookers and gas radiators are made in Tunisia.

One factory, also in Tunisia, has begun the assembly of an electric water-heater, although so far it has produced only a score or two. Gas cookers and gas radiators have been mentioned here because they could be items of trade between the countries of the Maghreb. Electric water-heaters and electric space-heaters manufactured in Morocco could be exchanged for gas cookers made in Tunisia.

These factories have invested a total of about $0.2 million. They have a floor-space of 4,000 m^2 and employ about a hundred people. Their output in 1966, at import prices, was approximately $1 million with a value added locally of the order of 50 per cent, representing a currency saving of around $500,000.

J. Primary cells and primary batteries

Imports of dry cells for the five countries combined amounted to $6 million in each of the years 1964 and 1965. These figures are impressive when compared with the total consumption of transistorized radios, for example. Imports of these two products are, in fact, practically equal. So far there have been only two attempts to manufacture dry cells in the Maghreb, and both ended in failure, probably attributable to the quantities produced having been too small.

There is now a larger project for the manufacture of dry cells in Morocco. It is intended to produce quantities of the order of 7 million batteries a year, i.e. about the quantity used in Morocco.

This factory will be set up in Tangier and will probably be a very up-to-date plant.

K. Fluorescent tube-holders(battens) and television aerials

Aerials are classified under heading 85.15 of the Brussels Nomenclature together with radio and television transmitters and receivers.

In Algeria and Morocco, where they are classified as a separate, item they represent around 5 per cent of the total for the heading.

Imports of aerials may therefore be estimated at ± $700,000 annually.

Fluorescent-tube battens used in street lighting probably come under heading 85.16 (Electric traffic control equipment...), which includes equipment for road-traffic-control lights and for railways.

Total imports under this heading are only about $200,000 a year.

There are about ten small workshops producing this type of equipment in North Africa. The value added locally is fairly considerable, of the order of 50 per cent. These workshops employ a total of about one hundred workers. It is difficult to calculate floor space, because production is often carried on in part of a factory whose main activity is different. Similarly, it is difficult to estimate the real investment involved, but it must be quite modest.

Since the output of these workshops must be of the order of $500,000 annually, the currency saving to the country is around $250,000.

L. Miscellaneous

Lastly, reference may be made to certain products not hitherto dealt with, which have been imported in small quantities, and which are not yet made locally, probably because of the small demand. These are:

Electro-mechanical domestic appliances	85.06
Electric shavers and hair-clippers	85.07
Electrical lighting and signalling equipment for vehicles	85.09
Electric sound signalling apparatus	85.17
Carbon articles of a kind used for electrical purposes	85.24
Photographic flashlight apparatus	90.07
Time switches	91.06
Elements for electrically-heated articles of bedding	94.04

Total imports of all these products into the five countries were $3 million and $2.5 million in 1964 and 1965 respectively.

Also to be included are the two "portmanteau" headings 85.22 and 85.28, which cover apparatus and electrical parts not elsewhere specified (n.e.s).

Imports under these two headings for all five countries combined were $7 million and $6 million in 1964 and 1965 respectively. These figures are, however, abnormally influenced by Libyan imports, which account for more than 90 per cent of the total. This seems to be due to lack of precision in the Libyan Customs nomenclature. It is anomalous that imports under the heading "electrical parts n.e.s." should come second in amount only to imports of generators.

This lack of precision suggests that apparatus and parts falling under other headings have been included here.

No allowance for this will be made, however, since it is likely that apparatus and parts that cannot be included with certainty under the other headings have been included under the heading "not elsewhere specified", and that therefore they are probably non-standard and not of a kind to make much difference to calculations of the capacity of local industries.

GENERAL OBSERVATIONS

Reference should be made again here to the problem (considered in the introduction) of the inconsistency between the 1966 production figures and the 1965 import figures.

For many products, a good approximation to the total demand may be arrived at by adding the 1966 local production to the 1965 imports.

This is true of the manufacture of electric wire, switchboards and electric space-heating apparatus, production of which had begun before 1965 and did not alter significantly in 1966. It can therefore be assumed that the 1966 imports were in fact comparable to those in 1965. The same also applies to the manufacture of fluorescent tubes for electric signs, transformers and electric motors, sparking plugs and industrial electronic equipment, the local 1966 production of which is a small percentage (less than 8 per cent) of the 1965 imports and could not therefore have had an appreciable effect on 1966 imports.

In the case of some products, on the other hand, the effect of local production on imports is considerable.

Insulating fittings

Something has already been said about the reliability of the production figures cited, and they have been reduced to $50,000 for 1966. If the 1965 imports, i.e. $350,000, are added to this figure, a total demand of $\pm$ $400,000 is obtained.

Fluorescent-tube-holders (battens) and aerials

Here again, the 1966 production figures cited represent a considerable proportion (more than 50 per cent) of the 1965 import figures.

These import figures were, however, arrived at by some extremely questionable approximations (it is not even certain that battens come under heading 85.16). Nevertheless, it is probable that the production of aerials, in particular, began in 1966, and that the 1965 import figures should be reduced by ± $200,000 for this equipment.

Accumulators

These have been manufactured in the Maghreb for several years. Imports of parts are given separately from imports of assembled batteries in the main producing countries. It has been seen that they represented about 50 per cent of the total, which in 1965 was $2,000,000. Parts were therefore imported to a total value of about $1,000,000. This corresponds to the difference between 1966 output, $3.5 million, and the value added locally ($2.5 million). It can therefore be assumed that total imports under heading 85.04 were also of the order of $2,000,000 in 1966.

Lastly, it is worth looking more closely at heading 85.15 (radio and television receivers), which is particularly important because it represents a considerable body of imports, as well as local production in 22 factories.

The import statistics of the five countries reveal the following situations.

1. Imports of assembled radio receivers have declined greatly over the last few years in Algeria, Morocco and Tunisia. This is due to Government-imposed restrictions aimed at assisting the assembly industry.

2. Imports of television receivers, on the other hand, had shown no decrease at all up to 1965. This is because, up to that year, no government restrictions had been placed on the import of television sets.

3. Imports of parts are increasing rapidly, but not proportionally to the decrease in imports of radio sets. Two comments are called for in this connexion.

   (a) An anomaly is to be noted in Algeria: imports of parts were 3,000,000 dinars less in 1965 than in 1964. This is because there was a very sharp increase in imports

under other Customs headings, such as 85.18 (capacitors) and 85.21 (transistors, etc.). Algerian manufacturers therefore import the parts they need for assembly, but declare them under headings other than electrical parts for radio receiving equipment.

(b) If the import figures are expressed in terms of the number of radio receivers or of complete assembly kits it will be found that the latter do not compensate the decrease in the former.

The explanation must be that when an import ban is imposed in a country the local manufacturers are not generally ready to fill the gap immediately, and that consequently there is a temporary decline in consumption because the demand cannot be completely satisfied by local production.

This state of affairs should normally cease within one or two years.

4. In Libya and the Sudan, where there is no assembly industry, imports of radio sets continued to increase until 1965, with the qualification as regards the Sudan that while the number of radio sets imported increased, their value decreased (fall in prices). As to Libya, it may be wondered whether the number cited (173,000 radio sets in 1965) is actually for local consumption.

The amount of imports in 1966 may be approximately deduced from these finding. Imports of assembled radio sets may be assumed to have been maintained in the five countries at approximately the same level as in 1965. Conversely, imports of parts will have increased, and will probably have risen from $5.5 million to $6.5 million (as stated above). Imports of assembled television sets, however, will have decreased in Morocco and Tunisia (assembly has been developed in these two countries this year) and, conversely, will have risen in Libya (increased consumption).

In the aggregate imports under the heading 85.15 may be assumed, taking one thing with another, to have been appreciably the same, in the five countries as a whole, in 1966 as in 1965.

CONCLUSION

It has been seen that imports of electronic and electrical equipment by the five countries have given rise to annual currency outflows of the order of $90 million (annex V, to the chapter on methodogogy).

If, on the other hand, local production of electronic and electrical products is totalled, the sum obtained is $25 million.

The value of this production added locally is $10.5 million, and consequently, imports of $14.5 million have been involved. These should be broken down into imports of electronic parts ($9.5 million) and of raw materials ($5 million). The former are already included in the figure of $90 million total electronic imports. Direct imports of finished products therefore amount to only $90 - 9.5 = $80.5 million. The total demand for the finished products in the Maghreb is thus $80.5 million (imports) + $25 million (local production) = $105.5 million.

The value added locally, $10.5 million, is ten per cent of the demand, and the total currency outgoings are therefore $95 million (broken down as follows: $80.5 million for finished products, $9.5 million for parts, $5 million for raw materials).

4. IMMEDIATE RECOMMENDATIONS FOR THE DEVELOPMENT OF THE INDUSTRY

A special chapter may usefully be devoted to some suggestions aimed at improving the operating conditions of the industries visited in North Africa.

For various reasons the electronic industry has, in fact, developed very rapidly in the Maghreb in recent years.

The stage reached is clearly in advance of that reached in many other countries of Africa and the Middle East (except Egypt).

This rapid development, however, sometimes takes place outside the framework of co-ordinated plans, and the organization and efficiency of the factories suffer from this lack of planning.

This study, which is concerned with the development of the industry to 1980, cannot ignore the sixty existing factories, which must be taken into consideration in all future projects. Maximum efficiency and maximum utilization of existing capacity would appear to be logical first objectives.

Some Governments, too, may be criticized for adopting a somewhat ambivalent attitude towards their own industry. National industrial development calls for some sacrifices at the outset, and it is essential that Governments should make a choice and state clearly their intentions in this respect.

(1) Competion between local products and cheaper imported products

This is a problem that arises both in the consumer sector (radio and television sets) and in the industrial sector (walkie-talkies, transmitters, etc.).

By importing, for example, 5,000 or 10,000 assembled television sets, at prices that compete with local products, a Government does not much benefit the country's economy; it merely demonstrates that the industrialized countries can turn out mass-produced goods at costs below those of local production, which amounts to no more than a few tens of thousands of sets.

This policy, however, always has a disastrous effect on the local industries, whose costs are immediately increased. If the market is for 30,000 sets, and if one or more companies have equipped themselves to produce them, and their potential sales are reduced to 20,000, the cost per set will necessarily be higher.

Moreover, because of the uncertainty created by such invitations to tender, which may be renewed unexpectedly, manufactures tend to keep their investments as low as possible while awaiting sounder prospects. Investment on buildings, plant and machinery for the manufacture of certain parts, and even the training of technicians, is thus held back.

A Government wishing to control the selling price of sets to bring them within the reach of the public has an arsenal of measures at its disposal to achieve this result without harming the development of the local industry.

Moreover, because the public administrations that invite tenders for the supply of industrial equipment operate on an autonomous budget, they often tend to accept bids from abroad, which are usually cheaper than the local production.

There is a choice to be made and a decision to be taken.

Should local industrialization be favoured, and at what price?

The price will obviously vary from one type of equipment to another, and the decision will differ from one country to another; but Governments should state their position and define clearly the criteria on which decisions are based.

(2) Planning, continuity and delivery periods

The development of local industry, especially in the undustrial sector, is hindered by another difficulty, which is very closely related to the problems referred to above. This is the absence of planning by the potential customers, who are usually official organizations. These organizations are unwilling, for many reasons, to enter into long-term undertakings and to guarantee continuity of orders.

They invite tenders for small quantities, as needed.

Enterprises capable of producing this type of equipment are understandably unwilling to invest in measuring equipment, tools and the training of the requisite staff without being assured of an adequate outlet for several years ahead.

The situation is further aggravated because the delivery periods stipulated by the customer when the tenders are invited are issued are extremely short, so that even companies that have been set up and that have the equipment to produce locally the items being ordered cannot make them for lack of time and stocks of parts.

Although long-term planning of the needs of these administrations is undoubtedly difficult, the manufacturer is obviously even less in a position to establish the needs of his customers, and he cannot be asked to take all the risks. It would therefore be desirable to create a more stable situation and to provide manufacturers, if not with guarantees, then at least with pilot plans that are reasonably likely to be fulfilled.

(3) Horizontal integration and standardization

In some sectors, production is already taking place in a number of factories (22 for radio and television sets, 8 for accumulators, 8 for switchboards, 6 for transformers and 5 for electric wire and cables). Each of these factories has normally been equipped to carry out all the operations of the manufacturing process, and for all models of apparatus or types of equipment for which there is a local demand. Examples of co-operation between factories as regards joint investment are rare.

There are, however, some notable exceptions, such as the production of wire in three factories in Algeria, in which a remarkable degree of integration has been achieved.

The author does not underestimate the difficulties that arise when an attempt is made to win over to principles of integration and collaboration with their competitors manufacturers accustomed to work in an atmosphere of free competition. He nevertheless believes that this is an aim which local authorities should tirelessly pursue.

Investments are a rare and precious commodity in expanding economies, such as that of the Maghreb. They should be made only in highly productive and profitable sectors, and they should, above all, be utilized to the maximum.

In fact, however, as regards accumulators, for example, each of the eight factories visited produces several dozens of models. One factory with an annual output of only 40,000 units, was producing 48 models. Of some models, only a few hundred were produced each year. In these conditions, the casting of the container, for example, is clearly uneconomical, and no factory in the Maghreb has so undertaken such manufacture. Furthermore, depreciation charges on the moulds used in the manufacture of lead grids represent too large a proportion of the cost. Lastly, most of the factories have equipment for the moulding and coating of grids, for production of the oxides of lead, demineralization of water and battery charging, etc; but because this equipment is rarely used to full capacity, it weighs abnormally on the cost.

It would obviously be easy to lower manufacturing costs and reduce the investment required simply by asking manufacturers to specialize either in a limited number of models from the total range, or in a limited number of operations in the manufacturing process, with the competitors arranging among themselves to exchange complementary, semi-finished articles or products. There is an example of this kind of co-operation in Morocco, where one factory produces coated grids for its own needs and for those of another factory.

The same line of reasoning could be applied, for example, to the production of wire, switchboards and transformers.

So far as radio and television sets are concerned, the profusion of competing makes, between which exchanges are unlikely, is an additional obstacle.

Lastly, this collaboration could be sought either on the national level, or at the level of the Maghreb. In the latter case, the output of radio and television sets, electric gramophones, etc, by certain large manufacturers who are at present producing in almost all the countries could be integrated, with the factories specializing in the production of groups of articles in sufficient quantities to satisfy total demand in the Maghreb.

Arrangements and agreements of this kind should be discussed at meetings of the members of industrial associations, in official organizations concerned with the unity of the Maghreb, and so on.

National and international authorities should heed these efforts, display an interest in their success, encourage them by creating all the necessary conditions and providing all the requisite guarantees.

One final remark should be made concerning the standardization of equipment, which is of particular value in the industrial sector.

All efforts at horizontal integration will obviously be in vain if the demand is too diversified. A decisive role may be played here by public utilities (gas, electricity, water) and by ministries (post, telegraph and telephone, radio and television, national defence, the interior) which are major customers.

(4) Vertical integration

This problem is very complex and is closely related to those mentioned above. Reference has been made in the "General" section to the distinction between mechanical components and electronic components and the relative importance of each. It has also been seen that the assembly of imported components does not usually in itself result in very substantial savings of foreign currency for the country, and that some of the materials or parts must be produced locally if the value added locally is to be increased. A trend in this direction is at present particularly perceptible in the radio and television sector, but the folowing considerations will have to be borne in mind:

(a) Above all, the need for gradualness must be admitted, and a stage-by-stage method of progress must be adopted, so that not too many new problems will have to be faced at the same time. It is advisable to start with the simplest types of manufacture, generally commencing with the production of wooden cabinets, and proceeding to metal parts, then plastic parts, printed circuits, coils and transformers and, in general, all "mechanical" parts as opposed to "electronic" parts (e.g. transistors, electronic tubes resistors and capacitors) that are mass-produced by highly-automated techniques not, in any case, within the reach of a factory producing a few thousand radio and television sets.

(b) It is not merely that production of these components could not be undertaken by an isolated manufacturer; it will not even be profitable, as a rule, at the level of a single country. The level at which this production can be organized will be seen later.

(c) It must next be admitted that the investment needed for this type of manufacture is generally fairly large (both for equipment and the training of staff), and is in any case far heavier than that required for mere assembly work.

(d) Lastly, another aspect of the problem is that of cost. Even in the production of "mechanical" parts, which has been said to be easy, the variety of parts, which differ from one model to another, is so great that, for the sets manufactured in North Africa, for example, several 1 thousand different parts would have to be produced, sometimes in quantities of as little as two or three thousand a year.

It is obviously utopian to hope to produce these parts at a normal price. Hence the importance, already referred to in recommendation (3) above, of standardization and of co-operation between manufacturers as a possible means of enabling them to consolidate certain investments and spread their amortization over a large output. It must also be admitted that locally manufactured parts will be dearer than imported parts and that this local industry will have to be protected against foreign competition.

(5) Highly technical equipment, qualifications of the labour force and research

In addition to the electronic components, there are some types of equipment whose manufacture, use and maintenance result from very highly advanced technology. They include high-power transmitters, electro-medical equipment, generators, high-power electric motors and computers.

Because this equipment is usually costly, it accounts for a considerable percentage of imports. So far there is no local production. Although this recommendation is therefore a little outside the scope of the present section, the problem is one that should be considered now, since the measures that can be taken will be effective only in the long term. Essentially the problem is one of vocational training and investment in a research programme.

Countries in process of industrialization cannot be satisfied with exploiting the techniques developed by other, more advanced countries. On the contrary, they should aim at setting up as soon as possible educational and research centres which would contribute to world technical development. However, slight such a contribution may be at the outset, it will be essential to progress and growth.

Local manufacture of highly technical equipment cannot in any case be envisaged until enough adequately qualified technicians are available.

(6) Over-capacity, exports and agreements between countries of the Maghreb

Most of the factories visited were working considerably below their rated capacity. Production in 1966 can be estimated at about 60 per cent of installed capacity. This phenomenon is particularly apparent in Algeria, where many factories set up before 1962 have suffered from the contraction of demand over the last few years, but it also exists in other conutries

and even in recently erected factories. The classical argument employed to justify this over-capacity is the desire to export a part of the output. Unfortunately, efforts to achieve this have as yet had only negligible results. Apart from a few branches of foreign companies, which export part of their output under agreements between them and the parent company, there is hardly any export in the electronic sector. The explanation should be sought in inadequate organization at the national level, for the creation of an export system calls for, among other things, some essential preliminary world market studies, a thorough knowledge of the requirements of importing countries (product quality, price, finish Customs regulations, etc.), market research and publicity for the introduction of a new brand in international competition, and the setting up of an after-sales service.

This basic effort is usually prolonged and very costly, and is hence rarely undertaken by medium-scale industries. Governments should therefore assist their national industry in this sphere, and should at least attempt to find outlets for it (market research, bilateral agreements etc.), leaving to industry only the problems of sale and an after-sale service.

The first natural outlet to be envisaged is of course the Maghreb itself, within which it should be possible by co-operation to produce and sell far more than at present.

In the case of types of production for which units exist in each country (assembly of radio and television sets, manufacture of accumulators, industrial equipment and switchboards), an effort should be made to promote standardization, for that would mean that production could be carried on in larger series, it would simplify integration problems and it would encourage co-operation agreements between manufacturers in the same country or in different countries.

In the case of types of manufacture carried on in only one or two countries, the possibilities of commercial agreements - on a basis of reciprocity of course - should be studied. These agreements could cover the following electronic products:

Manufactured in Morocco: transformers of less than 1,000 kVA, domestic heating appliances (space-heaters and water-heaters, primary cells and batteries (the production of which will begin this year).

Manufactured in Algeria:	telephone wire, alternators and motors of less than 10 HP, small transformers of less than 3 KVA.
Manufactured in Tunisia:	plastic (thermosetting) insulted fittings, sparking plugs, transformers of less than 160 kVA, (plus gas heating equipment which, although obviously not electronic, competes with electrical heating equipment).

As regards the volume of imports, Algeria will apparently be less favourably placed than its neighbours; the possibility of setting up of the electric light bulb factory in this country could therefore be studied.

Several projects are under study at present, but there is probably still time to reconsider them in a more international context.

5. PROJECTION OF DEMAND IN 1980

A distinction will here be made between private (household) demand for consumer products, private (industrial) demand for industrial equipment, and public service demand (postal, telephone and telegraph, radio, television and other services) for infrastructural equipment. The projection methods will be different in each case.

Household consumption will have to be estimated from the development weighted by an estimate of the distribution of the national income among the various population groups of per capita income. The increase in the number of households will also have to be taken into account. In addition, parallels will be established with other countries that were previously in a situation more or less comparable to that of North Africa, and whose development may provide useful pointers.

Estimates of the consumption of industrial equipment by industry will be based on the anticipated growth of the industrial sector, which should, in principle, develop more rapidly than the other sectors of the economy. The basis for calculation will be the aggregate figures for the growth of the national income of the five countries and for the part played by the industrial sector in their economic expansion.

The mining and petroleum industries, which, like manufacturing industry, are consumers of industrial equipment, will be included in the industrial sector.

Forecasts of public-service consumption can be based on the long-term projects undertaken by administrations, and also on recommendations made by international co-ordinating organizations. This will be the method adopted for the analysis of plans for the extension or modernization of telecommunication systems (telephone, telegraph and telex), of plans for the erection of radio or television transmitters and the links between them.

A. Household consumption

The items concerned include radio and television receiving sets, amplifiers, electric gramophones, sound recorders and parts for these items, primary cells and batteries, accumulators, electric lamps, electrical domestic equipment, electrical space-heating apparatus, photographic flashlight equipment, deaf aids, and electrically heated bedding.

The total demand for these products in 1965-1966 was $34 million for the five countries combined.

A 60 per cent increase in the population of the five countries from 42 million to 68 million inhabitants is expected between 1964 and 1980.

During the same period the national income will rise by 155 per cent from $7,360 million to $18,800 million. Mean per capita income will therefore rise from $175 to $275, an increase of 55 per cent.

On the other hand, the proportion of the national income that will be devoted to fixed capital will be larger in 1980 than in 1965. It will double from + 12 per cent to 25 per cent, and will quadruple in absolute value. The proportion of consumption expenditure will therefore decrease from 88 per cent to 75 per cent of the national income; it will, however, double in absolute value. The distribution of this expenditure between available consumer products will depend on many factors. Particular note should be taken of the phenomena of saturation, which have been systematically studied in many countries and are now quite well known.

Estimates are, on the other hand, far more uncertain in the realms of prices and of technical development. These two factors will obviously have a decisive influence on future demand, and every effort which the state of present knowledge permits has been made to quantity this influence

To sum up, there will probably be an 80 - 90 per cent increase between 1966 and 1980 in sales of radio sets, batteries, accumulators and electric lamps. Sales of electrical domestic apparatus, television sets, amplifiers, electric gramophones, sound recording apparatus, etc., will increase by 130 - 150 per cent.

The consumption of domestic electrical products will probably be between $60 million and $70 million in 1980, broken down as follows:

	$	
±	800,000	radio sets
	200,000	television sets
	50,000	amplifiers, sound recording equipment, electric gramophones, etc.,
	6,000,000	domestic electrical apparatus and space-heating apparatus
	20,000,000	standard electric lamp parts
	50,000,000	batteries
	900,000	accumulators.

B. Consumption of industrial equipment

The items concerned include computers, electronic statistical machines, generators, motors and transformers, electro-magnets, electrical starting and ignition equipment for vehicles, electrical lighting and signalling equipment for vehicles, welding equipment, sound signalling apparatus, control panels and switchboards, insulating fittings and carbon articles of the kind used for electrical purposes. The demand for these products in 1965 and 1966 was $42 million for the five countries combined.

The share of the industrial and mining sectors in the national income is expected to increase between 1964 and 1980 from 23.5 to 36 per cent. As the national income will also increase by 155 per cent, it follows that the absolute increase in industrial and mining production will be + 290 per cent in 15 years. The size of these two sectors will therefore be quadrupled.

It has been seen that fixed capital formation will also quadruple over the same period. The expenditure of the industrial and mining sector on equipment may also therefore be expected to quadruple between 1966 and 1980.

Technical progress will be the principal factor determining variation in the proportion of electronic and electrical equipment in this expenditure. In some cases, allowance will have to be made for the expected depreciation of outdated equipment. The use of electronic equipment to control industrial production will develop far more rapidly than that of other equipment. The rate of world growth is particularly high in this sphere, and in addition the consumption of African industries has so far been very slight.

The industrial consumption of electronic products in 1980 can be estimated at between 150 and 180 million dollars a year, with the following approximate breakdown:

computers and statistical machines	$15 million
generators, motors and transformers	$70 million
control panels and switchboards	$50 million
miscellaneous equipment: lighting, ignition, starting, signalling, electro-magnets	$15 million
welding equipment	$ 4 million
insulating fittings	$ 2 million

C. Public service demand

The items involved are telecommunication equipment, radio - broadcasting and television transmitters, radiotelephonic transmitter-receivers for military use or use by the police and gendarmerie, etc., studio equipment (industrial amplifyiers, and recording equipment), conductor wire, telephone cables, electro-medical equipment and X-ray apparatus.

The demand for these products was $29 million in 1965-1966 for the five countries.

The author's estimate of the 1980 demand for these types of equipment has been based on:

a study of the existing infrastructure;

its comparison with international recommendations (including the 1963 Rome Plan);

analysis of medium-range plans communicated by Post Offices and by radio and television administrations;

the probable progress towards extension and modernization by 1980.

1. The infrastructure of radio and television broadcasting; transmitters - receivers - radio relay links

Except for Tunisia, where no information could be obtained on this subject, all the countries described the present state of their infrastructure as regards broadcasting, and their short-term plans.

On the whole, the existing system of transmitters can already be said to provide a quite satisfactory coverage of the countries concerned. When the short-term plans have been carried out, the essential needs in this sphere will be satisfied. From then on the development of the system will presumably be mainly towards improvements in the quality of broadcasts and better coverage of zones adversely situated geographically.

On this assumption, the four countries of the Maghreb can be expected to have the following transmission services in 1980:

A.M. Radio:

Long-wave: one high-power transmitter (500 - 1,000 kW) in Algeria, Tunisia and Morocco.

Medium-wave: total coverage of the country by five to ten 50-100 kW transmitters.

Short-wave: one international broadcasting centre per country broadcasting in several directions through three to ten 50 - 100 kW transmitters.

F.M. radio:

Practically complete coverage of the country by transmitters of 1 - 5 kW working together with the television network (20 - 50 transmitters per country).

Television

First chain (VHF):

One series of large transmitters (of about 10 kW) forming a basic network with interconnexions by radio-relay links.

One system of 0.5 - 2 kW re-transmitters connected to the main system and providing coverage for shadow zones.

Second chain (UHF):

Facilities identical with those provided for the first chain will be installed for broadcasting a second programme. This will involve the installation of studios and a second radio-relay link system.

Notes:

1. It is difficult to say whether colour television will have made its appearance in North Africa by 1980. The present cost of receivers would appear to exclude a priori any exploitation of these possibilities on an industrial scale. There may, however, be some experimental broadcasts by them.

2. The coverage here envisaged obviously concerns mainly the non-desert part of the four countries of the Maghreb. Some cable or radio relay links must be added to provide radio and television programmes in large settlements in the Sahara.

   The existence of pipelines will facilitate the laying of co-axial cables, which are in general to be preferred to radio-relay links, for which there are problems of power supply and maintenance.

3. The cost of equipping the studios needed to provide broadcasts on the various television and radio systems must also be added.

4. Lastly, this heading includes the demand for transmitter-receivers for military or para-military use.

To summarize, the total demand for radio and television service is estimated as follows:

	US$
10 A.M. radio transmitters, medium-power, 100 kW, at	200,000 each
150 FM radio transmitters, medium-power, 3 kW, at	20,000 each
50 television transmitters (VHF - UHF), medium-power, 10 kW, at	100,000 each
50 television re-transmitters (VHF - UHF), medium-power, 1 or 2 kW, at	50,000 each
100 television re-transmitters (VHF - UHF), medium-power, 0.5 kW, at	10,000 each
50,000 walkie-talkies for military or para-military use, at	800 each
Studio equipment for a total of	20,000,000
10,000 km of radio-relay links, at	2,000/km

This means a total expenditure of $100 million in 13 years, excluding civil engineering works and aerials.

2. Telephony, telegraphy and telex

Consumption statistics (the number of telephones per country, density per 100 inhabitants, number of local and international calls, average number of calls per inhabitant) were obtained from information published by the American Telephone and Telegraph Company. The relevant information for 1960, 1963 and 1965 is given in annex VI. No figures were available for 1964, and information on traffic in the Sudan and Libya was lacking.

Three industrial activities are concerned with demand in this sector:

assembly of switchboards for large and small exchanges, the simplifiers used in carrier-current line systems, and modulators and demodulators;

manufacture of subscriber equipment; for production of telephone wire (bare aerial lines, quadded for local and trunk connexions, co-axial for long distances and submarine cables).

Subscriber equipment

It can be deduced from the total number of telephones in use in 1965 (370,000) and from the numbers of subscribers reported by some of the countries, that the total number of subscribers in the five countries was 250,000 in 1966.

The expected increase in population and the foreseeable increase in the number of telephones per 1,000 inhabitants suggest that the absolute rate of growth in the number of subscribers will be 170 per cent in the Maghreb and 200 per cent in the Sudan between 1966 and 1980, to give a total number of about 430,000 subscribers in 1980, or an absolute increase of 180,000.

For each additional subscriber, the average expenditure involved works out at $25 for subscriber equipment, $75 for connexion equipment and $200 for switchboard equipment.

Local transmission

It should be possible to work out the demand for wire and for amplifying, modulating and demodulating equipment (terminals) from information on the density of the local traffic.

Unfortunately, the information available on local traffic and even on traffic between African countries is not sufficiently detailed for a precise evaluation of the wire and cable requirements for various models, or of the various available capacities.

It would be necessary to know exactly the traffic density and the distance between each point in the system and other points, and such a study would go beyond the scope of this report.

The cables needed will be aerial and underground radio-relay links, bare cables, quadded cables and coaxial cables. In all probability, the average price per kilometre will be, very roughly, $3,000, with the electronic equipment accounting for one third and the cable two thirds.

The same could be said about the local telegraphic and telex traffic; this will increase considerably between now and 1980, but for the same reasons as in the case of telephone communications it is difficult to arrive at precise estimates.

It is assumed that local communications will make use of telephone cables, and only the electronic equipment required will be taken into account.

The author estimates that 3,000 harmonic telegraphy channels and 6,000 teleprinters (transmitters and receivers) will be installed between 1966 and 1980. A harmonic telegraphy channel costs about $600 in electronic equipment and the teleprinter costs about $1,600. Approximately $1.2 million should be added for switching.

Intercontinental transmission

Far more accurate information is available for intercontinental transmission, and the development of this traffic can be predicted, since it is carried by a smaller number of cables.

On the basis of the estimates continued in the Rome Plan (63,500 minutes of chargeable telephone conversations a day for the four countries of the Maghreb in 1968 and 131,800 in 1975), and the statistics of the American Telephone and Telegraph Company (more than 25 million conversations annually in 1965) and their trend since 1960, the North African intercontinental telephone traffic may be expected to reach an average daily figure of 400,000 chargeable minutes in 1980. It is generally considered that one telephone channel is needed for each 150 chargeable minutes/day. The number of channels needed for telephony in 1980 will therefore be 2,650.

So far as concerns telegraphic and telex traffic, the estimates contained in the Rome Plan may again be taken as a basis. They foresee an average daily intercontinental telegraphic traffic rising from 360,000 words in 1960 to 535,000 in 1975, and an intercontinental telex traffic rising from 12,500 chargeable minutes a day in 1962 to 62,500 in 1975: by 1980, these levels may be expected to have risen to 600,000 words and 125,000 minutes a day respectively.

The telex system may reasonably be expected to develop far more rapidly than telegraphy, because many of telegraphic messages are now transmitted by telex. The traffic norms are one telegraphic circuit for each 9,000 words/day and one telex circuit for each 150 minutes/day; 70 telegraphic and 800 telex circuits will therefore be needed in 1980.

The total required capacity has been expressed in terms of telephonic channels by reckoning 24 telegraphic and telex channels for one telephonic channel.

In addition to the existing cables, some 2,200 extra channels will have to be installed before 1980. Submarine telephone cables with a normal capacity of 128 channels will probably be used. This will involve the installation of 17 new channels with an average of about 750 km, i.e. a total of 12,750 km of cable.

The expenditure per kilometre of cable has been reckoned at $15,000, including the electronic equipment (amplifiers and terminals), which account for half the cost.

This figure should be halved, as each of the countries linked will bear half the cost of the channel.

The total expenditure will be:

subscriber equipment	$ 4.5 million
switching, modulation and amplifying equipment	$121.5 million
wires and cables	$111 million
Total	$237 million

Notes

1. Allowance has been made in this total for the progressive automation of switching as the traffic becomes denser.

2. Although there are plans to use satellites, the use of submarine telephone cables with transistorized amplifiers will probably still, in 1980, be less expensive than that of space vehicles.

3. Electric wires and cables

Under this heading are included power cables and the electric wire used in building construction.

The demand for this material in 1966 was of the order of $10 million; 70 per cent of the quantity involved was produced locally.

In the author's view, the demand for this commodity will follow the evolution of the industrial and mining sector; it may therefore be expected to increase fourfold between 1966 and 1980, rising to ± $40 million a year.

4. Medical equipment

The demand for these products may be expected to treble between 1966 and 1980, reaching a figure of ± 3 million dollars a year.

To sum up, the demand by the public-service sector for industrial electronic products will be as follows:

radio and television	$100,000,000
post, telephone and telegraph	$237,000,000
electricity and buildings	$250,000,000
hospitals	$ 26,000,000
Total	$613,000,000

Conclusions

The total demand for electronic products will rise from $105 million in 1966 to ± $307 million in 1980. It will consist of the following components:

± $ 65 million for consumer products;

± $165 million for industrial equipment for industry;

± $ 77 million for industrial equipment for the public-service sector.

The demand for the standard components needed for the manufacture of this equipment may be estimated as follows (excluding special components needed for the manufacture of industrial equipment in small series, local production of which would not be justified):

200,000	picture tubes
12,000,000	transistors
5,000,000	diodes
200,000	channel-selectors
200,000	deflection coils
200,000	line transformers
15,000,000	reactors and chokes
800,000	variable capacitors
4,000,000	trimming capacitors
60,000,000	capacitors
70,000,000	resistors

6. RECOMMENDATIONS FOR THE DEVELOPMENT OF THE INDUSTRY UP TO 1980

Introduction

The technical data for the industrial projects comprise the same items as in the report compiled in 1966 by Mr. Havelange, a United Nations consultant, in an identical study of the West African sub-region (document E/CN.14/INR/130).

Most of the remarks made at that time by Mr. Havelange are also applicable to North Africa.

An effort has been made, however, to take the factories already existing in 1966 as fully into account as possible, and the output figure has in many cases been determined in the light of the present number of factories.

In some instances, the number of factories has had to be reduced from 22 to 16, (for example, in the case of factories for the assembly of radio and television receivers) so that the remaining establishments could be of a big enough size.

Sometimes allowance has been made for a factory when the total demand for the product was somewhat below the profitability norms, simply because a fully-equipped factory already exists (in the case of telephones, the expected output of 20,000 is at the lower limit of profitability, but there is a completely integrated production unit in Algiers).

The factories have not been apportioned among the countries of North Africa, for that would mean taking the output of other sectors of industry into account. When allowance is made for more than one factory for the same item, the object is either to take existing facilities into account, or to a better geographical distribution.

This plan should of course form part of an all-African project, and it would in any case be essential to co-ordinate investment with the United Arab Republic, which is already well equipped, particularly for the manufacture of parts.

Analysis of industrial projects

Project No. 1

Six factories will each produce 100,000 radio sets and 200,000 loudspeakers. Each factory will employ 110 workers and have a floor space of 1,300 m^2. The investment will be of the order of $100,000 for equipment and $130,000 for buildings. The working capital needed will be around $1,000,000. Total expenditure in foreign currency will be $530,000. Equipment will be depreciated over six years. The

annual turnover will be $2,250,00 for radio sets and $250,000 for loudspeakers. The value added in the factory will be 35 per cent for loudspeakers and 28 per cent for radio sets.

Project No. 2

Two factories will each manufacture 100,000 radio sets and 25,000 electrophones. Each will employ 115 workers and have a floor space of 1,400 m^2. The investment will be $140,000 for buildings and $100,000 for equipment, the equipment being depreciated over six years. The working capital will be $1,250,000. Total expenditure in foreign currency will amount to $600,000. The annual turnover will be ± $2,820,000, and the value added will be 27.5 per cent.

Project No. 3

Eight factories will manufacture 25,000 television receivers and 25,000 channel-selectors. Each will employ 85 workers and have a floor space of 1,250 m^2. Investment will total $125,000 for buildings and $80,000 for equipment, the latter being depreciated over six years. The working capital will be $2,000,000. Total expenditure of foreign currency will be $880,000. The turnover will be ± $3,670,000 and the value added in the factory will be 29 per cent.

Project No. 4

One factory will produce 20,000,000 electric filament lamps and 1,000,000 electric discharge lamps. It will employ 250 workers and have a floor space of 4,000 m^2, representing an investment of $400,000. The equipment, which will cost $2,000,000, will be depreciated over 10 years, and the working capital needed will be $750,000. The annual turnover will be ± $1,500,000 with a value added in the factory of 26.5 per cent.

Project No. 5

Two factories will produce 25,000,000 dry cells. Each will employ 140 workers and have a floor space 2,500 m^2, representing an investment of $250,000. The equipment, which will cost ± $350,000, will be depreciated over ten years. The working capital will be $1,000,000. Total expenditure in foreign currency will amount to $1,000,000. The annual turnover will be ± $2,500,000 and the value added in the factory will vary between 35 and 70 per cent, depending upon whether or not the chemicals needed can be produced locally with a sufficiently high degree of purity.

Project No. 6

Eight factories will produce 120,000 accumulators. Each will employ 75 workers and will have a floor space of 2,000 m^2, representing an investment of $200,000. Their equipment, which will cost $200,000, will be depreciated over ten years and the working capital needed will be $300,000. The total expenditure of foreign currency will reach $300,000. The annual turnover will be ± 1,350,000 dollars, and the value added in the factory could reach 85 per cent if it is decided to produce containers for the models in greatest demand.

Project No. 7

One factory will produce 50,000 to 100,000 electric domestic appliances (shavers, fans, vacuum cleaners, water-heaters, etc.). If the total demand is assumed to be $6,000,000 for the entire household electric sector, it can be presumed that a factory producing the articles in greatest demand will reach a turnover of ± $3,000,000. It is difficult to work out thedimensions of this factory, since the range of items to be manufactured and the quantities of each cannot be foreseen. On the assumption that the factory that will be engaged only in the assembly of imported parts, a turnover of $3,000,000 can be taken as a basis, and this will mean employment for 300 workers, buildings with a floor space of 3,000 m^2, equipment of the order $200,000 (to be depreciated over five years), a working capital of $1,500,000 and a value added in the factory of 25 per cent.

Project No. 8

Five factories will produce wire and cables of all types to a value of ± $10,000,000. To achieve maximum integration, they should specialize in bare wire, electric cables or telephone wire. For ease of calculation, however, the aggregate data have been apportioned evenly over the five factories. Each will employ 800 workers and have a floor space of 12 000 m^2, representing an investment of $1,200,000. Investment on equipment will be $5,000,000 to be depreciated over ten years. The working capital will be $2,000,000. Total expenditure in foreign currency will be $5,800,000, and the value added in the factory will amount to 60 per cent if the process of manufacture is completely integrated.

Project No. 9

One factory will produce 20,000 telephones a year and telephone exchanges to a total value of $3,000,000. It will employ 225 workers and have a floor space of 2,000 m^2 ($200,000). The equipment will cost $500,000 and the working capital will amount to $2,500,000. Total expenditure in foreign currency will be $1,500,000. The value

added in the factory will be of the order of 40 per cent for subscriber equipment (turnover $400,000) and 30 per cent for exchange (turnover $2,600,000).

Project No. 10

One factory will manufacture transmitting and receiving equipment for radio-relay links (a few tens a year), radio and television transmitters (a few dozens a year) and transmitter-receivers for military or para-military use (± 4,000 a year). Its annual turnover will be around $5,000,000. It will employ 220 workers, and will have a floor space of 2,500 m^2 ($250,000). The equipment, which will cost $550,000, will be depreciated over 5 years, and the working capital needed will be $3,500,000. Total expenditure in foreign currency will be $3,000,000. The value added in the factory will be ± 30 per cent.

Project No. 11

One factory will produce studio equipment (some dozens of sets a year), amplifiers, modulators and demodulators for carrier-current line systems (some dozens a year) and teleprinters (some hundreds a year). The annual turnover will be of the order $6,000,000 and the value added in the factory will be ± 30 per cent. The factory will employ 300 workers and have a floor space of 3,000 m^2 ($300,000). The equipment, which will cost $700,000, will be depreciated over five years, and the working capital needed will be $6,000,000. Total expenditure in foreign currency will be $3,100,00.

Project No. 12

Seven factories will manufacture large coil equipment (motors, alternators, transformers, etc.) with a turnover of approximately $5,000,000. The total demand for this equipment will be $70,000,000 in 1980, but it is assumed that half will still have to be imported (Custom-built items, very large machines, etc.). Here also it would be desirable for each factory to specialize in a group of articles, but the aggregate data have been apportioned evenly among the factories. Each will employ 400 workers and have a floor space of 5,000 m^2 ($500,000). The investment will amount to some $2,000,000. The total expenditure in foreign currency will reach $2,800,000, and the value added in the factory will be of the order of 40 per cent.

Project No. 13

Four factories will produce switchboards, control panels, contact-breakers, etc., with an annual turnover of around $10,000,000. Each will provide employment for 500 workers and will have a floor space

of 5,000 m^2 ($500,000); equipment will cost $3,000,000 (depreciated over 10 years); the working capital fund will have to be $3,000,000. Total expenditure in foreign currency will be $5,000,000. The value added in the factory will reach 30 per cent.

Project No. 14

One factory will produce 7,500,000 coils and 800,000 variable capacitors of various types. It will provide employment for 230 workers and have a floor space of 1,500 m^2. The equipment, which will cost $300,000, will be depreciated over 6 years. The working capital fund will have to be $450,000 and the total expenditure in foreign currency will reach $550,000. The value added in the factory will reach 55 per cent.

Project No. 15

One factory will produce 7,500,000 coils and 4,000,000 trimming capacitors of various types. It will provide employment for 210 workers and have a floor space of 1,350 m^2. The equipment, which will cost $275,000, will be depreciated over 6 years. The working capital required will be $375,000 and the total expenditure in foreign currency will be $475,000. The value added in the factory will reach 57 per cent.

Project No. 16

One factory will produce 200,000 deflexion coils and 200,000 line output transformers. It will employ 80 workers and have a floor space of 950 m^2; the equipment, which will cost $150,000, will be depreciated over 6 years. The working capital fund will be $112,000, and the total expenditure in foreign currency will reach $265,000. Value added in the factory will be of the order of 46 per cent.

Project No. 17

One factory will produce 12,000,000 transistors, 5,000,000 diodes, 60,000,000 capacitors and 70,000,000 resistors. It will provide employment for 850 workers and will have a floor space of 5,500 m^2. The equipment will cost $4,500,000 and the working capital fund will have to be $22,000,000. Depreciation will be over 4 years for transistors and diodes and over 5 years for resistors and capacitors. The total expenditure in foreign currency will reach $6,000,000 and the locally added value will be of the order or 56 per cent.

Project No. 18

One factory will produce 200,000 picture tubes (electron gun assembly, application of sensitive coatings to the screen, and air evacuation). It will employ 170 workers and have a floor space of 4,000 m^2. The investment on equipment, which will be $1,000,000, will be depreciated over 5 years, and the working capital fund will have to be $1,500,000. The total expenditure in foreign currency will reach $2,160,000. The value added in the factory will be 48 per cent.

Summary and conclusions

If the eighteen projects described above are carried out, local production will amount to $203,000,000, which will be 67 per cent of the total demand of $302,000,000 for finished electronic products in 1980.

Imports of finished products will be a further $99,000,000, to which $73,000,000 should be added for the raw materials and compoents needed for local manufacture that will continue to be imported. Total imports will therefore be $172,000,000, or 57 per cent of the total demand.

The locally added value will be $90,000,000 in factories covered by the eighteen projects (including those producing components and other material for use in manufacture), to which $40,000,000, should be added for locally purchased raw materials. The expenditure of the electronics industry in local currency will therefore be $130,000,000, which is 43 per cent of the total demand.

Annexes VII, VIII, IX and X give aggregate figures for the progress of the industry of ISIC Group 370 between 1966 and 1980. No supply-and-demand balance-sheet for 1980 has been drawn up, because exchanges between the countries of the Maghreb will depend on a balance that still has to be established between all sectors of the economy, and it is not therefore essential to arrive at this balance in each sector.

ANNEX I

List of products falling within ISIC (International Standard Industrial Classification) Group 370 and the corresponding headings of the BTN (Brussels Tariff Nomenclature) and the revised SITC (Standard International Trade Classification).

Comments:

(a) The BTN and the SITC are made up of 6-digit numbers. The choice of the last two digits in the BTN and of the last one or the last two in the revised SITC, however, is left to the discretion of the national administrations of each country. In other words, the first four digits of the BTN and the first four or five digits of the revised SITC are laid down and accepted internationally. The extent to which these headings are sub-divided varies greatly from country to country (see annex II: Correspondence between the Customs nomenclatures of the five countries).

(b) In the list below, the reference EX in front of a heading in the BTN and the revised SITC indicates that the product mentioned appears under that heading together with others which do not fall within ISIC Group 370 (the latter are always quoted in parentheses, e.g. "excluding non-electronic ... etc." ...).

In some cases and according to the country, the last two digits are used to distinguish between these products, so that it will ultimately be possible to establish with sufficient accuracy the value of imports falling within Group 370, to the exclusion of all others.

ISIC Group 370: Manufacture of electrical machinery, apparatus, appliances and supplies.

	B.T.N	S.I.T.C revised
- ELECTRONIC COMPUTERS (excluding non-electronic calculating machines)	Ex 8452	Ex 714.2
- ELECTRONIC STATISTICAL MACHINES (excluding non-electronic statistical machines)	Ex 8453	Ex 714.3
- ELECTRIC POWER MACHINERY	8501	722.1
- ELECTRICAL APPARATUS FOR MAKING AND BREAKING OR FOR PROTECTING ELECTRICAL CIRCUITS (SWITCH GEAR, ETC...)	8519	722.2
- INSULATED WIRE AND CABLE	8523	723.1
- INSULATORS, ELECTRIC (OTHER THAN GLASS AND PORCELAIN)	Ex 8525	Ex 723.21
- INSULATING FITTINGS FOR ELECTRICAL EQUIPMENT (EXCEPT THOSE MADE OF GLASS OR PORCELAIN AND ELECTRICAL INSULATORS)	Ex 8526	Ex 723.22
- ELECTRICAL CONDUIT TUBING AND JOINTS THERE - FORE, OF BASE METAL LINED WITH INSULATING MATERIAL)	8527	723.23
- TELEVISION BROADCAST RECEIVERS, WHETHER OR NOT COMBINED WITH GRAMOPHONE OR RADIO	Ex 8515	724.1
- RADIO BROADCAST RECEIVERS, WHETHER OR NOT COMBINED WITH GRAMOPHONE	Ex 8515	724.2
- ELECTRICAL LINE TELEPHONE AND TELEGRAPH EQUIPMENT	8513	724.91
- MICROPHONES, LOUDSPEAKERS AND AMPLIFIERS	8514	724.92
- OTHER TELECOMMUNICATIONS EQUIPMENT (except WOODEN OR PLASTIC CABINETS FOR TELECOMMUNICATION EQUIPMENT)	Ex 8515	Ex 724.99
- ELECTRO-MECHANICAL DOMESTIC APPLIANCES, N.E.S	8506	725.03
- ELECTRIC SHAVERS AND HAIR CLIPPERS	8507	725.04
- ELECTRIC SPACE HEATING EQUIPMENT, ETC	8512	725.05

		B.T.N.	S.I.T.C. revised
-	ELECTRO-THERAPEUTIC APPARATUS (excluding non-ELECTRICAL or NON-THERAPEUTIC APPARATUS)	Ex 9017	Ex 726.1
-	X-RAY APPARATUS	9020	726.2
-	PRIMARY BATTERIES AND CELLS	8503	729.11
-	ELECTRICAL ACCUMULATORS (STORAGE BATTERIES)	8504	729.12
-	ELECTRIC LAMPS	8520	729.2
-	THERMIONIC ETC. VALVES AND TUBES, PHOTOCELLS, TRANSISTORS, ETC.	8521	729.3
-	ELECTRICAL STARTING AND IGNITION EQUIPMENT FOR INTERNAL COMBUSTION ENGINES	8508	729.41
-	LAMPS, FOR BICYCLES AND MOTOR VEHICLES (EXCLUDING OTHER SIGNALLING EQUIPMENT)	Ex 8509	Ex 729.42
-	ELECTRON AND PROTON ACCELERATORS	Ex 8522	729.7
-	ELECTRO-MAGNETS AND ELECTROMAGNETIC APPLIANCES (EXCLUDING PERMANENT MAGNETS)	Ex 8502	Ex 729.91
-	ELECTRIC ARC AND RESISTANCE, WELDING EQUIPMENT AND MACHINES (excluding INDUSTRIAL FURNACES)	Ex 8511	Ex 729.92
-	ELECTRIC TRAFFIC CONTROL EQUIPMENT	8516	729.93
-	ELECTRIC SOUND OR VISUAL SIGNALLING APPARATUS N.E.S.	8517	729.94
-	ELECTRICAL CONDENSERS (CAPACITORS)	8518	729.95
-	ELECTRICAL CARBONS	8524	729.96
-	ELECTRICAL PARTS FOR MACHINERY AND APPLIANCES N.E.S. (EXCEPT PLASTIC PARTS OF MACHINERY)	Ex 8528	Ex 729.98
-	OTHER ELECTRICAL GOODS AND APPARATUS, N.E.S. (EXCLUDING ELECTRICAL DETECTORS FOR MINES, METAL OBJECTS, ETC...)	Ex 8522	Ex 729.99
-	PORTABLE ELECTRIC BATTERY AND MAGNETO LAMPS	8510	812.43
-	CUSHIONS AND PADS, ELECTRIC (EXCLUDING NON-ELECTRICAL CUSHIONS AND PADS)	Ex 9404	Ex 821.03

	B.T.N.	S.I.T.C. revised
- FLASHLIGHT APPARATUS (EXCLUDING FLASHBULBS AND PHOTOGRAPHIC APPARATUS)	Ex 9007	Ex 861.4
- TIME SWITCHES, ELECTRIC (excluding NON-ELECTRIC CLOCKS)	Ex 9106	Ex 864.24
- GRAMOPHONES, TAPE RECORDERS, ETC. (EXCEPT DICTATING MACHINES)	Ex 9211	Ex 891.11
- OTHER ACCESSORIES AND PARTS, N.E.S. (EXCLUDING PARTS FOR DICTATING MACHINES)	Ex 9213	Ex 891.12
- PARTS AND ACCESSORIES OF ELECTRICAL MUSICAL INSTRUMENTS (EXCLUDING PARTS OF NON-ELECTRICAL INSTRUMENTS)	Ex 9210	Ex 891.9
- HEARING AIDS, ELECTRIC (EXCLUDING OTHER ORTHOPEDIC AIDS)	Ex 9019	Ex 899.61

ANNEX II

CORRESPONDENCE BETWEEN THE MOROCCAN, ALGERIAN TUNISIAN, LIBYAN AND SUDANESE CUSTOMS NOMENCLATURES FOR GOODS CLASSIFIED UNDER ISIC GROUP 370

	HEADINGS OF BTN CHAPTERS AND SUB-CHAPTERS	MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
8452	Calculating machines; accounting machines, cash registers, postage-franking machines, ticket-issuing machines and similar machines, incorporating a calculating device					
	- Electronic calculating machines - Other calculating machines	845200	845201 (845202/05, (845211,21, (31,41	845200	714200	714200
8453	Statistical machines of a kind operated in conjunction with punched cards (for example, sorting, calculating and tabulating machines); accounting machines operated in conjunction with similar punched cards; auxiliary machines for use with such machines (for example, punching and checking machines)					
	- Punching machines, checking machines - Sorting machines, interpolating machines - Calculating machines - Tabulating machines - Other statistical machines	845300	845301 845311 845321 845331 845341	845300	714300	714300
8501	Electrical goods of the following descriptions: generators, motors, converters (rotary or static) transformers, rectifiers and rectifying apparatus, inductors					
	- Electromagnetic	850101	(850151,54, (55/56			(722101,03
	- Electrostatic	850106	850152,57	(850100	(722100	
	- Instrument transformers	850121	850161,66			(722107
	- Other transformers, frequency					722107

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
	- 650 KVA	850123	850167,68			722107
	+ 650 KVA	850124	850169,70			722107
	- Transformers various	850126	850162,63	850100	722100	722107
	- Reactors and chokes	850127	(850164,65 (71			722105
	- Parts for generators	850111	850192			(722101,03
	- Parts for induction coils and transformers	850129	850193			
	- Other generators	——	(850153,81/ (85,91			722101
8502	Electromagnets; permanent magnets and articles of special materials for permanent magnets, being blanks of such magnets; electromagnetic and permanent magnet chucks, clamps, vices and similar work-holders; electromagnetic clutches and couplings; electromagnetic brakes; electromagnetic lifting heads	850201	850201,11, 21/22,33/34 40	850200	729910	Ex 729
8503	Primary cells and primary bateries					
	- For portable electric lamps	850311	850301	850300	729110	Ex729103
	- Others	(850301,12, (13,21	850302			
8504	Electric accumulators					
	- Lead-acid	850401	850401			
	- Other than lead-acid	850402	850414	850401		729101
	- Accumulator plates, lead	850411	850423			
	- Accumulator plates, other than lead	850412	850424		729120	Ex729103
	- Separator plates, wood	850413	850421			
	- Containers and covers	850414	850422	850402		
	- Parts	850415	850425			
8506	Electromechanical domestic appliances, with self-contained electric motor	850601	(850602,12 (22,23	850600	725030	Ex725

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
	N.B. Heading 8506 also includes domestic appliances such as: - Vacuum cleaners, floor-polishers, fruit-juice-extractors, food-grinders and mixers, room fans, etc. - It excludes refrigerators, dish-washing and clothes-washing machines roller and other ironing machines (except smoothingirons)and sewing machines - Electric heating apparatus (including smoothing irons) come under heading 8512					
8507	Shavers and hair-clippers, with self-contained electric motor					
	- Shavers	850701	850701	850700	725040	Ex 725
	- Hair-clippers	850711	850711			
8508	Electrical starting and ignition equipment for internal combustion engines (including ignition magnetos, magneto-dynamos, ignition coils, starter motors, sparking plugs and glow plugs); dynamos and cut-outs for use in conjunction therewith					
	- Starter motors and dynamos	850801	850801,02	850800	729410	729410
	- Magnetos for aero-engines	850811	850811			
	- Magnetos, other than for aero-engines	850812	850812			
	- Ignition equipment, various, for motors	850813	850841			
	- Sparking plugs	850814	850821,31			
	- Parts	—	850816,42			
8509	Electrical lighting and signalling equipment and electrical windscreen-wipers, de-froster and de-misters, for cycles or motor vehicles					

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
	- Dynamos for cycles, motor cycles and motor vehicles	850901	850902,03	850900	729420	729
	- Lighting and signalling equipment, n.e.s	850921	850922			
	- Sound signalling equipment	850911	850911			
8510	Portable electric battery and magneto lamps, other than lamps falling within heading No. 85.09					
	- Miners' lamps	851001	851001	851001	812430	812430
	- Other lamps	851002	851013	851001		
	- Cases for miners' lamps	851011	851002	851002		
	- Cases for other lamps	851012	851015	851002		
8511	Industrial and laboratory electric furnaces and ovens; electric induction and dielectric heating equipment; electric welding, brazing and soldering machines and apparatus and similar electric machines and apparatus for cutting					
	- Industrial furnaces and ovens	851101	851102/05	851101	729920	729921
	- Welding, brazing and soldering machines	851111	851111/17	851102		729920
	- Parts	851141	851118	—		
8512	Electric instantaneous or storage water-heaters and immersion heaters; electric soil-heating apparatus and electric space-heating apparatus; electric hair-dressing appliances (for example, hair dryers, hair curlers, curling-tong heaters) and electric smoothing irons; electro-thermic domestic appliances; electric heating resistors, other than those of carbon					
	- Water-heaters, instantaneous or storage	851201	851201	851200	725050	725
	- Space-heating apparatus	851211	851211			
	- Hair-dressing appliances	851221	851221			
	- Smoothing irons	851231	851231			

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
	- Dish-warmers, toasters	851242	851242			
	- Electro-thermic appliances, miscellaneous	851243	851243			
	- Resistors	851251	851251			
8513	Electrical line telephonic and telegraphic apparatus (including such apparatus for carrier-current line systems)					
	- Teletypewriters, picture telegraphic apparatus	851301	851314	851300	724910	724911,13
	- Apparatus, miscellaneous	851311	851303,15/16			
	- Parts	851321	851304,17			
8514	Microphones and stands therefor; loudspeakers; audio-frequency electric amplifiers					
	- Microphones	851401	851401	851400	724920	724920
	- Loudspeakers	851411	851411			
	- Sound-amplifier sets	851421	851412,13			
8515	Radiotelegraphic and radiotelephonic transmission and reception apparatus; radio-broadcasting and television transmission and reception apparatus (including those incorporating gramophones) and television cameras; radio navigational aid apparatus, radar apparatus and radio remote control apparatus					
	A. RADIO-BROADCASTING					
	- Transmitters	851501	851502,03	851508	724200	724201,03,05
	- Radiotelegraphic receivers	851511	851503,04	851501		
	- Radio-broadcasting receivers (including radio-gramophones)	851521	851503,05	851501		
	B. TELEVISION					
	- Receivers (including those incorporating a radio-broadcast receiver or gramophone	851531	851503,05,06	851501	724100	7241
	- Cameras	851541	851507	851508		

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
	C. OTHERS					
	- Radio navigational aid apparatus	851551	851512			
	- Aerials	851561	851525			
	- Cabinets, wood	851562	851522	851508	724990	724990
	- Cabinets, other than wood	851563	851523			
	- Radio sub-assemblies	851564	851527			
	- Parts, radio	851565	851528	851509		
8516	Electric traffic-control equipment for railways, roads or inland waterways and equipment used for similar purposes in port installations or upon airfields					
	- Railways	851601	851601			
	- Roads	851611	851602	851600	729930	Ex 729
	- Miscellaneous	851621	851603			
8517	Electric sound or visual signalling apparatus (such as bells, sirens, indicator panels, burglar and fire alarms), other than those of heading No. 8509 or 8516	851700	851700	851700	729940	Ex 729
8518	Electrical capacitors, fixed or variable					
	- Fixed	851801	851801/04	851800	729950	729950
	- Variable	851811	851811			
8519	Electrical apparatus for making and breaking electrical circuits, for the protection of electrical circuits, or for making connexions to or in electrical circuits (for example, switches, relays, fuses, lightning arresters, surge-suppressors, plugs, lampholders, terminals, terminal strips and junction boxes); resistors, fixed or variable (including potentiometres), other than heating resistors;					

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
	rheostatic, inductance, motor-driven and vibrating contact automatic voltage regulators; switchboards (other than telephone switchboards) and control panels					
	- Apparatus for making and breaking circuits	851901	851901/07 09,10.12/13	851901		
	- Parts for circuit-breaking apparatus	851911	851911			
	- Relays	851921	851921,22			
	- Overvoltage protective devices	851931	851931,32	851902		
	- Apparatus for making connexions to or in electrical circuits	851941	851941/45		722200	7222
	- Resistors, non-heating	851951	851951,52 54,55	851901		
	- Voltage-regulators	851961	851961			
	- Control panels	851971	851971/73	851902		
8520	Electric filament lamps and electric discharge lamps (including infra-red and ultra-violet lamps); arc-lamps; electrically ignited photographic flashbulbs					
	- Filament lamps	852001	852001/03	852002		
	- Discharge lamps	852011	852011,12	852202		
	- Ultra-violet lamps	852021	852021	852001		
	- Arc lamps	852031	852022	852002	729200	7292
	- Electrically ignited photographic flashlight bulbs	852041	852023	852001		
	- Parts, bulbs, fluorescent tubes	852051	852032,33	852003		
	- Other parts	852052	852034	852003		
8521	Thermionic, cold cathode and photocathode valves and tubes (including vapour or gas-filled valves and tubes, cathode-ray tubes, television camera tubes and mercury-arc rectifying valves and tubes); photocells; transistors and elements similar to					

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
	- Tubes, cathode-ray	852121	852106			
	- Crystal diodes and triodes	852151	852151			
	- Valves for X-ray apparatus	852132	852102			
	- Rectifying tubes	852131	852103/04	852100	729300	7293
	- Photocells	852141	852141,42			
	- Tubes, miscellaneous	852101, 11,33	852105,07 08			
	- Other electrical parts	852161	852161			
	- Parts	852171	852172,73			
8522	Electrical goods and apparatus (except those suitable for use solely or principally as parts of other machines or apparatus), not falling within any other heading of this chapter					
	A. Particle accelerators	852201	852202,22	852200	729990	729990
	B. Other	852211	852211,23,24			
8523	Insulated (including enamelled or anodized) electric wire, cable, bars, strip and the like (including coaxial cable), whether or not fitted with connectors					
	- Plastic-insulated, sheathed	852301	852301			
	- Rubber-insulated, sheathed	852302	852302			
	- Paper-insulated, sheathed	852303	852303			
	- With other kinds of insulation, sheathed	852304	852304,05	852300	723100	7231
	- Plastic-insulated, not sheathed	852311	852313			
	- Varnish-insulated, not sheathed	852313	852312			
	- With other kinds of insulation, not sheathed	852312,14/16	852314			
	- Other wire and cables	852305,22, 23	—			
8524	Carbon brushes, arc-lamp carbons, battery carbons, carbon electrodes and other carbon articles					

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
	- Arc-lamp carbons	852401	852422			
	- Battery carbons	852402	852423			
	- Electrodes, graphite	852411	852403,24			
	- Electrodes, amorphous-carbon	852413	852404,25	852400	729960	Ex 729
	- Heating resistors, other than domestic	852421	85241			
	- Brushes for electric motors	853431	852426			
	- Carbon parts, miscellaneous	852432	852427			
8525	Insulators of any material					
	- China or earthenware	852501	852512,13			
	- Other ceramic material	852502	852514	852500	723210	Ex 7232
	- Glass	852511	852515,16			
	- Other materials	852521	852503,17			
8526	Insulating fittings for electrical machines, appliances or equipment, being fittings wholly of insulating material apart from any minor components of metal incorporated during moulding solely for purposes of assembly, but not including insulators falling within heading No. 8525					
	- Ceramic materials	852611	852602			
	- Rubber	852621	852612	852600	723220	Ex 7232
	- Plastic	852631	852622			
	- Other	852641	852601,32,33			
8527	Electrical conduit tubing and joints therefor, of base metal lined with insulating material	852700	852700	852700	723230	Ex 7232
8528	Electrical parts of machinery and apparatus, not being goods falling within any of the preceding headings of this chapter	852800	852800	852800	729980	729980

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
	- Apparatus based on the use of X-rays	902001	902001			
	- Apparatus based on the use of radiations from radio-active substances	902011	902011			
	- X-ray tubes	902021	902021	902000	726200	7262
	- X-ray screens	902022	902022			
	- Frames and screens, parts	902023,24	902023,24			
9106	Time switches with clock or watch movement (including secondary movement)or with synchronous motor	910600	910600	910600	864240	8642
9210	Parts and accessories of musical instruments (other than strings), including perforated music rolls and mechanisms for musical boxes; metronomes, tuning forks and pitch pipes of all kinds	921001,11, 21	921041/49	921000	891900	8919
9211	Gramophones, dictating machines and other sound-recorders and reproducers, including record-players and tape decks with or without sound-heads; television instruments for recording and reproducing pictures and sound by the magnetic process					
	- Sound-recorders	921101	921101			
	- Record-players and automatic record-changers	921111	921111			
	- Tape-winders and the like	921112	921112	921100	891110	Ex 8911
	- Other sound-reproducing instruments	921113	921113			
	- Electricgramophones	921114	921114			
	- Combined sound-recorders and reproducers	921121	921121			
9213	Other accessories and parts of gramophones, of dictating machines or of other sound-reproducers or -recorders	921301	921301/03, 12/14,24/27	921300	891120	Ex 8911

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
9007	Photographic cameras; photographic flashlight apparatus					
	- Air-survey cameras	900701	900701			
	- "Automatic" cameras	900702	900702	900701	861400	8614
	- Other cameras	900703,04	900703,05/08			
	- Magazines for films	900722	900709	900702	861400	8614
	- Flashlight apparatus	900711	900712	900701		
	- Parts	900723	900710,13	900702		
9017	Medical, dental, surgical and veterinary instruments and appliances (including electro-medical apparatus and ophthalmic instruments)					
	A. Electro-medical apparatus	901701	901701	901700	7267100	7261
	B. Other (syringes, dental and surgical equipment)	901711/15	901711/16		861710	861710
9019	Orthopaedic appliances, surgical belts, trusses and the like; artificial limbs, eyes, teeth and other artificial parts of the body; deaf aids; splints and other fracture appliances					
	A. Deaf aids	901921	901915			
	B. Other (prosthetic and orthopaedic appliances)	901901,11/14/31	901902/07,22/23	901900	899600	8996
9020	Apparatus based on the use of X-rays or of the radiations from radio-active substances (including radiography and radiotherapy apparatus); X-ray generators; X-ray tubes; X-ray screens; X-ray high-tension generators; X-ray control panels and desks; X-ray examination or treatment tables, chairs and the like					

		MOROCCO	ALGERIA	TUNISIA	LIBYA	SUDAN
9404	Mattress supports; articles of bedding or similar furnishing fitted with springs or stuffed with any material, or of foamed or cellular rubber or plastic, whether or no covered (for example, mattresses, quilts, eiderdowns, cushions, pouffes and pillows)					
	- Mattress supports	940401,02	940401,02			
	- Mattresses	940411/13	940411/13			
	- Heating elements, electric	940421	940421	940400	821030	821030
	- Heating elements, rubber non-electric	940422	940422			
	- Miscellaneous	940423/25	940423/25			

N.B. The reference "Ex" before a number in the Sudanese Customs nomenclature indicates that the number will occur again later and that it covers more than the one item of the BTN.

It should also be noted that in the Sudanese nomenclature there are three-digit numbers which cover products entered under several headings, and which furthermore, occur in two different places where different products are entered. For instance, number 725 occurs twice for domestic electric equipment and shavers, and once for electric heating appliances. Number 729 also occurs twice, once for electrical signalling and sound equipment for motor vehicles, and once for electro-magnets, electric traffic-control equipment, carbon articles for electrical use, and audio-visual signalling equipment n.e.s.

ANNEX III

MOROCCO (1)

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
845200	Electronic calculating machines	845201	215,980	189	No separate figures	
	Other items not falling within ISIC Group 370		1,766,030		No separate figures	
			1,982,010		993,470	
845300	Punching machines and checking machines	845301	249,920	51	No separate figures	
	Sorting machines and interpolating machines	845311	60,140	4	"	
	Calculating machines, for use with punched cards	845321	103,060	2	"	
	Tabulating machines, for use with punched cards	845331	589,380	8	"	
	Machines, punched cards, various	845341	3,151,780	24	"	
		TOTAL :	4,154,280		3,766,790	
		N.B.	NON-ELECTRONIC MACHINES:		NO SEPARATE FIGURES	
850100	Electro-magnetic machines	850101	3,689,280		5,681,910	
	Electrostatic machines	850106	131,150		127,870	
	Parts for generators	850111	401,910		333,240	
	Instrument transformers	850121	482,460		712,560	
	Transformers, industrial frequency - 650 kVA	850123	902,890		511,930	
	" " " + 650 kVA	850124	475,260		595,780	
	Transformers, various	850126	384,730		502,260	
	Reactors and chokes	850127	255,050		954,040	
	Parts for transformers and induction coils	850129	137,850		147,000	
	Static converters	850131	503,400		952,300	
		TOTAL :	7,363,980		10,518,890	
850200	Electro-magnets	850201	152,580		114,570	
		N.B.	PERMANENT MAGNETS:		NO SEPARATE FIGURES	

MOROCCO (2)

HEADING	ITEM	SUB-HEADING	1964 Quantity	1965 Quantity
850300	Wet cells	850301	46,200	10,450
	Dry cells for portable electric lamps	850311	2,390,950	3,116,960
	Dry cells - IOV	850312	1,777,660	1,782,800
	Ditto, + IOV	850313	1,348,060	25,860
	Inert cells	850321	138,130	223,760
	Other cells and batteries	850341		60
		TOTAL :	5,701,000	5,159,890
850400	Accumulators, lead-acid	850401	840,150	708,720
	Accumulators, other than lead-acid	850402	337,790	414,320
	Accumulator plates, lead	850411	10,870	59,070
	Ditto, other than lead	850412	6,980	7,590
	Separator plates for accumulators, wood	850413	21,780	34,800
	Containers, covers and stoppers for accumulators	850414	740,020	1,178,240
	Other accumulator parts	850415	164,120	212,700
		TOTAL :	2,121,710	2,615,440
850600	Electro-mechanical domestic appliances	850601	919,780	403,410
850700	Electric shavers	850701	109,450	23,290
	Electric hair clippers	850711	5,990	2,160
850800	Starter motors and dynamos	850801	710,910	883,510
	Magnetos for aero-engines	850811	2,650	560
	Ditto, other than for aero-engines	850812	119,120	169,660
	Ignition equipment, various, for motors	850813	278,000	368,700
	Sparking plugs	850814	1,246,150	1,218,110
	Ignition equipment parts, miscellaneous	850815	534,540	473,990
		TOTAL :	2,891,370	3,114,530
850900	Dynamos, lighting, for cycles and motor cycles	850901	126,260	146,190
	Lighting equipment, for vehicles	850921	190,420	1,644,610
	Other items not falling within ISIC Group 370		336,620	254,660
		TOTAL :	653,300	2,045,460

HEADING	ITEM	SUB-HEADING	1964 Quantity	1965 Quantity
851000	Electric lamps, miners'	851001	29,190	43,120
	Electric lamps, other than miners'	851002	131,460	62,690
	Cases for miners' lamps	851011	26,720	24,330
	Cases for other lamps	851012	504,140	507,110
		TOTAL :	691,510	637,250
851100	Electric welding, brazing and soldering machines	851111	495,600	720,930
	Other items not falling within ISIC Group 370		121,600	86,370
		TOTAL :	617,200	807,300
851200	Electric water-heaters, instantaneous or storage	851201	148,860	436,240
	Electric space-heating apparatus	851211	541,570	1,049,510
	Electric hair-dressing appliances	851221	161,970	60,410
	Electric smoothing irons	851231	413,680	466,890
	Electric cookers	851241	245,730	76,050
	Dish-warmers, toasters	851242	78,350	30,540
	Electro-thermic appliances, miscellaneous	851243	27,390	5,560
	Domestic, heating, resistors	851251	87,100	82,810
		TOTAL :	1,704,650	2,208,010
851300	Teletypewriters, picture telegraphic apparatus	851301	1,367,880	1,117,160
	Miscellaneous telephone and telegraph apparatus	851311	5,459,070	2,334,510
	Parts for telephone and telegraph equipment	851321	1,593,580	1,072,780
		TOTAL :	8,420,530	4,524,450
851400	Microphones	851401	104,350	71,960
	Loudspeakers	851411	339,250	737,080
	Sound-amplifier sets	851421	665,240	301,920
		TOTAL :	1,108,840	1,110,960

MOROCCO (4)

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
851500	Radio transmitters	851501	2,867,210	381	3,148,380	
	Radiotelegraphic receivers	851511	415,810	92	222,420	
	Radio-broadcasting receivers	851521	12,765,860	133,100	2,747,750	
	TV receivers	851531	4,668,940	8,306	5,303,740	
	TV cameras	851541	357,210	6	12,180	
	Radio navigational aid apparatus	851551	543,520	670	467,710	
	Aerials	851561	1,160,620		1,100,130	
	Radio sub-assemblies	851564	973,620		2,396,140	
	Parts, radio	851565	567,480		2,941,620	
	Other items, not falling within ISIC Group 370		127,080		332,760	
		TOTAL :	24,447,350		18,672,830	
851600	Electric traffic-control equipment for railways	851601	366,030		97,150	
	Electric traffic-control equipment miscellaneous	851621	44,160		40,720	
		TOTAL :	410,190		137,870	
851700	Electric sound signalling apparatus	851700	189,160		354,960	
851800	Electrical capacitors fixed	851801	280,300		360,560	
	Electrical capacitors variable	851811	98,940		748,540	
		TOTAL :	370,240		1,109,100	
851900	Electrical apparatus for making and breaking circuits	851901	3,118,530		3,819,200	
	Parts for circuit-breaking apparatus	851911	479,540		489,440	
	Electric relays	851921	906,180		1,157,700	
	Overvoltage protective devices	851931	2,618,410		3,169,500	
	Apparatus for making connexions to or in electric circuits	851941	2,344,780		2,597,310	
	Resistors, non-heating	851951	200,130		562,280	
	Voltage-regulators, automatic	851961	937,360		1,172,250	
	Control panels and switchboards	851971	1,208,290		913,640	
		TOTAL :	11,813,220		13,881,320	

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
852000	Filament lamps	852001	2,533,680	11,004,566	2,372,490	
	Discharge lamps	852011	378,740		605,880	
	Ultra-violet and infra-red lamps	852021	31,020		6,900	
	Arc-lamps	852031	20,490		19,040	
	Photographic flashlight bulbs	852041	127,220		110,110	
	Parts, bulbs	852051	6,800		1,480	
	Miscellaneous other parts for lamps	852052	530		4,010	
		TOTAL :	3,098,480		3,119,910	
852100	Radio transmission tubes	852101	1,072,360		629,850	
	Radio reception tubes	852111	574,560		477,030	
	Cathode-ray tubes	852121	154,950		294,560	
	Gas-filled rectifying tubes	852131	29,390		26,290	
	Values for X-ray apparatus	852132	29,700		6,970	
	Electronic tubes, Miscellaneous	852133	49,700		43,910	
	Photocells	852141	7,700		8,050	
	Crystal diodes and triodes	852151	64,160		522,900	
	Mounted piezo-electric crystals	852161	29,440		71,910	
	Parts for electronic lamps	852171	16,070		15,620	
		TOTAL :	2,028,030		2,097,090	
852200	Signal-generators, HF and LF	852201	109,520		169,380	
	Miscellaneous lighting and signalling equipment	852211	10,620		1,460	
	Miscellaneous electrical equipment	852221	327,420		226,270	
		TOTAL :	447,560		397,110	
		N.B.	MINE DETECTORS:		NO SEPARATE FIGURES	
852300	Plastic-insulated electric wire (shealthed)	852301	428,360		1,023,030	
	Rubber-insulated " " (")	852302	108,960		251,840	
	Paper-insulated " " (")	852303	102,060		19,680	
	Electric wire with other kinds of insulation (")	852304	2,100		3,500	
	Plastic-insulated electric cables (")	852305	1,173,170		2,708,010	

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
	Plastic-insulated electric wire, not sheathed	852311	684,200		499,760	
	Rubber-insulated electric wire, not sheathed	852312	184,750		494,590	
	Varnish-insulated electric wire, not sheathed	852313	182,430		395,030	
	Paper-insulated electric wire, not sheathed	852314	158,890		136,680	
	Asbestos-insulated electric wire, not sheathed	852315	33,760		17,010	
	Electric wire with other kinds of insulation, not sheathed	852316	1,708,330		274,470	
	Coaxial cables	852322	64,460		98,520	
	Wire, fitted with connectors	852323	280,870		375,320	
		TOTAL :	5,112,340		6,297,440	
852400	Arc-lamp carbons	852401	175,530		214,020	
	Battery carbons	852402	82,290		76,680	
	Electrodes, graphite	852411	174,990		166,360	
	Electrodes, Soderberg	852412			860	
	Electrodes, amorphous-carbon	852413	1,810			
	Heating resistors, other than domestic	852421	6,640		24,510	
	Brushes for electric motors	852431	208,040		245,300	
	Carbon parts for miscellaneous electrical uses	852432	156,460		107,040	
		TOTAL :	745,760		834,770	
852500	Insulators of various materials other than glass, china and ceramic	852521	54,210		193,150	
	Other items not falling within ISIC Group 370		950,360		1,647,320	
		TOTAL :	1,004,570		1,840,470	
852600	Insulating fittings, rubber	852621	6,240		3,090	
	" " , plastic	852631	38,690		42,030	
	" " , miscellaneous (other than cermaic)	852641	33,260		61,720	
	Other items not falling within ISIC Group 370		44,740		144,510	
		TOTAL :	122,930		251,350	
852700	Electrical condent tubing, and joints therefor, metal	852700	50,980		14,460	

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
852800	Electrical parts, n.e.s.	852800	41,380		156,700	
		N.B. PLASTIC PARTS: NO SEPARATE FIGURES				
900700	Photographic flashlight apparatus	900711	50,780		18,100	
	Other items not falling within ISIC Group 370		819,920		425,700	
		TOTAL :	870,700		443,800	
901700	Electro-medical apparatus	900701	219,600		236,510	
	Other items not falling within ISIC Group 370		1,050,000		1,303,510	
		TOTAL :	1,269,600		1,540,020	
		N.B. ELECTRICAL APPARATUS, NOT THERAPEUTICAL: NO SEPARATE FIGURES				
901900	Deaf aids	901921	13,720		16,450	
	Other items not falling within ISIC Group 370		100,000		153,770	
		TOTAL :	113,720		170,220	
902000	Apparatus based on the use of X-rays	902001	1,313,190		903,450	
	Apparatus based on the use of radiations from radio-active substances	902011	108,360		39,010	
	X-ray tubes	902021	91,020		65,710	
	X-ray screens	902022	6,270		9,860	
	Protective frames and screens	902023	2,970		14,730	
	Parts for X-ray apparatus	902024	159,370		95,360	
		TOTAL :	1,681,180		1,128,120	
910600	Time switches with clock or watch movement	910600	48,890		82,310	
		N.B. MECHANICAL: NO SEPARATE FIGURES				

MOROCCO (8)

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
921000	Parts of musical instruments	921021	16,880		56,330	
		N.B. NON-ELECTRONIC: NO SEPARATE FIGURES				
921100	Sound-recorders	921101	288,790		265,990	
	Record-players and automatic record-changers	921111	147,250		134,900	
	Tape-winders and the like	921112	190		800	
	Instruments for the direct reproduction of sound	921113	75,550		3,720	
	Electric gramophones	921114	595,620		287,790	
	Combined sound-recorders and reproducers	921121	559,860		292,670	
		TOTAL :	1,667,260		985,870	
		N.B. DICTATING MACHINES: NO SEPARATE FIGURES				
921300	Parts for sound-recording instruments	921301	85,590		328,800	
		N.B. CASES AND PARTS FOR DICTATING MACHINES: NO SEPARATE FIGURES				
940400	Articles of bedding, with heating elements	940421	600		1,250	
	Other items not included in ISIC		510,000		146,210	
		TOTAL :	510,600		147,460	

ALGERIA (1)

Dinars

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
8452 ..			3,011,150		5,842,820		4,678,040	
	Electronic calculating machines	845201		150,950		96,280		76,760
	Other items not falling within ISIC Group 370			2,860,200		5,746,540		4,601,280
8453 ..			1,691,530		3,385,240		4,319,420	
	Punching machines, checking machines	845301		138,380		375,990		508,830
	Sorting machines, interpolating machines	845311		352,460		106,480		234,860
	Calculating machines	845321		43,060		69,630		166,350
	Tabulating machines	845331		591,000		548,120		48,240
	Other statistical machines	845341		566,690		2,285,020		3,361,140
	N.B. NON-ELECTRONIC CALCULATING MACHINES: NO SEPARATE FIGURES							
8501 ..			18,479,850		16,599,570		20,401,250	
	Electro-magnetic machines, 10 kg or less	850151		203,600		350,310		466,020
	Electrostatic machines, 10 kg or less	850152		68,560		187,810		198,480
	Generating sets over 10 kg	850153		4,587,590		2,982,270		2,841,750
	Electro-magnetic machines for locomotives, over 10 kg	850154		122,000		8,760		1,180
	Other electro-magnetic machines, over 10 kg, 500 HP and under	850155		2,021,850		2,103,540		3,743,290
	Ditto, over 500 HP	850156		3,892,590		2,554,310		276,190
	Electrostatic machines, over 10 kg	850157		527,690		968,090		883,890

ALGERIA (2)

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
	Other transformers, over 500 grammes	850162		814,240		672,580		864,850
	Ditto, under 500 grammes	850163		166,720		242,230		818,440
	Reactors and chokes over 500 grammes	850164		38,900		11,460		54,430
	Ditto, under 500 grammes	850165		159,530		327,640		708,590
	Instrument transformers, over 10 kg	850166		68,810		79,660		144,250
	Other transformers, under 10 kVA	850167		169,620		1,042,730		602,250
	Ditto, from 10 to 650 kVA	850168		1,577,230		1,528,630		1,834,630
	Ditto, from 650 to 5,000 kVA	850169		618,000		781,420		549,590
	Ditto, over 5000 kVA	850170		500,000		110,570		399,130
	Reactors over 10 kg	850171		30,610		361,530		588,050
	Rectifiers, metal, 10 kg or under	850181		98,250		48,680		123,000
	Other converters, 10 kg or under	850182		52,000		223,990		19,790
	Synchronous metal contact rectifiers, over 10 kg	850183		54,030		79,950		39,520
	Rectifiers, metal, over 10 kg	850184		382,000		505,100		237,720
	Other convertors, over 10 kg	850185		254,580		262,980		513,250
	Current-reversing keys for generators, motors and rotary converters	850191		57,040		427,380		237,640
	Components and parts generators and motors, n.e.s.	850192		1,536,290		588,700		1,560,450
	Components and parts for transformers and							

ALGERIA (3)

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
8502 ..			[illegible]20		352,270		161,770	
	Electro-magnets and electro-magnetic lifting heads	850211		19,610		235,300		48,610
	Brakes and speed-checkers for motor vehicles	850221		8,000		1,310		16,920
	Ditto, other than for motor vehicles	850222		19,940		35,280		15,980
	Electro-magnetic clutches, couplings and variable-speed couplings for motor vehicles	850233		6,000		4,820		3,430
	Ditto, other than for motor vehicles	850234		17,180		44,030		26,180
	Electro-magnetic or electronic chucks and similar work-holders	850240		2,000		15,480		11,750
	Other items not falling within ISIC Group 370			31,090		16,050		38,900
8503 ..			10,033,170		12,039,100		10,417,350	
	Batteries for portable electric lamps	850301		8,912,660		11,371,420		10,015,110
	Other primary cells and batteries	850302		1,120,510		667,680		402,240
8504 ..			3,005,190		3,077,330		3,798,410	
	Accumulators, lead-acid	850401		1,320,080		610,680		320,810
	Accumulators, other than lead-acid	850414		602,760		402,270		518,860
	Accumulators, separater							

ALGERIA (4)

HEADING	ITEM	SUB-HEADING	1963 Total for heading	1963 Total for sub-heading	1964 Total for heading	1964 Total for sub-heading	1965 Total for heading	1965 Total for sub-heading
	Containers, covers, separator plates and vulcanite or plastic stoppers	850422		937,000		1,764,910		1,815,760
	Lead plates for accumulators	850423		44,730		9,320		51,330
	Plates, other than lead, for accumulators	850424		11,000		3,400		44,780
	Accumulator components and parts, n.e.s.	850425		84,620		279,380		1,023,610
8506 ..			1,028,960		1,032,890		1,010,380	
	Vacuum cleaners	850602		136,200		53,090		103,290
	Waxers	850612		6,000		4,170		5,730
	Fans	850622		223,830		334,780		189,570
	Other electro-mechanical domestic appliances, n.e.s.	850623		662,930		640,850		711,790
8507 ..			331,280		284,680		113,420	
	Electric shavers	850701		318,800		282,010		106,500
	Electric hair-clippers	850711		12,480		2,670		6,920
8508 ..			4,081,410		5,146,300		6.086,120	
	Starter motors for aero-engines	850801		41,320		24,590		70,800
	Dynamos and starter motors other than for aero engines	850802		2,209,090		1,778,080		2,201,110
	Magnetos for aero-engines	850811		24,000		14,680		3,840
	Magnetos other than for aero-engines	850812		43,000		100,620		188,000
	Components and parts for magnetos	850816		12,000		34,900		52,670
	Sparking plugs	850821		750,000		1,417,050		1,422,280

ALGERIA (5)

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
	Complete electrical ignition and starting equipment, n.e.s.	850841		263,000		548,230		590,690
	Parts therefor	850842		731,000		1,188,160		1,470,050
8509 ..			2,817,000		3,907,780		6,161,540	
	Dynamos, for lighting purposes, for cycles and motor vehicles	850902		31,000		139,650		179,030
	Other cycle and motor vehicle lighting equipment, n.e.s.	850903		555,000		1,387,040		3,587,440
	Other items not falling within ISIC Group 370			2,231,000		2,381,090		2,395,070
8510 ..			1,228,520		1,157,700		1,442,540	
	Miners' lamps	851001		10,000		4,170		21,670
	Cases, components and parts for miners' lamps	851002		4,000		27,170		8,210
	Portable electric lamps, complete	851013		55,470		91,260		86,150
	Cases, components and parts for the above	851015		1,159,050		1,038,800		1,326,510
8511 ..			1,158,000		1,608,090		1,690,000	
	Automatic or semi-automatic arc welding heads and appliances	851111		12,000		131,580		40,270
	Rotary arc welding machines and apparatus	851112		386,000		359,700		244,040
	Arc welding machines and apparatus, static and other	851113		273,000		340,620		680,170
	Resistance welding machines	851114		8,000		19,200		

ALGERIA (6)

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
	Resistance welding machines, other	851115		30,000		51,060		
	Electric soldering irons, manual	851116		44,000		33,230		23,120
	Other electric machinss and apparatus for welding, brazing, soldering, cutting	851117		78,000		316,990		313,540
	Components and parts for welding machines	851118		246,000		219,510		288,010
	Other items not falling within ISIC Group 370			81,000		136,200		100,850
8512 ..			2,200,750		2,606,670		2,037,610	
	Electric instantaneous and storage water-heaters, and immersion heaters	851201		473,000		354,610		340,580
	Electric space-heating apparatus	851211		337,750		759,260		457,880
	Electric hair-dressing appliances	851221		190,000		242,260		
	Electric smoothing irons	851231		886,000		896,040		739,150
	Electric domestic cookers, ovens and heating plates	851241		163,000		143,730		165,630
	Dish-warmers, toasters, driers and the like	851242		37,000		63,940		105,230
	Electro-thermic appliances for heating liquids	851243		42,000		36,140		61,380
	Heating resistors	851251		72,000		110,690		167,760

ALGERIA (7)

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
8513 ..			8,902,000		10,241,270		15,771,420	
	Complete telecommunication apparatus for carrier-current line systems	851303		2,114,000		2,454,280		4,740,350
	Components and parts for the above	851304		2,864,000		1,712,890		661,040
	Picture telegraphic apparatus	851314		14,000		248,690		8,000
	Teleprinters, telephone and telegraph transmitters and receivers	851315		399,000		964,940		1,238,160
	Other electrical line telephonic and telegraphic apparatus	851316		2,508,000		3,791,180		7,498,050
	Components and parts for the above	851317		1,003,000		1,069,290		1,625,820
8514 ..			830,000		893,860		1,330,570	
	Microphones and stands therefor	851401		76,000		69,980		145,060
	Loudspeakers	851411		197,000		436,620		853,870
	Audio-frequency amplifiers, LF, for telephony and telegraphy	851412		224,000		74,870		66,480
	Other audio-frequency amplifiers, LF, and sound-amplifier sets	851413		333,000		312,390		265,160
8515 ..			33,770,930		26,534,690		23,286,910	
	Transmitters, radio-telephonic, radio-telegraphic, radio-broadcasting and TV	851502		1,480,000		3,341,410		2,690,670

ALGERIA (8)

HEADING	ITEM	SUB-HEADING	1963 Total for heading	1963 Total for sub-heading	1964 Total for heading	1964 Total for sub-heading	1965 Total for heading	1965 Total for sub-heading
	Receivers, radiotelephonic, whether or not incorporating sound recorders	851504		1,576,000		379,800		515,290
	Radio-broadcasting, receivers, whether or not incorporating sound-recorders or gramophones	851505		13,487,000		1,588,150		1,244,090
	TV receivers, whether or not incorporating a radio-broadcasting receiver	851506		7,505,000		6,646,480		8,929,010
	TV cameras	851507		194,000		68,740		29,150
	Transistor sets	851508				213,770		910,510
	Radio navigational aid apparatus, radar apparatus and radio remote control apparatus	851512		494,350		223,840		256,070
	Aerials	851525		1,006,000		1,014,040		1,274,280
	Radio components, n.e.s.	851527		2,016,860		3,206,080		976,580
	Radio components and parts, n.e.s.	851528		2,491,720		4,262,600		3,638,100
	Other items not falling within ISIC Group 370			179,000		1,320,700		1,841,130
8516 ..			225,000		810,660		135,950	
	Electric traffic-control equipment for railways	851601		136,000		177,920		87,970
	Ditto, for roads, towns, and inland waterways	851602		16,000		22,590		3,880
	Ditto, other, including equipment for use in port installations or upon airfields	851603		73,000		610,150		44,100

ALGERIA (9)

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
8517 ..			559,000		403,070		355,710	
	Other electrical signalling apparatus, n.e.s.	851700		559,000		403,070		355,710
8518 ..			1,642,000		879,020		2,029,330	
	Electrical, capacitors, fixed, paper dielectric	851801		84,000		50,570		87,900
	Ditto, mica dielectric	851802		50,000		17,170		103,430
	Ditto, ceramic dielectric	851803		1,292,000		8,770		52,590
	Ditto, electrolytic	851804		100,000		81,650		261,220
	Electrical, capacitors, variable and adjustable	851811		116,000		720,860		1,524,190
8519 ..			23,565,000		14,763,930		20,659,260	
	Electrical circuit-breaking apparatus, non-automatic, over 1 kg, under 1,000 V	851901		189,000		113,760		315,570
	Ditto, over 1,000 V	851902		78,000		50,160		93,280
	Ditto, under 1 kg	851903		434,000		665,520		861,500
	Ditto, other than aerial, under 1,000 V	851904		187,000		140,330		326,830
	Ditto, over 1,000 V	851905		19,000		30,710		22,050
	Fuses under 1,000 V	851906		224,000		114,940		298,990
	Other circuit-breaking apparatus, automatic, over 2 kg, under 1000 V	851907		865,000		498,820		584,770
	Fuses, over 1,000 V	851909		27,000		35,310		240,140
	Other circuit-breaking apparatus, automatic, over 1,000 V	851910		421,000		286,760		577,750
	Components and parts for electrical circuit-breaking apparatus	851911		1,113,000		760,930		1,151,170

ALGERIA (10)

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total heading	Total for sub-heading
	Vibrating, contact regulators under 2 kg, under 1,000 V	851912		25,000		20,840		13,820
	Other automatic circuit-breaking apparatus, under 1,000 V	851913		574,000		410,200		1,295,820
	Relays, for telephony and telegraphy	851921		419,000		206,830		333,370
	Relays, telecommunication or other	851922		924,000		526,470		1,051,370
	Overvoltage protective devices, under 1,000 V	851931		39,000		71,160		47,500
	Ditto, over 1,000 V	851932		24,000		21,190		52,210
	Plugs and sockets, under 250 grammes	851941		222,000		190,630		300,570
	Ditto, over 250 grammes	851942		93,000		76,370		46,650
	Valve sockets and lamp-holders	851943		266,000		141,750		317,820
	Apparatus for making connexions, n.e.s., over 1 kg	851944		1,223,000		1,131,210		921,510
	Ditto, under 1 kg	851945		1,356,000		2,040,540		2,772,960
	Potentiometers, rheostats over 1 kg	851951		102,000		89,980		172,970
	Ditto, under 1 kg	851952		31,000		111,830		330,780
	Resistors, non-heating, 20 kg	851954		5,000		51,880		195,810
	Resistors, non-heating, under 20 kg	851955		103,000		151,930		110,310
	Rheostatic voltage regulators	851961		682,000		1,029,790		1,033,380
	Control panels and switchboards, with one or more instruments	851971		13,118,000		5,719,290		6,347,870

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
	Ditto, without instruments, plastic	851972				26,690		581,420
	Ditto, without instruments, other than plastic	851973		202,000		48,110		261,070
8520 ..			4,620,280		5,191,770		6,300,270	
	Filament, lamps and tubes, under 5 grammes	852001		182,070		606,990		824,340
	Ditto, from 5 to 25 grammes	852002		1,015,000		1,296,050		1,689,540
	Ditto, over 25 grammes	852003		2,372,000		2,421,600		2,105,650
	Discharge lamps, fluorescent tubes	852011		636,670		486,610		652,770
	Ditto, other than fluorescent tubes	852012		192,130		153,750		165,320
	Ultra-violet or infra-red lamps	852021		7,000		20,010		24,500
	Arc-lamps	852022		4,000		7,770		12,450
	Photographic flash-light bulbs	852023		187,000		161,280		230,210
	Parts for bulbs and fluorescent tubes	852032		4,640		26,560		496,490
	Other parts for electric lamps	852034		19,770		11,150		99,000
8521 ..			1,776,000		2,305,890		3,281,560	
	Valves for X-ray apparatus	852102		8,000		24,500		750
	Rectifying tubes, gas-filled or filled with mercury vapour	852103		12,000		38,540		19,540
	Rectifying tubes, other than gas-filled or filled							

ALGERIA (12)

HEADING	ITEM	SUB-HEADING	1963 Total for heading	1963 Total for sub-heading	1964 Total for heading	1964 Total for sub-heading	1965 Total for heading	1965 Total for sub-heading
	TV camera tubes, image-converter tubes, multiplier tubes and the like	852105		22,000		168,680		266,570
	Cathode-ray tubes	852106		63,000		265,170		672,290
	Tubes, other than cathode-ray, over 60 grammes	852107		950,000		526,180		551,960
	Tubes, other than cathode-ray, under 60 grammes	852108		529,000		474,980		315,670
	Photo-electric, cells, vacuum or gas-filled	852141		3,000		26,260		57,130
	Ditto, other than vacuum or gas-filled	852142		7,000		10,490		21,600
	Crystal diodes, crystal triodes and other crystal valves	852151		135,000		465,230		1,087,550
	Mounted piezo-electric crystals	852161				11,120		22,560
	Parts for crystal diodes and crystal triodes	852172		1,000		1,560		11,500
	Other parts for electric lamps, valves and tubes	852173		20,000		35,150		15,070
8522 ..			295,000		237,640		168,760	
	Electrical machines for producing items included under heading No. 2851	852202						130
	Signal generators, LF	852222		96,000		28,970		49,890
	Particle accelerators	852223						21,020
	Other electrical machines and apparatus, n.e.s.	852224		199,000		208,670		97,720

N.B. MINE DETECTORS: NO SEPARATE FIGURES

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
8523 ..			12,138,000		7,148,960		4,024,630	
	Electric wire with continuous insulating covering of plastic	852301		7,633,000		4,226,900		1,751,480
	Ditto, rubber	852302		2,734,000		1,443,790		267,050
	Ditto, printed paper or varnished canvas	852303		107,000		48,610		6,360
	Ditto, waxed or varnished paper, textile or synthetic yarn	852304		85,000		82,730		310
	Ditto, other material	852305		1,101,000		700,970		857,100
	Electric wire, without covering, insulated by coating with varnish, lacquer, enamel or metallic oxides or salts	852312		287,000		416,120		577,910
	Ditto, insulated with plastic	852313		84,000		63,630		253,570
	Ditto, insulated with other materials	852314		107,000		166,210		310,850
8524 ..			517,000		1,297,770		1,045,730	
	Electrodes for electrolysis, graphite	852403		19,000		21,730		218,880
	Ditto, amorphous carbon	852404		9,000		11,660		1,550
	Heating resistors, other than those under heading No. 8512	852412		15,000		16,710		69,030
	Carbons for arc-lamps	852422		139,000		160,800		32,980
	Ditto, for electric cells	852423		8,000		4,420		8,230
	Electrodes, for furnaces, graphite	852424		7,000		28,600		3,720

ALGERIA (14)

HEADING	ITEM	SUB-HEADING	1963 Total for heading	1963 Total for sub-heading	1964 Total for heading	1964 Total for sub-heading	1965 Total for heading	1965 Total for sub-heading
	Brushes for electrical machines	852426		273,000		208,490		319,010
	Carbon or graphite components or parts, n.e.s., for electrical use	852427		45,000		165,750		275,700
8525 ..			352,000		609,920		592,450	
	Insulators, in materials other than glass, porcelain, ceramic	852517		49,000		66,500		129,500
	Other items not falling within ISIC Group 370			303,000		543,420		462,950
8526 ..			40,000		66,590		101,640	
	Insulating fittings, rubber, asphaltic or tarry materials	852612		1,000				930
	Ditto, on other materials, except glass, porcelain, ceramic	852633		33,000		41,480		77,310
	Other items not falling within ISIC Group 370			6,000		25,110		23,400
8527 ..			447,000		361,360		456,440	
	Electrical conduit tubing and joints therefor, of base metal, lined with insulating material	852700		447,000		361,360		456,440
8528 ..			1,342,000		725,000		313,510	
	Electrical parts, of machinery and apparatus, n.e.s.	852800		1,342,000		725,000		313,510

N.B. PLASTIC PARTS: NO SEPARATE FIGURES

ALGERIA (15)

HEADING	ITEM	SUB-HEADING	1963 Total for heading	1963 Total for sub-heading	1964 Total for heading	1964 Total for sub-heading	1965 Total for heading	1965 Total for sub-heading
9007 ..			1,106,470		845,420		963,950	
	Photographic flashlight apparatus	900712		54,760		88,620		74,040
	Components and parts for the above	900713		15,030		30,690		15,350
	Other items not falling within ISIC Group 370			1,036,680		726,110		874,560
9017 ..			1,300,000		2,376,950		2,580,860	
	Electro-medical apparatus	901701		78,000		119,380		89,930
	Other items not falling within ISIC Group 370			1,222,000		2,257,570		2,490,930
9019 ..			134,000		148,650		126,120	
	Deaf aids	901915				1,240		2,270
	Other items not falling within ISIC Group 370			134,000		147,410		123,850
9020 ..			662,000		719,430		1,418,360	
	Apparatus based on the use of X-rays, including radiography apparatus	902001		235,000		348,680		1,106,330
	Apparatus based on the use of radiations from radio-active substances	902011		47,000		18,250		103,290
	X-ray tubes	902021		20,000		191,290		97,060
	X-ray screens	902022		100,000		10,220		26,420
	Protective frames and screens	902023				530		18,710
	Parts for X-ray apparatus, n.e.s.	902024		260,000		150,460		66,550

ALGERIA (16)

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
9106 ..			58,000		32,480		159,200	
	Time Switches	910600		58,000		32,480		159,200
9210 ..			10,830		37,310		18,600	
	Parts for electronic musical instruments	921044		3,000		230		-
	Other items not falling within ISIC Group 370			7,830		37,080		18,600
9211 ..			3,038,000		3,680,880		4,976,620	
	Sound recorders	921101		154,000		134,300		73,840
	Record players and automatic record-changers	921111		564,000		746,960		702,290
	Tape-winders and the like	921112		7,000		2,660		8,040
	Other direct sound-recording apparatus, mechanical or electrical	921113		1,748,000		1,383,790		1,651,790
	Other sound-reproducing apparatus, n.e.s.	921114		208,000		373,540		951,500
	Combined sound-recorders and reproducers	921121		357,000		1,039,630		1,589,160
	N.B. DICTATING MACHINES: NO SEPARATE FIGURES							
9213 ..			206,000		264,830		386,220	
	Pick-ups for discs or mechanically recorded sound films	921301		31,000		64,510		124,230
	Other pick-ups	921302		7,000		7,850		11,940
	Components and parts for pick-ups.	921303		47,000		37,520		29,930
	Needles and needle-points for apparatus falling under heading							

HEADING	ITEM	SUB-HEADING	1963		1964		1965	
			Total for heading	Total for sub-heading	Total for heading	Total for sub-heading	Total for heading	Total for sub-heading
	Diamonds, sapphires and other stones, unmounted	921313				8,180		11,370
	Ditto, mounted	921314				200		21,660
	Apparatus for winding films, tapes, or wires	921324				940		1,570
	Electric motors and accessories for apparatus falling under heading No. 9211	921325		14,000		6,200		10,730
	Mechanical motors for apparatus falling under heading No.9211	921326						160
	Components and parts, n.e.s. for apparatus falling under heading No. 9211	921327		106,000		136,130		125,310
		N.B. CASES AND PARTS FOR DICTATING MACHINES: NO SEPARATE FIGURES						
9404 ..			6,827,470		6,013,080		1,772,210	
	Bedding articles with electric heating elements	940421		3,000		23,890		220
	Other items not included in ISIC Group 370			6,824,470		5,989,190		1,771,990

TUNISIA (1)

In Dinars

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
8452 ..	Calculating machines	845200	202,009	1,042	188,274	1,105
		N.B. NON-ELECTRONIC MACHINES: NO SEPARATE FIGURES				
8453 ..	Statistical machines	845300	54,615	75	18,066	26
		N.B. NON-ELECTRONIC STATISTICAL MACHINES: NO SEPARATE FIGURES				
8501 ..	Generators, motors, transformers and parts	850100	1,400,846		1,975,018	
8502 ..	Electro-magnets	850200	5,284		4,547	
		N.B. PERMANENT MAGNETS: NO SEPARATE FIGURES				
8503 ..	Primary cells and primary batteries	850300	379,463		286,175	
8504 ..	Accumulators and plates therefor	850401	29,357		63,941	
	Other accumulator parts	850402	81,952		90,956	
		Total:	111,309		154,897	
8506 ..	Electro-mechanical domestic appliances	850600	54,914		44,511	
8507 ..	Electric shavers and hair-clippers	850700	12,857		4,654	
8508 ..	Electrical ignition and starting equipment for motors	850800	166,293		164,756	
8509 ..	Electrical signalling equipment, for cycles and motor vehicles	850900	139,035		124,900	
		N.B. SIGNALLING EQUIPMENT OTHER THAN LIGHTING: NO SEPARATE FIGURES				
8510 ..	Portable electric lamps, complete	851001	2,127		4,011	
	Parts for the above	851002	25,444		8,672	
		Total:	27,571		12,683	
8511 ..	Welding, brazing and soldering machines, and parts thereof	851102	50,284		53,871	
	Other items not falling within ISIC Group 370		11,497		43,715	
		Total:	61,781		97,586	

TUNISIA (2)

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
8512 ..	Electro-thermic machines and appliances for domestic use	851200	71,025		58,342	
8513 ..	Electrical line telephonic and telegraphic apparatus	851300	742,670		546,640	
8514 ..	Microphones, loudspeakers, amplifiers	851400	59,219		71,577	
8515 ..	Radio and TV receivers	851501	214,009	18,192	83,024	7,377
	Radio telephony apparatus for aircraft	851504			211,752	301
	Other radio and TV apparatus	851508	134,221	241	186,184	256
	Parts, radio	851509	198,283		224,894	
		Total:	546,513		705,854	
		N.B. CASES:	NO SEPARATE FIGURES			
8516 ..	Electric traffic-control equipment for railways	851600	8,630		19,130	
8517 ..	Electric bells and sound signalling equipment	851700	20,379		67,710	
8518 ..	Electrical capacitors	851800	39,703		41,576	
8519 ..	Electrical apparatus for making and breaking electrical circuits, and parts thereof	851901	483,111		926,518	
	Electrical apparatus for making connexions, to or in electrical circuits and control panels	851902	566,176		1,445,848	
		Total:	1,049,287		2,372,366	
8520 ..	Discharge lamps and flashbulbs	852001	41,996		56,318	
	Ditto, filament and arc	852002	157,644	3,250,069	141,061	2,457,745
	Parts for the above	852003	1,532		396	
		Total:	201,172		197,775	
8521 ..	Thermionic valves and tubes, photocells and diodes	852100	73,528		81,243	
8522 ..	Electrical, machines and apparatus, n.e.s.	852200	20,986		35,302	
		N.B. MINE DETECTORS	— NO SEPARATE FIGURES			

TUNISIA (3)

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
8524 ..	Carbon and graphite articles, for electrical purposes	852400	34,800		35,751	
8525 ..	Insulators of any material	852500	90,000		70,748	
		N.B. GLASS AND PORCELAIN: NO SEPARATE FIGURES				
8526 ..	Other insulating fittings of any material	852600	6,385		9,608	
		N.B. GLASS AND PORCELAIN: NO SEPARATE FIGURES				
8527 ..	Electrical conduit tubing and joints therefor	852700	12,469		16,505	
8528 ..	Components and parts, n.e.s., for electrical machines and appliances		77,444		15,300	
		N.B. PLASTIC MATERIALS: NO SEPARATE FIGURES				
9007 ..	Photographic cameras; photographic light flash apparatus	900701	22,259		16,068	1,126
	Parts and accessories for cameras	900702	5,937			
		Total:	28,196			
		N.B. FLASH LIGHT EQUIPMENT: NO SEPARATE FIGURES				
9017 ..	Medical instruments and appliances	901700	107,246		123,829	
		N.B. NON-ELECTRONIC AND NON-THERAPEUTIC APPLIANCES: NO SEPARATE FIGURES				
9019 ..	Orthopaedic and prosthetic appliances	901900	44,109		9,836	
		N.B. DEAF AIDS: NO SEPARATE FIGURES				
9020 ..	X-ray apparatus and accessories	902000	86,088		58,237	
9106 ..	Time switches and the like	910600	10,620		8,428	
		N.B. DITTO ELECTRICAL: NO SEPARATE FIGURES				
9210 ..	Parts and accessories of musical instruments	921000	788		187	
		N.B. DITTO ELECTRICAL: NO SEPARATE FIGURES				
9211 ..	Sound-recorders and reproducers	921100	29,575		69,981	

TUNISIA (4)

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
9213 ..	Parts and accessories for sound-recorders and reproducers	921300	13,749		10,749	
		N.B. CASES AND PARTS FOR DICTATING MACHINES: NO SEPARATE FIGURES				
9404 ..	Bedding, mattress supports, etc.	940400	127,538		60,101	
		N.B. BEDDING WITH HEATING ELEMENTS: NO SEPARATE FIGURES				

LIBYA (1)

HEADING	ITEM	1964	Quantity	1965	Quantity
714 200	Calculating machines	111,495	1,362	166,090	2,107
	N.B. NON-ELECTRONIC MACHINES: NO SEPARATE FIGURES				
714 300	Statistical machines	15,788	28	26,359	108
	N.B. NON-ELECTRONIC MACHINES: NO SEPARATE FIGURES				
722 100	Generators, motors, transformers	2,519,817		2,126,535	
729 910	Electro-magnets	346		1,968	
	N.B. PERMANENT MAGNETS: NO SEPARATE FIGURES				
729 110	Primary cells and primary batteries	177,781		339,446	
729 120	Electric accumulators	77,709	10,500	64,768	9,091
725 030	Electro-mechanical domestic appliances	119,126		170,995	
725 040	Electric shavers	5,321		-	
729 410	Electrical starting and ignition equipment	42,019		63,758	
729 420	Electrical lighting and signalling equipment	297,492		96,930	
	N.B. PARTS, OTHER THAN FOR LIGHTING: NO SEPARATE FIGURES				
812 430	Portable electric lamps	11,224		34,871	
729 920	Electric furnaces, electric welding and brazing apparatus	79,559		69,279	
	N.B. SOLDERING, BRAZING AND CUTTING MACHINES: NO SEPARATE FIGURES				
725 050	Electric instantaneous and storage water-heaters	68,042		111,994	
724 910	Electrical line telephone and telegraph equipment	364,310		226,549	
724 920	Microphones and stands therefor	9,525		24,417	
724 200	Radio broadcast receivers	570,581	75,383	974,111	172,764

LIBYA (2)

HEADING	ITEM	1964	Quantity	1965	Quantity
724 990	Other telecommunication equipment	304,672		36,186	
	N.B. CASES: NO SEPARATE FIGURES				
729 930	Electric traffic-control equipment	4,174		6,884	
729 940	Electric sound or visual signalling apparatus	2,914		3,008	
729 950	Electrical capacitors	2,493		197	
722 200	Electrical apparatus for making and breaking or for protecting electrical circuits	91,001		386,242	
729 200	Electric lamps, filament and discharge	78,828		101,562	
729 300	Thermionic valves and tubes, crystals, etc...	31,705		16,703	
729 990	Other electrical machines and apparatus, n.e.s.	765,452		670,306	
	N.B. MINE DETECTORS: NO SEPARATE FIGURES				
723 100	Insulated electric wire, braided wire, etc...	398,675		990,637	
729 960	Electrical carbons	1,993		3,142	
723 210	Insulators of any material)	26,675		57,906	
723 220	Other insulating fittings)	19,614		1,176	
	N.B. GLASS AND PORCELAIN: NO SEPARATE FIGURES				
723 230	Electrical conduit tubing and joints therefor	14,860		25,286	
729 980	Other electrical parts, n.e.s.	1,785,524		1,426,795	
	N.B. PLASTIC: NO SEPARATE FIGURES				
861 400	Photographic cameras and flash light apparatus	28,545		32,591	4,709
	N.B. FLASH LIGHT APPARATUS: NO SEPARATE FIGURES				
726 100	Electro-medical apparatus	28,978	221	9,323	52
	N.B. NON-THERAPEUTIC: NO SEPARATE FIGURES				

LIBYA (3)

HEADING	ITEM	1964	Quantity	1965	Quantity
		N.B. DEAF AIDS: NO SEPARATE FIGURES			
726 200	X-ray apparatus	50,078	111	70,632	145
864 240	Time switches with clock or watch movement	996		879	
		N.B. NON-ELECTRICAL: NO SEPARATE FIGURES			
891 900	Parts and accessories of musical instruments	2,143		1,136	
		N.B. ELECTRICAL: NO SEPARATE FIGURES			
891 110	Gramophones, tape recorders, etc...	88,550		101,421	
		N.B. DICTATING MACHINES: NO SEPARATE FIGURES			
891 120	Parts for gramophones, etc.	2,065		3,552	
		N.B. CASES AND PARTS FOR DICTATING MACHINES: NO SEPARATE FIGURES			
821 030	Mattress supports	130,665		204,796	
		N.B. BEDDING, WITH HEATING ELEMENTS: NO SEPARATE FIGURES			

SUDAN (1)

£ Sudanese

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
714200	Calculating machines		59,075	433	51,199	355
		N.B. NON-ELECTRIC MACHINES: NO SEPARATE FIGURES				
714300	Statistical machines, for use with punched cards				10,543	1
		N.B. NON-ELECTRIC MACHINES: NO SEPARATE FIGURES				
7221 ..	Generators and components thereof	722101	241,438		127,648	
	Electric motors and parts thereof	722103	162,730		84,039	
	Reactors and chokes	722105	26,319		133,376	
	Transformers	722107	141,364		108,160	
		TOTAL:	571,851		433,223	
729	Electro-magnets, together with traffic control equipment, carbon articles and electrical sound and visual signalling equipment		14,714		12,306	
		N.B. PERMANENT MAGNETS: NO SEPARATE FIGURES				
729103	Primary cells, primary batteries and accumulators, other than for motor vehicles		429,325		456,616	
729101	Accumulators for motor vehicles		119,502	25,724	113,270	22,780
725	Electro-mechanical domestic appliances		110,693		106,949	
729410	Electric ignition and starting equipment for explosion or internal combustion motors		165,300		141,003	
729	Electrical lighting and signalling equipment for cycles and motor vehicles		49,356		36,364	
		N.B. EQUIPMENT OTHER THAN FOR LIGHTING: NO SEPARATE FIGURES				
812430	Portable electric lamps, designed to function by means of a self-contained source of electricity		48,967	549,378	29,910	

SUDAN (2)

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
729923	Electrical industrial furnaces and ovens; welding, brazing, soldering and cutting machines		29,783		20,448	
725	Electric space-heating equipment, domestic		25,812		19,125	
72491	Electrical line, telephony equipment	724911	244,071		119,929	
	" " telegraph "	724913	66,684		99,991	
		TOTAL:	310,755		219,920	
724920	Microphones, loudspeakers and amplifiers		18,590		15,379	
7242 ..	Transistor radio receivers, excluding radiogrammes	724201	396,467	69,622	418,270	95,412
	Other radio receivers, excluding radiogrammes	724203	114,770	12,761	75,858	
	Radiogrammes	724205	1,684	137	1,126	
		TOTAL:	512,921		495,254	
7241	TV receivers		142,360		47,157	1,129
724990	Other receiving and transmitting equipment, n.e.s.		219,638		180,966	
		N.B. CASES:	NO SEPARATE FIGURES			
729950	Electric capacitors		9,354		2,447	
7222	Electrical apparatus for making and breaking electrical circuits, for the protection of electrical circuits, control panels, etc...		397,994		332,461	
7292	Electric filament lamps and electric discharge lamps, flashbulbs, arc lamps		90,997	1,431,738	80,599	6,036,552
7293	Thermionic valves and tubes, cathode-ray tubes, transistors		12,227	12,484	11,186	
729990	Other electrical apparatus, n.e.s.		5,031		6,244	
7231	Equipment for distributing electricity					

SUDAN (3)

HEADING	ITEM	SUB-HEADING	1964	Quantity	1965	Quantity
7232	Insulators of any material		32,723		15,208	
		N.B. GLASS AND CERAMIC: NO SEPARATE FIGURES				
729980	Electrical parts of machinery and apparatus, n.e.s.		4,542		1,258	
8614	Photographic cameras and flash-light apparatus		33,965		20,537	
		N.B. FLASHLIGHT APPARATUS: NO SEPARATE FIGURES				
7261	Electro-medical apparatus		876		239	
		N.B. NON-ELECTRIC, NON THERAPEUTIC MEDICAL APPLIANCES: NO SEPARATE FIGURES				
8996	Deaf aids, orthopaedic appliances		292		390	
		N.B. AIDS OTHER THAN DEAF AIDS: NO SEPARATE FIGURES				
7262	X-ray apparatus		28,755		3,181	
8642	Time switches with clock or watch movement, etc.		5,584		5,978	
		N.B. NON-ELECTRIC APPLIANCES: NO SEPARATE FIGURES				
8919	Parts and accessories of musical instruments, n.e.s.		579		444	
		N.B. NON-ELECTRIC INSTRUMENTS: NO SEPARATE FIGURES				
8911	Musical instruments, gramophones, record players, dictating machines, etc. and parts thereof		64,170		50,612	
		N.B. DICTATING MACHINES AND CASES: NO SEPARATE FIGURES				
821030	Articles of bedding and the like		17,449		4,894	
		N.B. ELECTRICAL HEATING ELEMENTS: NO SEPARATE FIGURES				

Notes on Customs headings in which no distinction is made between those items which fall within ISIC Group 370 and those which do not. Calculation of percentages applicable to other countries by extrapolation.

BTN NOMENCLATURE		SITC, Revised	
8452 00	=	7142 00	A distinction between calculating machines and electronic computers has been made only in Algeria (for 3 years) and in Morocco (for one year). On the average, electronic computers represent + 3.5% of the total under heading 8452 00 (539,970 out of 15,514,020).
8453 00	=	7143 00	In no country is a distinction made between electronic and non-electronic statistical machines. A proportion of 50% has been applied to all the import figures under this heading.
8502 ..	=	72991	A distinction between permanent and other magnets is made only in Algeria. Over a period of three years, permanent magents represent an average of + 14% of the total under the heading 8502 (86,040 out of 618,060).
8509 ..	=	72942	A distinction between electrical lighting equipment for motor vehicles and other, i.e. sound, signalling equipment and accessories is made only in Algeria and Morocco. On the average (over a period of three years in Algeria and two years in Morocco), electrical lighting equipment represents + 50% of the total under heading 8509 (7,598,440 out of 15,585,080).
8511 ..	=	72992	A distinction between industrial electric furnaces and welding equipment is made in all countries except Libya. In the remaining four countries, industrial electric furnaces represent an average of 10% of the total under the heading 8511 (582,894 out of 6,062,085).
8515 00	=	7241 7242 72499	A distinction between wooden or plastic cabinets and the rest of the apparatus is made in Algeria and Morocco. On the average,

BTN nomenclature		SITC, revised	
			(over a period of three years in Algeria and stwo years in Morocco). Cabinets represent + 3% of the total under heading 8515 00 (3,800,670 out of 126,912,710).
8522 ..	=	72999	No Customs nomenclature has a separate sub-heading for mine-detectors. They can be estimated at 5% of the total under the heading.
8525 00	=	72321	A distinction between glass or ceramic insulators and those of other materials is made in Morocco and Algeria. On the average, over a period of three years in Algeria and two years in Morocco, insulators of other materials represent + 11% of the total under heading 8525 00 (492,360 out of 4,399,410).
8526 00	=	72322	See above. On the average, over a period of three years in Algeria and two years in Morocco, fittings of rubber, plastic and other materials except glass and ceramics represent + 58% of the total under heading 8526 00 (338,750 out of 582,510).
8528 ..	=	72998	No Customs nomenclature has a separate sub-heading for plastic parts. They can be estimated at 5% of the total under the heading.
9007 ..	=	8614	Flashlight apparatus is distinguished from photographic cameras only in Algeria (3 years) and Morocco (2 years). On the average, it represents 8% of the total under heading 9007 (347,370 out of 4,230,340).
9017 00	=	7261	A distinction between electrical and non-electrical medical appliances is made everywhere except in Tunisia. (In the remaining countries, electrical appliances represent an average of ± 8% of the total).
			In no country is a distinction made between therapeutic and non-therapeutic appliances (appliances for beauty parlours, sun-tan equipment, etc.). ± 75% of imports may be said to consist of appliances.

BTN nomenclature		SITC, revised	
9019 ..	=	89961	Deaf aids are distinguished from other orthopaedic appliances in Morocco (2 years) and Algeria (3 years). Deaf aids account for an average + 5% of the total under the heading (33,680 out of 692,710).
9106 ..	=	86424	No nomenclature distinguishes between electric and mechanical watch movements. The former may be estimated at ± 50% in all countries except the Sudan, where the heading covers a greater number of products and where the estimate should be more like 5%.
9210 ..	=	8919	Parts for electronic musical instruments are distinguished from parts for non-electronic instruments only in Algeria. Over a period of three years, they represent an average of 5% of the total under heading 9210 (3,230 out of 66,740).
9211 ..	=	89111	No nomenclature contains a separate sub-heading for dictating machines. They may be estimated at ± 10% of the total under the heading.
9213 ..	=	89112	No nomenclature contains a separate sub-heading for dictating-machine cabinets and parts. They also may be estimated at ± 10% of the total under the heading.
9404 ..	=	82103	A distinction is made between electric heating elements for bedding and other articles of bedding in Algeria (3 years) and Morocco (2 years). Electric heating elements for bedding account for an average 0.2% of the total under the heading (28,960 out of 15,270,820).

The following table gives the calculated extrapolations, and provides, for each "doubtful" heading, the estimated imports of products falling within ISIC Group 370, and the estimated imports of products which should be excluded from it.

BTN heading		MOROCCO			ALGERIA		TUNISIA		LIBYA		SUDAN	
		1964	1965	1963	1964	1965	1964	1965	1964	1965	1964	1965
8452	Total	1,982,010	993,470	3,011,150	5,842,820	4,678,040	202,009	188,274	111,495	166,090	59,075	51,199
Non-electronic		1,766,030	± 958,470	2,860,200	5,746,540	4,601,280	± 195,009	± 181,774	± 107,495	± 160,090	± 57,075	± 49,399
Group 370		215,980	± 35,000	150,950	96,280	76,760	± 7,000	± 6,500	± 4,000	± 6,000	± 2,000	± 1,800
8453	Total	4,154,280	3,766,790	1,691,530	3,385,240	4,319,420	54,615	18,066	15,788	26,359	-	10,543
Non-electronic		2,077,140	1,883,395	845,765	1,692,620	2,159,710	27,308	9,033	7,894	13,180	-	5,272
Group 370		2,077,140	1,883,395	845,765	1,692,620	2,159,710	27,307	9,033	7,894	13,179	-	5,271
8502	Total	152,580	114,570	104,020	352,270	161,770	5,284	4,547	346	1,968	see note	
Permanent magnets		± 21,500	± 16,000	31,090	16,050	38,900	± 740	± 640	± 48	± 225	below	
Group 370		± 131,080	± 98,570	72,930	336,220	122,870	± 4,544	± 3,907	± 298	± 1,743	± 1,471	± 1,230
8509	Total	653,300	2,045,460	2,817,000	3,907,780	6,161,540	139,035	124,900	297,492	96,930	49,356	36,364
Sound signalling equipment & access.		336,620	254,660	2,231,000	2,381,090	2,395,070	± 70,000	± 62,000	± 149,000	± 48,000	± 25,000	± 18,000
Group 370		316,680	1,790,800	586,000	1,526,690	3,766,470	± 69,035	± 62,900	± 148,492	± 48,930	± 24,356	± 18,364
8511	Total	617,200	807,300	1,158,000	1,608,090	1,690,000	61,781	97,586	79,559	69,279	29,783	22,128
Electric furnaces and ovens		121,600	86,370	81,000	136,200	100,850	11,479	43,715	± 7,900	± 6,900	-	1,680
Group 370		495,600	720,930	1,077,000	1,471,890	1,589,150	50,284	53,871	± 71,659	± 62,379	29,783	20,448
8515	Total	24,447,350	18,872,830	33,770,930	26,534,690	23,286,910	546,513	705,854	941,981	1,096,581	512,921	495,254
Cabinets		127,080	332,760	179,000	1,320,700	1,841,130	± 16,000	± 22,000	± 28,000	± 33,000	± 15,000	± 15,000
Group 370		24,320,270	18,540,070	33,591,930	25,213,990	21,445,780	± 530,513	± 684,854	± 913,981	1,063,581	497,921	± 480,254
8522	Total	447,560	397,110	295,000	237,640	168,760	20,986	35,302	765,462	670,306	5,031	6,244
Mine-detectors		± 22,000	± 20,000	± 15,000	± 12,000	± 8,000	± 1,000	± 1,800	± 38,000	± 33,000	± 250	± 310
Group 370		± 425,560	± 377,110	± 280,000	± 225,640	± 160,760	± 19,986	± 33,502	± 727,462	± 637,306	± 4,781	± 5,934
8525	Total	1,004,570	1,840,470	352,000	609,920	592,450	90,000	70,748	26,675	57,906	see note	
Glass and ceramic		950,360	1,647,320	303,000	543,420	462,950	± 80,100	± 62,948	± 23,675	± 51,606	below	
Group 370		54,210	193,150	49,000	66,500	129,500	± 9,900	± 7,800	± 3,000	± 6,300	± 6,544	± 3,042
8526	Total	122,930	251,350	40,000	66,590	101,640	6,385	9,608	19,614	1,176	see note	
Glass and ceramic		44,740	144,510	6,000	25,110	23,400	± 2,685	± 4,008	± 8,214	± 496	below	
Group 370		78,190	106,840	34,000	41,480	78,240	± 3,700	± 5,600	± 11,400	± 680	± 6,544	± 3,042
8528	Total	41,380	156,700	1,342,000	725,000	313,510	77,444	15,300	1,785,524	1,426,745	4,542	1,258
Plastic parts		± 2,050	± 7,800	± 67,000	± 36,000	± 15,600	± 3,850	± 770	± 89,000	± 71,000	± 225	± 63
Group 370		± 39,330	± 148,900	± 1,275,000	± 689,000	± 297,910	± 73,594	± 14,530	±1,696,524	±1,355,745	± 4,317	± 1,195
9007	Total	870,700	443,800	1,106,470	845,420	963,950	28,196	16,068	28,545	32,591	33,965	20,537
Photographic apparatus other than flashlight apparatus		819,920	425,700	1,036,680	726,110	874,560	± 25,946	± 14,768	26,245	± 29,991	± 31,265	± 18,933
Group 370		50,780	18,100	69,790	119,310	89,390	± 2,250	± 1,300	± 2,300	± 2,600	± 2,700	± 1,604
9017	Total	1,269,600	1,540,020	1,300,000	2,376,950	2,580,860	107,246	123,829	-	-	-	-
Non-electrical		1,050,000	1,303,510	1,222,000	2,257,570	2,490,930	± 98,646	± 113,929	-	-	-	-
Electrical		219,600	236,510	78,000	119,380	89,930	± 8,600	± 9,900	28,978	9,323	876	239
Non-therapeutic		± 54,800	± 59,510	± 19,500	± 30,000	± 22,930	± 2,150	± 2,500	± 7,178	± 2,323	± 218	± 60
Group 370		± 164,800	± 177,000	± 58,500	± 89,380	± 67,000	± 6,450	± 7,400	± 21,800	± 7,000	± 658	± 179
9019	Total	113,720	170,220	134,000	148,650	126,120	44,109	9,836	1,987	1,500	292	390
Other orthopaedic appliances		100,000	153,770	134,000	147,410	123,850	± 41,904	± 9,342	± 1,888	± 1,425	± 277	± 370
Group 370		13,720	16,450	0	1,240	2,270	± 2,205	± 494	± 99	± 75	± 15	± 20
9106	Total	48,890	82,310	58,000	12,480	159,200	10,620	8,428	996	879	5,584	5,978
Mechanical movement		± 24,490	± 41,310	± 29,000	± 16,240	± 79,200	± 5,300	± 4,200	± 500	± 435	± 5,309	± 5,678
Group 370		± 24,400	± 41,000	± 29,000	± 16,240	± 80,000	± 5,320	± 4,228	± 496	± 444	± 275	± 300
9210	Total	16,880	56,330	10,830	37,310	18,600	788	187	2,143	1,136	579	444
Parts for non-electronic musical instruments		± 16,040	± 53,530	7,830	37,080	18,600	± 749	± 178	± 2,033	± 1,081	± 550	± 422
Group 370		± 840	± 2,800	3,000	230	0	± 39	± 9	± 110	± 55	± 29	± 22
9211	Total	1,677,260	985,870	3,038,000	3,680,880	4,976,620	29,575	69,981	88,550	101,421	57,753	45,551
Dictating machines		± 166,700	± 98,580	± 303,800	± 368,090	± 497,660	± 2,957	± 6,998	± 8,855	± 10,142	± 5,775	± 4,555
Group 370		±1,500,560	±887,290	±2,734,200	±3,312,790	±4,478,960	± 26,618	± 62,983	±79,695	± 91,279	± 51,978	± 40,996
9211	Total	85,590	328,800	206,000	264,830	386,220	13,749	10,749	2,065	3,552	6,417	5,061
Dictating-machine cases		± 8,559	± 32,880	± 20,600	± 26,483	38,622	± 1,375	± 1,075	± 207	± 355	± 642	± 506
Group 370		± 77,031	± 295,920	± 185,400	± 238,347	± 347,598	± 12,374	± 9,674	± 1,858	±3,197	± 5,775	± 4,555
9404	Total	510,600	147,460	6,827,470	6,013,080	1,772,210	127,538	60,101	130,665	204,796	17,449	4,894
Bedding without heating elements		510,000	146,210	6,824,470	5,989,190	1,771,990	± 127,288	± 59,981	± 130,405	± 204,396	± 17,414	± 4,885
Group 370		600	1,250	3,000	23,890	220	± 250	± 120	± 260	± 400	± 35	± 9

Note: In the Sudanese nomenclature, headings 8502 (electro-magnets), 8524 (carbons), 8516 (electric traffic-control equipment) and 8517 (sound signalling apparatus) are grouped together under the same number (729). The figures under this number have been apportioned as follows:

8502:	10 per cent	(The relevant figures are given in Annex IV)
8516:	20 per cent)	
8517:	20 per cent)	(The relevant figures are given in Annex V)
8524:	50 per cent)	

Headings 8506 and 8507 are run together. Electric shavers have been estimated at 10 per cent of the total for the heading (725) and other electro-mechanical domestic appliances at 90 per cent (the relevant figures are given in Annex V).

Headings 8525, 8526 and 8527 are grouped together under No. 7232. The figures under this number have been apportioned as follows:

8525:	20 per cent)	
8526:	20 per cent)	(The relevant figures are given in Annex IV)
8527:	60 per cent)	(The relevant figures are given in Annex V)

Lastly, headings 9211 and 9213 have also been grouped together, under No. 8911. Parts have been estimated at 10 per cent of the total for the heading, and assembled instruments at 90 per cent (the relevant figures are given in Annex IV).

ANNEX V

TOTAL ANNUAL IMPORTS OF ELECTRICAL GOODS AND TOTALS FOR INDIVIDUAL HEADINGS IN 1964 AND 1965 IN THE FIVE COUNTRIES (+ 1963 IN ALGERIA)

The figures have been adjusted (see Annex IV) so as to cover only products falling within ISIC Group 370

BTN heading/ Revised SITC	Heading used in the Sudan	ALGERIA			MOROCCO		TUNISIA		LIBYA		SUDAN		Total in US$ for the 5 countries	
		1963	1964	1965	1964	1965	1964	1965	1964	1965	1964	1965	1964	1965
			Dinars		Dirhams		Dinars		£		£			
8452../714200 Electronic calculating machines		150,950	96,280	76,760	215,980	35,000	7,000	6,500	4,000	6,000	2,000	1,800	94,652	56,542
8453../714300 Electronic statistical machines		845,765	1,692,620	2,159,710	2,077,140	1,883,395	27,307	9,033	7,894	13,179	-	5,271	836,130	877,443
8501../722100 Generators	(722101/3/5/7)	18,479,850	16,599,570	20,401,250	7,363,980	10,518,890	1,400,846	1,975,018	2,519,817	2,126,535	571,851	433,223	16,531,241	17,103,884
8502../729910 Electro-magnets	(729)	72,930	336,220	122,870	131,080	98,570	4,544	3,907	298	1,743	1,471	1,230	108,410	60,035
8503../729110 Primary cells and primary batteries	(729.103)	10,033,170	12,039,100	10,417,350	5,701,000	5,159,890	379,463	286,175	177,781	339,446	429,325	456,616	6,082,735	5,888,154
8504../729120 Electric accumulators	(729.101)	3,005,190	3,077,330	3,798,410	2,121,710	2,615,440	111,309	154,897	77,709	64,708	119,502	113,270	1,836,878	2,075,412
8506../725030 Electro-mechanical domestic appliances	(725)	1,028,960	1,032,890	1,010,380	919,780	403,410	54,914	44,511	119,126	170,995	100,693	97,000	1,126,838	1,117,714
8507../724040 Electric shavers and hair-clippers	(725)	331,280	284,680	113,420	115,440	25,450	12,857	4,654	5,321	-	10,000	9,949	151,208	64,473
8508../729410 Electrical starting and ignition equipment		4,081,410	5,146,300	6,086,120	2,891,370	3,114,530	166,293	164,756	42,019	63,758	165,300	141,003	2,553,871	2,726,497
8509../729420 Electrical lighting and signalling equipment	(729)	586,000	1,526,690	3,766,470	316,680	1,790,800	69,035	62,900	148,492	48,930	24,356	18,364	1,004,525	1,419,387
8510../812430 Portable electric lamps		1,228,520	1,157,700	1,442,540	691,510	637,250	27,571	12,683	11,224	34,871	48,967	29,910	599,033	621,442
8511../729920 Industrial and laboratory electric furnaces and ovens	(729923)	1,077,000	1,471,890	1,589,150	495,600	720,930	50,284	53,871	71,659	62,379	29,783	20,448	788,160	796,286
8512../725050 Electric instantaneous or storage water-heaters and immersion heaters	(725)	2,200,750	2,606,670	2,037,610	1,704,650	2,208,010	71,025	58,342	68,042	111,994	25,812	19,125	1,281,310	1,327,107
8513../724910 Electrical line telecommunication apparatus	(724911.13)	8,902,000	10,241,270	15,771,420	8,420,530	4,524,450	742,670	548,640	364,310	226,549	310,755	219,920	7,256,416	6,347,903
8514../724920 Microphones, loudspeakers and amplifiers		830,000	893,860	1,330,570	1,108,840	1,110,960	59,219	71,577	9,525	24,417	18,590	15,379	609,543	735,733
8515../724100 724200 724990 Radio-broadcasting, TV and telecommunication transmission and reception apparatus	(724) (724201,3,5) (724990)	33,591,931	25,213,990	21,445,780	24,320,270	18,540,070	530,513	684,854	913,981	1,063,581	497,921	480,254	15,027,306	13,621,130
8516../729930 Electric traffic-control equipment	(729)	225,000	810,660	135,950	410,190	137,870	8,630	19,130	4,174	6,884	2,942	2,460	283,080	123,013

TOTAL ANNUAL IMPORTS OF ELECTRICAL GOODS AND TOTALS FOR INDIVIDUAL HEADINGS IN 1964 AND 1965 IN THE FIVE COUNTRIES (+ 1963 IN ALGERIA)

The figures have been adjusted (see Annex IV) so as to cover only products falling within ISIC Group 370

BTN heading/ Revised SITC	Heading used in the Sudan	ALGERIA		MOROCCO		TUNISIA		LIBYA		SUDAN		Total in US$ for the 5 countries	
		1963	1964	1965	1964	1965	1964	1965	1964	1965	1964	1965	
		Dinars		Dirhams		Dinars		£		£			
8519../722200 Apparatus for making connexions to or in electrical circuits, switchboards		23,565,000	14,763,930	20,659,260	11,813,220	13,881,320	1,049,287	2,372,366	91,001	386,242	397,994	332,461	8,993,047	13,427,98 *
8520../729200 Electric lamps		4,620,280	5,191,770	6,300,270	3,098,480	3,119,910	201,172	197,775	78,828	101,562	90,997	80,599	2,576,138	2,769,85 *
8521../729300 Thermionic valves and tubes		1,776,000	2,305,890	3,281,560	2,028,030	2,097,090	73,528	81,243	31,705	16,703	12,227	11,186	1,151,555	1,308,18 *
8522../729990 Electrical apparatus n.e.s.		280,000	225,640	160,760	425,560	377,110	19,986	33,502	727,462	637,306	4,781	5,934	2,224,489	1,972,29 *
8523../723100 Wire		12,138,000	7,148,960	4,024,630	5,112,340	6,297,440	698,314	1,035,901	398,675	990,637	484,812	249,257	6,462,314	7,504,32 *
8524../729960 Carbons	(729)	517,000	1,297,770	1,045,730	745,760	834,770	34,800	35,751	1,993	3,142	7,359	6,156	511,451	470,06 *
8525../723210 Insulators	(7232)	49,000	66,500	129,500	54,210	193,150	9,900	7,800	3,000	6,300	6,544	3,042	72,645	105,50 *
8526../723220 Other insulating fittings	(7232)	34,000	41,480	78,240	78,190	106,840	3,700	5,600	11,400	680	6,544	3,042	82,317	58,07 *
8527../723230 Conduit tubing	(7232)	447,000	361,360	456,440	50,980	14,460	12,469	16,505	14,860	25,286	19,634	9,125	206,483	221,890
8528../729980 Parts n.e.s.		1,275,000	689,000	297,910	39,330	148,900	73,594	14,530	1,696,524	1,355,745	4,317	1,195	5,069,927	3,916,401
9007../861400 Photographic cameras		69,790	119,310	89,390	50,780	18,100	2,250	1,300	2,300	2,600	2,700	1,604	52,968	35,739
9017../726100 Electro-medical apparatus		58,500	89,380	67,000	164,800	177,000	6,450	7,400	21,800	7,000	658	179	127,908	82,961
9019../899600 Deaf aids		-	1,240	2,270	13,720	16,450	2,205	494	99	75	15	20	8,162	4,948
9020../726200 Apparatus based on the use of X-rays		662,000	719,430	1,418,360	1,681,180	1,128,120	86,088	58,237	50,078	70,632	28,755	3,181	810,248	826,622
9016../864240 Time switches	(8642)	29,000	16,240	80,000	24,400	41,000	5,320	4,228	496	444	275	300	21,990	34,316
9210../891700 Parts and accessories of musical instruments		3,000	230	-	840	2,800	39	9	110	55	29	22	689	792
9211../891110 Sound recorders and reproducers	(8911)	2,734,200	3,312,790	4,478,960	1,500,560	887,290	26,618	62,983	79,695	91,279	52,753	40,551	1,392,084	1,562,041
9213../891120 Accessories for 9211	(8911)	185,400	238,347	347,598	77,031	295,920	12,374	9,674	1,858	3,197	5,000	5,000	109,500	170,035
9404../821030 Heating elements for bedding		3,000	23,890	220	600	1,250	250	120	260	400	35	9	6,274	1,667
TOTAL		137,317,876	122,122,967	137,008,898	86,534,161	84,627,895	6,101,907	8,214,152	7,762,923	8,068,459	3,496,993	2,822,992		
TOTAL IN US$		27,463,575	24,424,584	27,401,779	17,306,832	16,925,579	13,424,193	15,612,607	21,736,184	22,591,685	9,791,580	7,904,377	86,683,371	90,436,027

ANNEX VI

STATISTICS OBTAINED FROM INFORMATION RELEASED BY THE AMERICAN TELEGRAPH AND TELEPHONE COMPANY CONCERNING TELEPHONE TRAFFIC IN NORTH AFRICA

No. of telephones	Morocco	Algeria	Tunisia	Libya	Sudan
1960	130,000	178,000	25,000	9,400	21,000
1961	130,000	198,000	26,000	14,600	24,000
1962	131,000	205,000	28,000	12,300	26,500
1963	133,000	189,000	30,000	13,400	29,000
1965	147,000	139,000	34,000	14,200	35,500
Density of telephones per 100 population					
1960	1,22	1,7	0,63	0,80	0,18
1961	1,11	1,86	0,62	1,21	0,21
1962	1,08	1,81	0,65	1,01	0,22
1963	1,07	1,89	0,70	1,07	0,23
1965	1,12	1,13	0,73	0,91	0,27
No. of local and trunk telephone calls (millions)	L/T	L/T	L/T	L/T	
1960	-	108/20	29/7	-	-
1961	-	124/20	29/5	-	-
1962	107/9	137/20	23/6	-	-
1963	114/10	-	20/7	-	-
1965	133/10	87/7.5	-	26/1	-
Average no. of telephone calls per inhabitant					
1960	-	12.4	9.2	-	-
1961	-	13.0	8.3	-	-
1962	9.8	14.0	6.9	-	-
1963	10.1	-	6.4	-	-
1965	11.0	7.5	-	16.9	-

ANNEX VII

PRODUCTION, DEMAND, EMPLOYMENT, INVESTMENTS

Countries: Maghreb + Sudan

Industry: ISIC Group 370

	Units	Years	
		1966	1980
(1) Production capacity	$ millions	40	250
(2) Local production	"	25	203
(3) Value added	"	8	90
(+ purchases from other local industries)	"	2.5	40
(4) Exports	"	-	-
(5) Imports of finished products	"	80.5	99
(+ raw materials for electronics industry)	"	14.5	73
(6) Local demand	"	105.5	302
(7) Formation of fixed capital	"	13.6 (before 1966)	70 (from 1967 to 1980)
(8) Employment	Persons	3,500	14,000

ANNEX VIII

DISTRIBUTION OF LOCAL PRODUCTS

Countries: Maghreb + Sudan

Industry: ISIC Group 370

	In $ millions Years		
	1966	1980	
Final destination: private	12	69	
public services	10	59	
Formation of fixed capital	3	75	
Changes in stocks	-	-	
Exports	-	-	
Intermediate destination			
Consumed by electronics industry Group 370	-	(25.5)	self-consumption (pro memoria)
TOTAL	25	203	

Note: It is assumed that there will be no changes in stocks, since, if spread over thirteen years, any changes there were would have little influence on the annual production in 1980. Exports have been ignored, because only a general survey covering at least the whole of Africa could give any numerical indication of each country's possibilities in this respect.

ANNEX IX

CONTRIBUTIONS TO LOCAL INDUSTRY

Countries: Maghreb + Sudan
Industry: ISIC Group 370

$ million years

	1966				1980			
			Coefficients				Coefficients	
	Total (1)	Of which imports (2)	(1) as % of total production	(2) as % of (1)	Total (1)	Of which imports (2)	(1) as % of total production	(2) as % of (1)
Intermediate contributions								
Division 1 – Mining and quarrying (lead, zinc, manganese dioxide, various...)	1.5	0.5	6	33	8.6	–	4	0
Major Group 26 – Manufacture of furniture and fixtures wooden television and wireless cabinets	0.5	0.15	2	30	3.4	–	1.5	0
Major Group 31 – Manufacture of chemicals and chemical products (acid, plastics, synthetic materials, insulators...)	2.53	2.53	10	100	20	13.3	10	66
Major Group 34 – Basic metal industries (copper ingots)	3	3	12	100	16	16	8	100
Major Group 35 – Manufacture of metal products (bays, frames, tittings, frameworks, etc...)	2.84	1.87	11	66	23.3	2	11	9
Major Group 36/37 – Manufacturer of machinery and electrical machinery (components, wire, sub-assemblies...)	6.64	6.64	27	100	40	40	20	100
Major Group 39 – Manufacture of glassware (valves, bulbs)	–	–	–	–	1.7	1.7	1	100
Total intermediate	17	14.7	68	86	113	73	56	64
Wages	4	–	16	–	29	–	14	–
Costs + Profits and Losses	4	–	16	–	61	–	30	–
Total production	25		100		203		100	

ANNEX X

SUPPLY/DEMAND BALANCE

Countries: North African sub-region, excluding Egypt.
Industry: ISIC Group 370; year - 1966.

Importing country / Exporting country	Morocco	Algeria	Tunisia	Libya	Maghreb	Sudan	North Africa (excluding Egypt)
Morocco		-	-	-	-	-	-
Algeria	-		-	-	-	-	-
Tunisia	-	-		-	-	-	-
Libya	-	-	-		-	-	-
Maghreb	-	-	-	-		-	-
Sudan	-	-	-	-	-		
North Africa (excluding Egypt)	-	-	-	-	-	-	
Rest of the world	15.2	24.4	13.8	20.1	73.5	7	80.5
Total imports	15.2	24.4	13.8	20.1	73.5	7	80.5
Total production	13.2	9.3	2.3	0.2	25	-	25
Total consumption	28.4	33.7	16.1	20.3	98.5	7	105.5