ACC

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INDUSTRIAL REHABILITATION SUB-COMM.
JAN.- JUNE 1944

Increase of Civilian Supplies

10. Clothing and Footwear.

Next in importance to food are clothing and footwear. Contrary to the impressions which the Supply Division formed from an incomplete survey, the Committee is informed that the reserves of these in the shops and in the hands of consumers are virtually exhausted. Provision of clothing and shoes are essential for three reasons:

a) To maintain the working efficiency of civilian workers,

b) To maintain the existing wage level, and

c) To induce cultivators to deliver their crops.

Insofar as these goods are imported they will have an important anti-inflationary effect; and, by providing an incentive to local food production and collection, particularly cereals, they may actually effect an economy of world supplies and a net saving of tonnage.

The requirements of liberated Italy up to the end of 1944 for cotton textiles are about 60 million yards and of this about 20 million yards could be contributed by Southern Italy, through the use of existing stocks and local production, given an import of about 1800 tons of raw cotton up to the end of 1944 and minor quantities of supplies and machinery items.

The minimum footwear needs for the balance of 1944 are placed at seven million pairs of shoes, of which less than two million need to be new shoes, the balance consisting of repair soles and heels. The import requirement would be less than 1,000 tons of leather with some tanning materials and an appropriate quantity of other supplies. Requisitions for amounts of this order are now being discussed and will be decided primarily on supply grounds. The Committee wish to emphasize the extreme importance of meeting these demands as a contribution to anti-inflation.

11. Fertilizers.

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The full requirements of fertilizers for Italian agriculture in liberated areas, including Regions III and IV, are 389,000 tons of super-phosphates and 111,000 tons of nitrogeneous fertilizers. Their importance is indicated by the fact that one pound of fertilizer is equivalent to six or seven pounds of food. Fertilizers must be distributed before the planting season, which

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For this purpose phosphate rock, from North Africa, certain chemicals and a limited amount of industrial equipment must be imported. If the rehabilitation of the fertilizer industry can be carried out, Southern Italy should supply about 25% of its requirements of super-phosphates before the end of this year. The production of nitrogeneous fertilizers depends on power being made available and could only be on a small scale. Imported nitrates have been requisitioned and their importation would be amply repaid by reduction in imports of cereals.

12. Sacks.

The importation of paper sacks for transport of fertilizers and cement is urgently required. A decision on this question is still in suspense after several months' delay.

13. Sulphur mines.

The rehabilitation of the sulphur mines in Sicily is important in order to provide sulphuric acid, carbon bisulphide and insecticides - all of which are needed for food production.

14. Light Engineering.

A minimum amount of light engineering productive capacity is essential for maintaining a supply of small tools, spare parts and mechanical repairs for agriculture, transport and the rehabilitation of consumer goods industries. To achieve this it may be necessary to import certain industrial supplies but the principal difficulty will be the supply of adequate power and a relatively small amount of imported coal.

Two wire and nail manufacturing plants are already free for civilian supply and an energetic salvage programme will recover considerable amounts of industrial and metal working equipment throughout the area.

15. Olive oil refining.

The production of olive oil is essential for feeding the population in the absence of imported fats. Imports of caustic soda for the refining of olive oil are urgently needed.

16. Soap production.

A plan for the local manufacture of 4,500 tons monthly of soap has been drawn up and a requisition for 1,500 tons monthly for caustic soda was put forward on the 22nd of May, of which 600 tons are needed for soap. At present there is an acute shortage of soap and insufficient quantities are available for distribution in the ration.

17. Miscellaneous.

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Other essential civilian supplies, e.g., cement, glassware, candles, etc., can be provided from local sources provided a minimum quantity of coal is obtained either from Sardinia or foreign countries.

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The Committee recommend that a definite allocation of coal should be made for implementing a minimum programme of local production for civilian [illegible] the military authority controlling coal, both foreign and

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18. Coal.

The Committee recommend that a definite allocation of coal should be made for implementing a minimum programme of local production for civilian needs. At present the military authority controlling coal, both foreign and domestic, makes no allocation of coal for industry producing solely for civilian needs. No substantial progress can be made in checking inflation unless a higher priority can be given to the provision of coal for essential civilian requirements.

19. Transport.

The rehabilitation of the civilian economy and fuller utilization of domestic production, particularly food, is dependent upon the improvement of transport facilities.

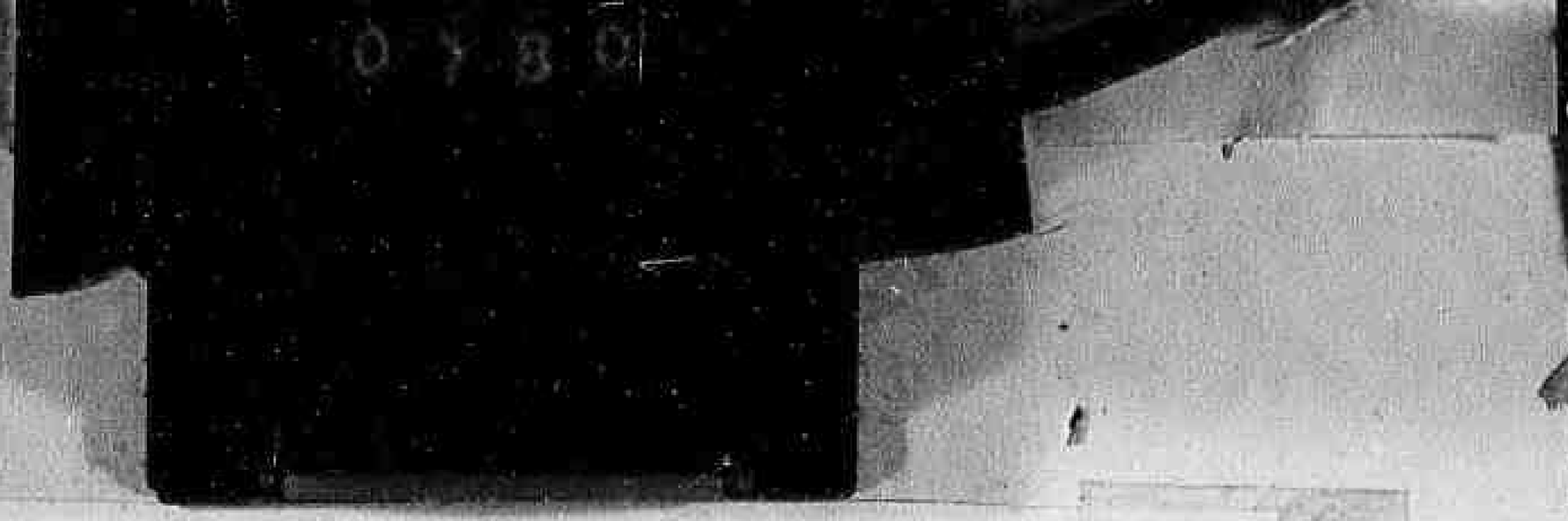
Coastal shipping. The release of schooners for coastal traffic would increase the supply of Sardinian coal and the marketing of regional surpluses in deficit areas.

Fishing craft. Increased supplies of fish are dependent upon the release of fishing vessels by the Naval authorities.

Shipbuilding. The release of a limited amount of shipbuilding and ship-repairing facilities for civilian purposes is of the utmost importance.

Road transport. Road transport facilities are a serious limiting factor in the production and distribution of civilian supplies. Allocation of an additional 2,000 trucks for civilian purposes is highly desirable. The success of grain collection and the reduction of the black market depend upon more trucks being available and upon strict control and pooling of road transport.

In general the Committee wish to emphasize once more that the fight against inflation is conditioned at every turn by the low degree of priority given to the rehabilitation of civilian economy and to the supply of consumer goods, both home produced and imported, for civilian consumption. Continuance of the present acute scarcity of civilian goods, with little or no prospect of improvement in the near future, is one of the most dangerous features of the present inflationary situation in Italy.



Steel Mill Open 1944

TORRE ANNUNZIATA, June 1 —The Ilva steel works, largest of the bomb-smashed plants yet to be rehabilitated in liberated Italy, began operation this week when Maj. Gen. Arthur R. Wilson, Commanding General, PBS, pulled a switch setting the rolling mills in operation. The plant will produce 3,000 tons of steel per month for the Allied war machine.

HEADQUARTERS
ALLIED CONTROL COMMISSION
INDUSTRY & COMMERCE SUB-COMMISSION
APO 394

WTM/ml

31 May 1944

Ref: ACC/5111/IC

SUBJECT: Industrial Gases - Employment on Industrial Gases Sub-Committee AFLR of Capt. W.E. Mydans

TO : Director, Industry & Commerce Sub-Commission, HQ ACC

1. On 25 May, Capt. Mydans, the ACC representative on the Industrial Gases Sub-Committee, AFLR (I) B, journeyed to Caserta to a meeting of that committee. All members of the committee save the Chairman, and Acting Secretary had likewise come from Naples and expended much valuable time and transport in the process.

2. Again, as in all prior meetings of this Sub-Committee, allocations of Industrial Gases in east and west Italy were reviewed. From the time that Capt. Mydans first joined this Sub-Committee in December 1943, no new important supplies of gas have become available. Accordingly, the process of gas allocation might best be described as frequent and somewhat futile efforts to cut the same inadequate pie in a manner to please and satisfy all the services having gas needs. During this period, gas requirements of the services have mounted faster than small increases in plant efficiency have improved the production of gas. The Air Forces have introduced enormous demands for high purity oxygen and at the same time have resisted valiantly any attempt to induce them to assist in meeting that demand.

During this period, also, only two concrete proposals have been advanced to augment the supply of oxygen. Both of these were originated by A.C.C. representative.

(a) Montecatini plant at Crotone

(b) IMAD plant, Naples.

Both of these projects for oxygen production present some knotty but by no means insuperable difficulties. No Service

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has been willing to undertake the work to place the two installations in gas production, and to date, both plants are still in the same condition as when they were originally advanced as potential sources of oxygen.

3. The rehabilitation of Italian industrial plant, first for essential war needs and then for essential civilian needs, presents huge new requirements for oxygen and acetylene. Further, recent interest in the possibilities of steel scrap export expressed by AFHQ, G-5 adds mightily to those gas requirements. Accordingly, Capt. Mydans asked the Industrial Gases Sub-Committee what allocation of industrial gases was envisaged for HQ ACC. In answer, it was made quite clear that the needs of HQ ACC were not deemed military and, in view of the continuing oxygen and acetylene shortage, no gas allocation to HQ ACC could be considered Moreover, if HQ ACC needs oxygen and acetylene with which to further its plans for industrial rehabilitation, it is the problem and responsibility of HQ ACC to develop its own sources of gas production.

4. The Industrial Gases Sub-Committee agreed that they had no interest in the gas experts Hon. P. Brunel, Hon. P. Jaquet, and others that ACC has sought to bing to Naples from North Africa - this, in spite of the oft repeated contention by various of the Services that they could not develop oxygen production at either Crotone or DUAD as proposed by ACC because they lacked technically competent personnel.

5. In view of the now changing military situation in Italy, HQ ACC was asked to undertake duties for the Sub-Committee:

(a) Prepare a survey of industrial gas plants in the NOEF area.

(b) Lay plans by which ACC will take over gas plants in Southern Italy as the armies move forward. An anomalous situation is here represented by which HQ ACC with non-existent personnel for the task is asked to contemplate assuming responsibility for the operation of gas plants, the entire output of which will go to the Services. No gas from these sources will be available to HQ ACC with which to further its essential industrial rehabilitation program.

6. Recommendations:

(a) In view of the fact that the Industrial Gases Sub-Committee is now chiefly concerned with "pie cutting" in which no portion of the pie may be allocated to ACC it is suggested that Capt. Mydans be withdrawn from membership on that committee, so that his time may be more efficiently employed elsewhere.

(b) In view of the obviously large and urgent requirements of oxygen and acetylene for any program of industrial rehabilitation, it is recommended that HQ ACC lay plans and undertake to develop sources of these gases to be wholly under the control of HQ ACC who will allocate as is deemed proper. Capt. Mydans is already investigating such possibilities. Increased personnel will be necessary in this connection. Requisitions for considerable materials will have to be lodged to implement this proposal.

(c) In line with recommendation (b) Industry and Commerce Sub-Commission, HQ ACC, should seek to add to its staff without delay Mon. Paul Jagnet of Air Liquide - this on a permenant basis. This gentleman is a French National, a highly trained technical expert, and provision should be made to guarantee him an adequate salary. The maximum price set for Italian employees should not be applied to this proposed Allied employee who will be released by his Company in a patriotic desire to assist.

HEADQUARTERS
ALLIED CONTROL COMMISSION
INDUSTRY & COMMERCE SUB-COMMISSION
APO 394

WPE/jfl

SUBJECT: Rehabilitation of Industry and Availability of Consumer Goods

25 May 1944

TO : Anti-Inflation Sub-Committee

1. The policy of the I. & C. Sub-Commission on the rehabilitation of industry has been based on the following directives:-

"No industrial rehabilitation will be undertaken in liberated Italy which is not

A) Absolutely essential to military needs whilst the war is going on, and

B) Essential to the minimum civilian needs of individual territories" (Letter AFHQ MGS 17 Feb. 44).

2. Advice has also been received from HQ AAI (Adm. Ech.) CMF File ACC/5063/IC dated March 20 that AFHQ feels that it should retain unto itself the decision as to what factories or users should have coal. It is also the desire of HQ AAI that all requests for opening factories which require the importation of coal or other critical items or the use of sea transportation should be presented as a staff study. This study should show the amount of the commodity to be produced, to what extent this commodity is essential for the Military or civil life of the country, all items to be imported or transported both to commence production and to sustain it and the source of such items. As rail transportation is in short supply the movements of items from one part of Italy to another will directly affect the ability of the Military Forces to support themselves.

3. As the demands on shipping are insufficient to meet all the calls made upon it, all demands from any source whatsoever must be reviewed by the Authority responsible for the support of the Military Forces. Careful consideration must be given to each proposal to determine how essential it is to the Military efforts, whether it would not be preferable to import finished products and whether the source of supply can afford to ship either the basic materials or finished products in view of known short supplies.

These have been the limiting factors in determining the policy of rehabilitation of industry in relation to the availability of goods for civilian needs and no doubt the scarcity of these has its effects on the inflation problem.

4. Similar directives to those mentioned in par. 1 were imparted to this sub-commission by the then CCAO in October 1943 and consequently, although surveys were carried out on heavy industries, see "Interim Report on Heavy Industries in Liberated Italy," particular study was given to essential civilian needs.

W. P. Evans

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1 Incl. - Anti-Inflation Report dated 24 May 1944.

W. P. EVANS
Colonel - Director
Industry & Commerce Sub-Commission

HEADQUARTERS
ALLIED CONTROL COMMISSION
APO 394

INDUSTRY & COMMERCE SUB-COMMISSION'S PROPOSED CONTRIBUTION TO ANTI-INFLATION MEASURES

As a result of discussions on the development of inflation in Liberated Italy it is agreed that the production of food, clothing and other consumer goods be encouraged by the utmost possible. Industry & Commerce Sub-Commission has been engaged since October last in detailed studies of Italian industries and has formulated recommendations and submitted reactivation programs on the following industries deemed essential and of utmost urgency. The development of these industries it is considered will contribute towards the minimising of inflation:

1. Fertiliser Production. A detailed study, occupying some months and much effort has been made into the possibility of producing Fertilisers. For lack of electric power the program of production of nitrogenous fertilisers has been much impeded, and though the situation is being once more reviewed, no great hopes are entertained of immediate large scale manufacture. In the case of Superphosphate Fertilisar considerable progress has been made. With the cooperation of Montecatini Engineers, eight plants are now in a position to produce immediately on arrival of Phosphate Rock.

The necessary Phosphate Rock is due shortly to arrive. Sulphuric Acid is essential for the production of Superphosphate. In view of the difficulty of supply of pyrites (normal basic raw material for Sulphuric Acid) which need to be imported from Spain, amendments to plants have been made to enable sulphur of domestic production to be utilised instead. As a result of these efforts

a) Numerous workpeople will be employed in the manufacture, packing and transportation of fertilisers

b) Considerable crop increases (with reduction in the cost of living) will be achieved.

c) Shipping space for the importation of foodstuffs will be spared and made available for munitions

d) Sulphuric Acid in excess of requirements for fertiliser manufacture will be produced and will be utilised for restarting other industries where it is essential. All needs for Army battery acid have also been covered.

Packing for superphosphate. This is a critical point: 3 or 4 ply paper sacks are utilised - and as indicated later, in the report on Paper production, these cannot be produced in Italy. Requisitions have been lodged on 17 February 1944 for these, but so far no information is to hand as to probable date of arrival. These sacks are essential - fertiliser cannot be transported unpacked.

Recommendation. Paper sack supply should be urged by all possible means.

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Copy of Industry & Commerce Sub-Commission's Report on Fertiliser Production is attached.

2. Cement Production. A survey of cement production possibilities in Liberated Italy was commenced in November 1943 and completed January 1944. As a result capacity for all military requirements for the repair of bridges, road maintenance, etc., was found. An excess production, of a volume dependent on any increased military needs, exists for civilian requirements. Six plants are now producing and two others have since been recommended for reactivation.

As soon as production exceeds military needs

a) Further workpeople will be employed in cement production and distribution

b) Many people will be employed in

1. Reconstruction of factories essential for manufacture of essential civilian supply.

2. Repair of public utility plants and roads

3. Repair and rebuilding of civilian homes thus increasing accommodation and reducing rents.

Packing for Cement. This is a critical point: 3 or 4 ply paper sacks which cannot be produced in Liberated Italy are required. Cement cannot be handled unpacked. These sacks were requisitioned on 17 February 1944 up to a total (including Fertilisers) of 4,368,000 but so far no news of dates of arrival has been received. The plants are at present utilising sacks provided by the military who absorb the whole output.

Recommendation. Any steps which can be taken to urge paper sack supplies should be initiated. Copy of Industry & Commerce Sub-Commission's 'Report on Cement Production in Liberated Italy' is attached.

3. Tobacco and Cigarette Manufacture. A great part of the Italian national revenue is obtained from the tax on cigarettes, cigars and tobacco. Production at the Regia Manifatture Tabacchi at Bari and Lecce fell considerably, due in some part to difficulty in transporting Tobacco, but principally to the non-arrival of cigarette paper ordered from U.S. The first delivery of this paper was due in January 1944, but despite every effort to urge it forward by means of numerous cables and letters the paper did not arrive until April. The resultant increased manufacture of cigarettes will

a) Increase national tax revenue

b) Employ more hands

c) Increase tobacco by-products

1. Nicotine Sulphate

2. Extract of Nicotine

used as Insecticides, thus uncreasing food production.

Recommendation. Assurance should be sought of continuing supply of Cigarette paper which cannot be produced in liberated Italy.

4. Light Engineering. This branch includes the production of Wire and Wire products (wire nails and screws). Extensive surveys of production capacity have been made by Industry & Commerce Sub-Commission. Two wire and nail manufacturing plants are now free for civilian supply - all military requirements being covered.

Recommendation. Prices for these free products should be stabilised at a reasonable level. They are essential for any civilian repair and rebuilding program.

5. Heavy Industry. A most comprehensive survey has been made of this Industry. Some years before the war the Fascist regime had turned the whole of the Engineering plants of Meridional Italy over to production of weapons of war, munitions, and auxiliary materials. Therefore to restore these plants to their 1939 activities is not desirable.

Recommendations. Heavy industry presents a major problem which will need study by experts. Meantime many of the plants have been dismantled by the Allied military, and machines dispersed and put to work elsewhere. These plants should be reconstituted on a basis allowing them to work primarily for military needs, and then for civilian purposes. To a great extent production to both ends could run concurrently and for instance, materials for railroad reconstruction, bridge building, reinforced concrete construction could be made, as well as tinplate and blackplate for food - canning. Copy of Industry & Commerce Sub-Commission's 'Report on Heavy Industries in Liberated Italy' is attached. It is suggested that a Coordinating Committee be formed to rationalise the present situation. At present capacity is wasted, production of identical, or similar, articles going on in a number of plants when it could be concentrated in a smaller number, with a saving of critical electric power and long flame coal. Increased employment in heavy industry would

a) Improve railway transportation by repair of rolling stock

b) Provide building and engineering materials

c) Enable repair of heavy machine tools to be undertaken

6. Paper Production. Possibilities of Paper manufacture have been a major preoccupation with Industry & Commerce Sub-Commission. Raw materials (Wood Pulp and Cellulose) for the production of high class paper do not exist in Liberated Italy and must be imported. Common packing paper from a basis of domestic Esparto could be produced, were it not that the only considerable plant - which could, given raw materials and much electric power, take care of requirements of all classes of paper - has been severely damaged. Even when repaired this plant will require large amounts of electric energy, which are likely to be denied. The importation of wood pulp is not considered practicable, as it would occupy as much shipping space as paper.

Recommendation. Further careful study of present capacity proceeds and efforts are being made to ensure that plants likely in the immediate future to fall into Allied hands be not disturbed and that their stocks of raw materials remain undisturbed.

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Meanwhile steps should be taken to ascertain from Italian Government sources the minimum essential import requirements of paper

a) To keep writing paper in the market

b) To allow some publishing to continue

Newsprint is imported and must continue so to be.

7. Olive Oil Refining. The production of olive oil is an absolute essential, and Industry & Commerce Sub-Commission has therefore made surveys and recommendations for the restarting of pressing and refining plants. Caustic Soda imported on Industry and Commerce requisition has been placed at the disposal of Food Sub-Commission for this purpose. Supplies of caustic soda for future use in the Olive Oil industry are not at present in sight. Industry & Commerce Sub-Commission has therefore lodged a requisition for Caustic Soda as indicated in 8) below to cover, inter alia, the needs of the Olive Oil refing plants. Further, effort has been expended to get a plant running to manufacture carbon bisulphide, an essential material in extracting industrial quality Olive Oil. This plant should begin production shortly.

Recommendation. Every effort should be made to keep olive oil refining at its highest possible level, in order to put the products of the industry on the market at the cheapest possible prices. These products are

a) Edible olive oil - a prime necessity for feeding the population

b) Manufacturing oil (Sulphur oil of two qualities, i.e. low acidity oil which is edible after refining and whose by-products are raw material for soap, and high acidity oil, a direct raw material for soap.

c) Sansa esausta (exhausted husks) a fuel in great demand in industry.

Therefore pressure to obtain implementation of caustic soda requisitions is recommended. Much employment depends on plentiful olive oil.

8. Soap Production. The question of the provision from domestic resources of a sufficient supply of soap to maintain civilian decency and to combat typhus has occupied the attention of Industry & Commerce Sub-Commission for some months. A large number of Soap Manufacturing Plants have been surveyed and much material sifted. As a result a coordinated plan for the manufacture of the necessary quantity of 4500 tons monthly of a good quality yellow soap has been completed.

Recommendations. The reactivation of the Soap Industry will

a) absorb the residues from olive oil refining

b) produce soap at a reasonable figure and in quantity sufficient for essential civilian needs. (N.B. At present 'black market' prices for soap are astronomical).

c) Employ many hands in soap making.

Therefore it is recommended that every effort be made to cause early implementation of requisition for 1500 tons monthly Caustic Soda lodged 22 May 1944. The 600 tons of this material required for soap making will spare the import of 4500 tons Soap per month. The remainder of the caustic soda will be applied as indicated in 7) above, and to general industrial requirements.

9. Electric Power. It must be borne in mind in considering any reactivating program, that industries in Meridional Italy (as well as in the North) depend practically exclusively on Hydro-electric power supply at a reasonable figure. This power is generated at SILA in Calabria where more than sufficient energy is produced to carry the industrial load of Naples and district. It is however impossible to transport the whole of this power over the presently existing power lines at 150 Kv. Until the Montecatini plant at Crotone and the Pertusola Zinc plant are reactivated, the excess production therefore of more than 1,000,000 Kw. per day is at present going to waste, whilst the power lines to Naples are taxed to capacity. Power is now critically short in Naples and district and therefore a careful study of the electricity situation is essential before any ambitious industrial program be embarked upon. See Central Electric Board, Colonel Growdon -

10. Coal. Tremendous quantities of long-flame coal will be needed for any comprehensive resurrection of industry in Meridional Italy. Heavy industry must revolve around the Ilva Steel plant at Bagnoli, the largest steel works in the whole of Italy and one of the most important in Europe. This plant, now a mass of ruins, will require much importation of raw materials to rehabilitate and a time lag of years before production, even on a much reduced scale, can be contemplated. Coal is vital and it is recommended that urgent steps be taken to establish its availability.

11. CLOTHING.

A. General.

(1) Bulk requisitions for clothing and footwear, based upon figures of essential requirements as embodied in a study prepared by NAEB were submitted by this HQ under date 10 Mar. 44. Although these figures purported to represent minimum civilian requirements, they were reduced, in screening, by this HQ by approximately one half.

(2) Subsequently a mission from the Combined Supply Group visited the theater and formed the conclusion, with which this HQ did not agree, that local availability was such as to render the importation of cloth or clothing unnecessary, and of shoes limited, if at all.

(3) However, in view of the recommendations of the C.S.G., this HQ modified its proposals by substituting a considerable proportion of semi-manufactures, e.g. piece goods, for ready-made clothing, and by eliminating certain articles altogether. A comparative table of original and proposed revised requisitions is attached hereto as an appendix.

B. Indigenous availability.

(1) Clothing.

(a) A certain amount of clothing is on sale in the shops in towns, particularly Naples, at excessive prices, which puts it out of the range of any purchaser except speculators and black market operators.

(b) As a temporary expedient to meet the essential needs of heavy workers and particularly those employed by or under the control of the Allied Forces, arrangements have been made by rehabilitation of factories and requisitions of materials to repair and dye unserviceable army uniforms for issue to civilians on payment at approximately cost. At present the facilities so organized are:-

(i) Mainland. 5000 plus dyed uniforms per month (ex Cotoniere Meridionali) now in north and expected to produce in quantities for issue by mid-June. An attempt to extend this output came into conflict with the requirements of the military authorities, who could not derequisition the premises. However this HQ rehabilitated another small dyeworks, who are now carrying out trials, and it is hoped, subject to the arrival of dyes, to reach a production of at least 10/12000 uniforms per month.

(ii) Sicily. Similar arrangements have been made in Sicily for a similar production. Here however a commencement cannot be made until the arrival of uniforms, needles and thread, and dyes. All these have been requisitioned, and it is hoped that shipments will be received in order to start production by end July.

(iii) Sardinia. Investigations are being made for the same scheme to be put into operation in Sardinia. Here however the project has not yet passed the trial stage. An early report is expected.

It should be appreciated however that this is only a temporary expedient, producing at best 100/150,000 uniforms by the end of the year.

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(2) Textiles.

(a) Woollen. Bulk manufacture of woollen fabrics is non-existent in liberated Italy. There are afew centres where there is a small production on industrial lines e.g. Macomer in Sardinia (for which requisitions for 6 months have been made), Lagonegro and elsewhere, but the number of power operated looms is inconsiderable, probably under 20,000 yds. per month.

In addition there is a widespread output of fabrics from hand looms and hand knitting, for which no figures are available. It is considered however that the contribution to the general economy made thereby is not substantial, these products being chiefly for the families and neighbors of the producers, as in normal times the bulk of the wool produced in liberated Italy was exported to the industrial centers of the North for processing.

(b) Cotton.

(i) There is one cotton cloth producing unit of some size in Southern Italy - the Man. Cotoniere Meridionali. Of the six factories of this group, three have been damaged to such an extent as to render reactivation a long term policy. However the remaining three form a balanced unit with a maximum production of 25/30,000,000 yds. of fabric per annum. Every assistance is being given by this HQ to enable this production to be reached, and a detailed study is in course of preparation with a view to imports of raw materials and other commodities being made so that the maximum potential is reached. Meantime locally grown cotton, especially from Sicily, will enable the present rate of production 8/10,000,000 m. per annum to be raised to near the maximum for a period of about 3 months, when work will cease in default of importations of American or Egyptian cotton. Pending the completion of the study and filing of appropriate requisitions, an interim demand for 150 tons of raw cotton has been approved.

(ii) Stocks on hand with this firm total upwards of 8,000,000 meters, and despite withdrawals made by the Allied Forces for military purposes, this is being maintained and even increased by present production.

(iii) Not all of this material is however essentially suitable for clothing, but it is being surveyed with a view to suitable adaptation, e.g. sheeting for shirts, camouflage cloth for overalls, and a provisional rationing scheme is being considered in conjunction with the Italian Govt. to get this material (which has been temporarily frozen) into the hands of the public.

(c) Other availability. Two shipments of printed cottons, and similar cloths, have been received from U.S., one at Naples and one in Sicily. These total approximately 250,000 meters each, and they have been frozen until they can be brought within the ambit of the rationing scheme.

C. Summary of Textile situation.

(1) Immediately availabel:-

Cotton: 8,000,000 meters at M.C.M.
" 500,000 " imported.
Woollen: Indefinite but inconsiderable quantity.

(2) Prodjction to end of 1944 (dependent on imports):-

Cotton manufactures - 12/15,000,000 meters.
Woollen " - 120/150,000 meters plus 'home' production.

(3) Converted into yardage the revised essen ial immediate minimum civilian requirements are:-

Cotton fabrics - 45,000,000 meters } approximate
Woollen type " - 17,500,000 " } only

Leaving a deficit of Cotton fabrics - 30/33,000,000 meters
Wollen " - 17,000,000 meters
allowing for cloth production and dyed uniforms.

Note 1. Hosiery fabrics e.g. underwear, socks, are not included.
" 2. The revised requirements amount per capita for liberated Italy only to:-

Cotton Fabrics - 3 yards } per
Woollen " - 1 " } head

" 3. Considerable quantities of findings - e.g. needles thread buttons will also be required and have been demanded.

D. Recommendations on Clothing & Textiles.

(1) That in view of the inadequacy of local production facilities, even with the importation of raw materials, and in view of the inevitable time lag before raw materials can be converted into semi-manufactured goods and the latter into the finished garment, urgent consideration shall be given to the filling of the requisitions submitted under date 18 Mar. 44.

(2) That importations against these requisitions shall be substantial and at least equivalent to the figures given under 'Ready-Made-Proposed new Requisition in attached Appendix.

(3) That in order to avoid such goods finding their way by resale at enhanced prices into the black market, such goods should be shipped and distributed within the shortest possible limits of time, in order to saturate the market and to discourage speculators.

(4) That the requirements of M.C.M. when screened and presented, shall be met, so that this unit can make its full contribution to the economic position.

(5) That all demands shall be treated as urgent so that their effect will be felt before increasing deficiencies raise still higher existing uneconomic prices.

12. FOOTWEAR.

A. Situation.

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(1) The lack of satisfactory footwear is even more critical than that of clothing. Shoes are fundamentally more essential particularly for heavy work than clothing, which can be more easily improvised or repaired and does not wear out as quickly.

(2) On the invasion of Italy the leather producing industry immediately considered that all laws regulating the control and distribution of hides, leather were automatically revoked, and all the production of hides went into the black market instead of the Consorzii. Contributing factors to the chaotic conditions were the large requisitions made by the Germans during their occupation, the fact that considerable quantities of hides are normally imported from No. Italy into Campania where there is a large tanning industry, and the clandestine slaughter of cattle, which latter has reduced the 'stock' position to a state at which prohibition of slaughtering, except under license, must be prohibited. Close control is virtually impossible owing to the widespread dispersion of production; every farmer is a potential hide producer, and the situation was further complicated by the entry, attracted by the high prices, of 'bootleg' tanners into the market.

(3) Early in 1944 ACC started to take measures first to relieve and then to control the situation. Leather of all kinds suitable for footwear or useful to the war effort was placedunder control; maximum prices were fixed for such leather, raw hides frozen by Royal Decree in the Consorzii were released under control, a special Commissioner for hides for Naples (the chief center) was appointed, and discussions were entered into with the Italian Govt. with a view to general regulations being issued to cover the whole of liberated Italy. Requisitions were also submitted (see below). Difficulties were encountered - the change of Ministry caused delay and Sicily has adopted an independent attitude.

(4) Eventually HQ ACC with the assistance of the Special Commissioner for hides draw up a draft of proposed legislation and it is proposed to urge this upon the Italian Govt., in default of counter proposals of their own, as it is essential that such legislation shall be comprehensive of all liberated Italy in scope and simultaneous in application.

(5) As a temporary expedient, to meet at least in part the urgent demands made by Allied Forces and other sub-commissions for employees of or under the control of the occupying forces, this HQ established a repair factory for the conversion of discarded Army boots into a condition fit for issue to the certain categories of civilians. 3000 pairs per week are now being turned out and it is hoped to increase this. Supply of leather is however the controlling factor. At best however this expedient can only touch the fringe of the problem and can only meet the most immediate and urgent needs.

B. Availability.

(1) It has been estimated that immediate requirements of heavy workers shoes, a class to which this HQ attaches the highest priority amount to 1,000,000 pairs. This figure, by screening and taking into account local improvisations and repairs, can it is considered be reduced to 700,000 a figure which is strengthened as an essential minimum by the fact that there had been no production of heavy shoes or boots for civilians for some years before the occupation, all availability going to the Italian Army.

(2) Leather is at present in production from hides released from the Consorzii sufficient to make approximately 130,000 pairs, with a monthly accretion of 50,000 pairs until such time as prohibition or slaughtering is imposed, when the production will decline still further.

(3) This HQ expects to produce 70/100,000 pairs of repaired Army boots by the end of the year, but it should be understood that the leather required for this purpose will operate substantially to reduce the availability in par. 2 above.

(4) Therefore taking 2 and 3 above together the maximum indigenous production is estimated at 200,000 pairs, leaving a balance, when deducted from 700,000 in par. 1 above of 500,000 pairs.

(5) This latter figure has been notified to AFHQ MGS as immediate essential requirements of heavy workers shoes required to be imported.

(6) To make 500,000 pairs of this class of shoe will take 600 tons of leather or approx. 375 tons of heavy dry raw hides.

(7) Manufacturing capacity amounts to 100,000 pairs per month, without taking account of artisan workers whom it would be impossible to control in the manufacture of standard footwear, which it is proposed to make.

(8) Requisitions submitted by this HQ under date Mar. 18 were for:-

1,629,000 (boys'& girls')
1,629,000 (men's)
2,857,000 (women's)

being half NAEB's estimate of essential minimum requirement. In deference to the views expressed by the Combined Supply Group women's shoes were deleted, and it was proposed to manufacture these locally from cork, wood, fabric and light hides.

(9) Tanning material (extract of chestnut) is produced locally in adequate quantities. Production has been largely frozen by ACC and it is understood that it has been blocked by the Italian Ministry of War.

C. Summary. Immediate requirements of heavy shoes 700,000.
ACC repair production to end of year 70,000
Local availability 130,000
Net requirements 500,000

D. Recommendations.

(1) That as the needs of high priorities of workers, e.g. employees of Allied Forces, Railway Workers, Civil Police, Agricultural workers are critical if essential services are to be maintained and harvests are to be amassed 500,000 pairs of heavy shoes be imported as soon as possible.

(2) That to discourage speculators the requisitions submitted under date Mar. 18 as revised by the deletion of women's shoes (less 500,000 shoes referred to in D(1) above) be imported and distributed within early and narrow limits of time.

(3) That failing (1) above either 600 tons of suitable leather, or 375 tons of dry hides be imported. In view of the length of time taken by the tanning and manufacturing process, and as the need is urgent, preference is given to recommendation (1).

Conclusion on the Clothing and Footwear Situation.

Having regard to the considerations set out above, and in view of the fact that without adequate wearing apparel other and vitally essential services and functions will inevitably be diminished, and to counter inflationary tendencies by increasing supply, it is generally recommended that the requisitions proposed as a result of the Combined Supply Group's observations be implemented in full with the least possible delay, and within a strictly limited period of time. (Column headed "Proposed New Requisition" in Appendix A to ACC/5146/IC attached hereto, copy of which was also handed to Combined Supply Group when at this HQ).

W. D. Thomas Col
S. & T. Sub-comm.

1 Incl. - Appendix A

WJM/EERK/rj/fjl

24 May 1944

APPENDIX "A"
TO
ACC/5157/IC dated 24 May 1944

COMPARATIVE TABLE OF REQUISITIONS

Item	Requisition dated 18 March 1944	Proposed New Requisition	
	Totals	Ready made	Cloth in piece
Blouses (girls & women)	4,897,000	1,000,000	6,000,000 yds.
Brassieres	1,285,000	-	-
Buttons plastic	526,500 gross	Considerable increase	-
Dresses (girls & women	4,897,000	1,000,000	14,000,000 yds.
Flannel Infants	326,800 yds.	-	326,800 yds.
Needles	7,612,000	Considerable increase	-
Pins	9,260,000 pkts.	"	-
Pins (Safety)	108,900 doz.	Some increase	-
Shirts (boys & men)	6,484,000	1,950,000	11,350,000 yds.
Shoes (boys & girls)	1,629,000 prs.	1,629,000	-
Shoes (men)	1,629,000 prs.	1,629,000	-
Shoes (women)	2,857,000 prs.	-	-
Shoes Repair Soles	4,502,000 prs.	4,502,000 prs	Delete any for
Shoes Repair Heels	4,502,000 prs.	4,502,000 "	women shoes
Shoe laces	4,502,000 prs.	4,502,000 "	"
Short trousers	1,088,000 prs.	544,000 "	544,000 yds.
Skirts (girls & women)	4,897,000	1,000,000	3,000,000 yds.
Socks (men & women)	11,432,000 prs.	11,432,000 "	-
Sweaters (all types)	6,878,800	3,500,000	1,750,000 lbs.
Thread (for boots)	34,160 lbs.	34,160 lbs	-
Thread (Mending)	273,500 lbs.	Considerable	

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Shirts (boys & men)	6,484,000	1,950,000	11,350,000 yds.
Shoes (boys & girls)	1,629,000 prs.	1,629,000	-
Shoes (men)	1,629,000 prs.	1,629,000	-
Shoes (women)	2,857,000 prs.	-	-
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Sweaters (all types)	6,878,800	3,500,000	1,750,000 lbs.
Thread (for boots)	34,160 lbs.	34,160 lbs	-
Thread (Mending)	273,500 lbs.	Considerable increase	-
Two-Piece Suits	1,098,300	550,000	1,925,000 yds.
Two-Piece Overalls	1,078,400	1,078,400	-
Undershirts (Male & Female)	11,966,000	11,966,000	-
Underdrawers (Male)	4,354,000	4,354,000	-
Underdrawers (Female)	7,612,000	3,806,000	2,000,000 yds.
Union Suits (Children)	1,740,500	870,000	-
Union Suits (boys)	2,132,000	1,066,000	-
Waterproofs(male & female)	452,500	-	-
Workdresses	343,800	-	1,200,000

SUMMARY:

(i)	Garments reduced by :	28,300,400
(ii)	Cloth required in lieu:	39,475,000 yds.
(iii)	Knitting Wool :	1,750,000 lbs.

NOTE: (ii) & (iii) subject to rechecking.

PROGRAM OF SOAP PRODUCTION FOR THE REQUIREMENTS OF LIBERATED ITALY

SOAP PRODUCTION
FOR THE REQUIREMENTS OF LIBERATED ITALY

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Industry & Commerce Sub-Commission
ALLIED CONTROL COMMISSION

PROGRAM OF SOAP PRODUCTION FOR THE REQUIREMENTS OF LIBERATED ITALY

= Submitted by: Dr. R.S. Opatowski =

- Industry & Commerce Sub-Commission - HQ ACC -

(Condensed from a detailed report submitted 2 May 1944)

Ref. ACC/5112/IC

INTRODUCTION

The present report was compiled along the following lines:

a) for sanitary reasons it is essential that the population, with which the Allied Forces are in continuous contact have sufficient soap for maintaining cleanliness in order to avoid skin and epidemic disease. This is indicated by memoranda of various HQ (ACC/5112/IC). It is also in the Allied interest to satisfy the essential needs of liberated Italy as soon as possible.

b) initially it will be necessary to import caustic soda - a raw material needed for soap manufacturing - but efforts should be made to minimize import by developing a program of local production.

I) SOAP REQUIREMENTS OF LIBERATED ITALY

On basis of figures in hand, the number of the civilian population included refugees in the liberated area, rounded, is:

15,000,000

distributed on the islands and on the mainland, rounded, as follows:

Sicily	--	4,000,000
Sardinia	--	1,000,000
Mainland	--	10,000,000

On the basis of data of the "CIVIL AFFAIRS GUIDE ON THE ITALIAN CHEMICAL INDUSTRY" the prewar consumption rate of soap in Italy was calculated as

400 grs. per capita per month.

b) initially it will be necessary to import caustic soda - a raw material needed for soap manufacturing - but efforts should be made to minimize import by developing a program of local production.

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400 grs. per capita per month.

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In view of actual war conditions it is suggested that

300 grs. per capita per month

be taken as a basis for present Italian soap-requirement. This amount is estimated as the minimum consumption rate in order to prevent spreading epidemic disease. This is equivalent to 3 cakes of soap per capita per month and includes soap for laundry as well as for personal use.
The total soap requirement for the entire population in liberated Italy is:

300 grs/capita x 15.000.000 (population) =

= 45.000 qls. per month 4,500 Tons

The requirements of the islands and of the mainland are subdivided as follows:

Region I - Sicily - (4.000.000 inhabitants) - 12.000 qls. per month

Region VI- Sardinia-(1,000.000 ") - 3.000 " " "

Region II)
Region III)
Region V) Mainland - (10.000.000 inhabitants) - 30.000 qls. per month
Region VII)

With a view to eliminating unnecessary transportation full account has been taken of the regional distribution of soap plants in the following review.

II) SOAP PRODUCTION PROGRAM IN LIBERATED ITALY

a) Soap was produced in Italy by two methods:

(1) With recovery of glycerine, which is a valuable by-product.

(2) Without recovery of glycerine.

The second method, although not modern and less economical than the first one, is much more used by soap producers in Italy, because of its simpler working technique.

b) In order to simplify production and permit adequate control of the consumption of raw materials and the quality of the product it is considered essential to standardize the soap types. Further it is considered better to operate the smallest possible number of plants, of the greatest unit - capacity and possessing the most modern installations. In general it is planned to reestablish plants capable of producing 1000 qls. per month each or more. However, in some cases, because of particular transport or other local conditions, the reactivation of some smaller plants may be considered.

REGION I - Sicily

Population -- 4.000.000

Soap requirements -- 12.000 qls. per month

On the basis of figures submitted by Region I ACC-HQ, there are in Sicily 11 plants with a production of 1000 qls. per month each or more.
The total maximum production-capacity of the above plants is:

16.000 qls. per month.

This capacity can supply more than the estimated soap-requirements for Region I.

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Population -- 4.000.000

Soap requirements -- 12.000 qls. per month

On the basis of figures submitted by Region I ACC-HQ, there are in Sicily 11 plants with a production of 1000 qls. per month each or more.
The total maximum production-capacity of the above plants is:

16.000 qls. per month.

This capacity can supply more than the estimated soap-requirements for Region I.

REGION VI - Sardinia

Population -- 1.000.000

Soap requirements -- 3.000 qls. per month

Figures of production-capacity are not available, and have been requested on 15 Apr44. Considering the availability of transport and the geographical position of the island, the reactivation of plants smaller than 1000 qls. capacity per month will be considered. Further, since the Sicilian production capacity is adequate for both Regions I and VI, it may be desirable to supply Sardinian soap needs from Sicily. (The estimated combined soap requirements of Region I and VI are: 12.000 plus 3.000 = 15.000 qls. per month).

THE MAINLAND

Population -- 10.000.000

Soap requirements -- 30.000 qls. per month

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Bearing in mind the geographical distribution of plants on the Mainland and their production-capacity it is suggested that production be subdivided as follows:

Region II - (East Coast; these plants supply both Region II and Regions V & VII)- - 20.000 qls. per month

Region III - (West Coast) - 10.000 qls. per month

This subdivision may eventually be changed according to the results of visits to the plants it is proposed to reactivate.

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REGION II

On the basis of figures submitted by Region II - ACC-MG and by the "Consiglio Provinciale Economia - Bari" there are in Region II 9 plants with a production-capacity of 1000 qls. or more per month each. These plants are located either on the East Coast or not far from it.
The total maximum production-capacity of the above plants is:

20.150 qls. per month.

This capacity can supply more than the estimated soap requirements for Regions II, V and VII. (The estimated soap requirements in aggregate for these Regions are: 20.000 qls. per month).

REGION III

On the basis of figures submitted by the "Camera di Commercio - Naples" there are in Region III 4 plants with a production-capacity of 1000 qls. or more per month each. These plants are located either on the West Coast or not far from it. The maximum production-capacity of the above plants is:

6.600 qls. per month.

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REGION III

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6.600 qls. per month.

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This capacity can supply 66% - that is two thirds - of the estimated soap requirements of Region III.
(The estimated soap requirements of Region III are: 10.000 qls. per month).

SUMMARY

From the total of about 200 plants existing in liberated Italy 24 only are of an adequate size to be scheduled for reactivation.

The total maximum production-capacity of the 24 scheduled plants is:

Region I	- 16.000	qls. per month
Region II	- 20.150	" " "
Region III	- 6.600	" " "
TOTAL	42.750	qls. per month

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The total soap requirements of the liberated area are (see page 2):

45,000 qls. per month:

Therefore, the total maximum production-capacity of the 24 scheduled plants can supply practically the entire non-military soap requirements of liberated Italy.

III) RECOVERY OF GLYCERINE

As mentioned above the majority of the soap factories in the liberated area operate without recovering glycerine. Large quantities of glycerine are needed to-day in the explosive and pharmaceutical industries and it is in very short world supply. Therefore it is planned to have soap manufacturers adapt their plants and their working methods so that glycerine or concentrated "glycerine lyes" with 80 ÷ 90% of glycerine content will be recovered, wherever economically feasible.

IV) QUALITY OF SOAP

The proposed soap manufacturing program aims to produce a standard soda soap of good quality of definite and simple composition in order to prevent fraud and to enable quality to be easily checked by analysis. It is suggested that only one quality of soda soap - or two as maximum - be authorised. It should be noted that from the hygienic point of view it is not necessary to manufacture soap of a number of qualities.

V) ELECTRIC POWER

Electric power requirement in soap production is small and it is anticipated that no difficulties will arise on this point.

VI) FUEL

"Sansa esausta" (exhausted olive husks) serve as fuel. This is in plentiful supply and no difficulties, other than those of transportation, are envisaged.

VII) CARBON BISULPHIDE

Carbon bisulphide is a solvent used for extracting from the olive husks ("sanse") two qualities of "sulphur oil": low-acidity and high-acidity oil.

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In liberated Italy there exists only one plant which produced carbon bisulphide before the war: the Soc. "L'Insulare" - Catania. Figures of actual production are not available. It is known that some producers have stocks of this solvent.

VIII) OILS

Liberated Italy is an important producer of oil. "Sulphur oil of high acidity" mentioned above is largely used for soap manufacture. No exact data on oil availability are to hand but from reports from producing Regions it would appear that ample supplies will be available. The amassing of oil and its distribution to soap plants will be a matter for regional arrangement under direction from HQ. ACC.

IX) CAUSTIC SODA PROBLEM

The basic problem of soap production in liberated Italy is caustic soda supply and it is considered necessary to make every possible effort to reestablish caustic soda production. In the liberated area there were only two plants for electrolytic caustic soda production. These operated as departments of cellulose manufacturing plants (Pomilio - process): "S.A. Cellulosa - Cloro - Soda" - Naples and

"S.A. Cellulosa" - Foggia.

Both plants are badly damaged by enemy action.
Electric power facilities, are totally destroyed. Industry & Commerce S/C is now engaged in investigating the possibility of partly reactivating the above plants.
In any case for needs in the near future caustic soda must be imported.

Caustic soda requirements

Data on hand from various sources indicate that to produce 100 kg. of soap from 11 to 15 kg. of caustic soda are required.
A basic average figure for caustic soda for the production of 100 kg. of soap can be taken therefore

as 13 kg. , i.e. a ratio of 13 %.

Therefore the total quantity of caustic soda needed for the soap requirements of the entire civilian population of liberated Italy is:

13% of 45.000 qls. per month = 5.850 qls.

or, rounded:

600 M. tons per month.

CONCLUSIONS

a) It must be borne in mind that without an adequate supply of caustic soda it is not possible to organize the manufacture of soap.

b) That to provide for the needs of soap for the entire civilian population of liberated Italy it is necessary to import:

600 M. tons per month of caustic soda

or

4500 M. tons per month of soap.

RECOMMENDATIONS

1) That caustic soda to the extent of 600 M. tons per month be imported as shipping space would be about one tenth of that required for soap and there is plant-capacity and availability of raw materials (other than caustic soda) in liberated Italy for the manufacture of soap. In addition employment would be found for many hands now idle. There is not, so far as can at present be ascertained, any production in liberated Italy of caustic soda. Requisitions should be lodged for caustic soda for 6 months (3600 M. tons), so that in the meantime capacity for its manufac-

600 M. tons per month.

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2) That a program of production of soap for the entire civilian population of liberated Italy be established to the extent of 45.000 qls. per month.

3) That in general only factories capable of producing 1000 qls. per month or more be considered for reactivation, although local conditions and consideration of transportation may allow a certain elasticity in this respect. It would be uneconomic to recommend for reactivation a number of smaller plants in view of the difficulty of control of consumption of raw materials and soap quality.
So far it has been ascertained that of the total of 189 known plants in the liberated area, 24 only, located in Region I, II and III, are of an adequate size to be scheduled for operation. These 24 plants can supply about 94%, that is almost the entire estimated non-military soap requirements.

4) That in order to facilitate and simplify production and control both raw materials and soap, one or at most two types of soap should be produced. This soap should contain about 12 to 13% of caustic soda (corresponding to about 10% Na_2O), about 60% of fatty acid and a maximum water (H_2O) content of 20%. For the remaining about 10% a filling material may be used, i.e.: bentonite. This quality of soap can be utilised for all essential purposes. Detailed discussion on the type of soap to be produced should be initiated with interested parties.

5) That producers set up a standard system of glycerine recovery in their plants. Concentrated "glycerine lyes" at 80 - 90% glycerine content could be recovered and shipped to U.S.A. or U.K. for refining and use.
In this case the managements of the scheduled factories should be given the opportunity to study and to copy the methods already in use in other plants. If there be any lack of cooperation by the managements in this respect, ACC should requisition the factories. The recovery of glycerine must be imposed as a duty, but the means by which this is done may be elastic in its working because the time limits for setting up of a glycerine recovery department cannot be strictly fixed especially under to-day's conditions.

6) That the duty of supervising the orderly fulfilling of the program of soap manufacture and recovery of glycerine should be that of the ACC Regional Supply Officer. ACC Headquarters should give guidance and should instruct Regional Supply Officers on the control of quantity and quality of soap to be produced. Close control of the producers must be considered as a factor of main importance.

7) That a control by analysis of soap produced should be instituted under the supervision of ACC. Soap manufacturers should be informed that their product would be under continuous control as regards quality and that severe penalties would follow any adverse deviation from specification. For example fines could be inflicted on owners or managers or their plants requisitioned for the time of Allied occupation without compensation.

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Allied occupation without compensation.

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CEMENT PRODUCTION

IN LIBERATED ITALY

as at JANUARY, 1944

as at JANUARY, 1944.

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Industry & Commerce Sub-commission
Allied Control Commission

CEMENT PRODUCTION IN LIBERATED ITALY

as at January 1944

I. GENERAL — There exist in liberated Italy, excluding Sicily and Sardinia, ~~twelve~~ plants for the manufacture of cement. Of the total, six plants have been taken over for military production, three by the British and three by the American Engineers. Five of these factories are reported to be more or less active, the three on the east coast at a substantial rate of production. Two of the three operated by the PBS Engineers on the west coast are producing whilst under repair, and the remaining American-controlled plant, that at Ariano Irpino, has not yet recommenced activities.

Appendix "A" reviews each plant individually and indicates the problems put forward by the various managements.

Appendix "B" lists the factories and provides statistics of requirements in fuel, electric power and packing materials.

II. FUEL — For the production of cement substantial quantities of coal are required, the ratio of coal consumption to cement production being approximately 1 in 5, variations existing according to the raw materials worked. This consumption is based on hard coal, anthracite of British or German supply. In view of the strenuous efforts made by Italy before the war to become self-sufficient in fuel, it is reasonable to suppose that attempts were made to produce cement by utilization of domestic resources, but that these efforts were unavailing, either for the reason that the larger tonnage required (due to low calorific value of Sardinian coal) was uneconomic, or that the fuel was basically unsuitable.

In connection with this problem, it has been considered useful to have the views of a Committeeof Industrial consultants appointed by the Italian Minister of Industry, Commerce & Labor, and of the Engineers of the plants concerned. The views of the plant managers appear in the review of the factories concerned in Appendix "A".

Information received from the Coal Controller AFHQ Adv. Adm. Echelon, is that Sardinian coal only will be provided, probably Bacu Abis. That produced by the Sulcis mines would be preferred. The physical properties of Bacu Abis coal (lignite picia) vary between the following minimum/maximum figures:

Humidity 3.2/6.1%, Ash 18.4/22.7%. Volatile material 36.8/40.8%. Fixed carbon 35.5/37.1%. Calorific value 5153/5580. Sulphur content about 8%.

Sulcis coal is reported as being considerably superior in calorific value to the Bacu Abis deposits--but exact information is lacking.

variations existing according to the raw materials worked. This consumption is based on hard coal, anthracite of British or German supply. In view of the strenuous efforts made by Italy before the war to become self-sufficient in fuel, it is reasonable to suppose that attempts were made to produce cement by utilization of domestic resources, but that these efforts were unavailing, either for the reason that the larger tonnage required (due to low calorific value of Sardinian coal) was uneconomic, or that the fuel was basically unsuitable.

In connection with this problem, it has been considered useful to have the views of a Committeeof Industrial consultants appointed by the Italian Minister of Industry, Commerce & Labor, and of the Engineers of the plants concerned. The views of the plant managers appear in the review of the factories concerned in Appendix "A".

Information received from the Coal Controller AFHQ Adv. Adm. Echelon, is that Sardinian coal only will be provided, probably Bacu Abis. That produced by the Sulcis mines would be preferred. The physical properties of Bacu Abis coal (lignite picia) vary between the following minimum/maximum figures:

Humidity 3.2/6.1%, Ash 18.4/22.7%. Volatile material 36.8/40.8%. Fixed carbon 35.5/37.1%. Calorific value 5153/5580. Sulphur content about 8%.

Sulcis coal is reported as being considerably superior in calorific value to the Bacu Abis deposits--but exact information is lacking.

As a result of the discussions above-mentioned, it is considered that an attempt should be made to produce cement by the employment 100% of Sardinian coal, even though from the cost of production point of view it may beuneconomic. Should it be found to be absolutely indispensable, 20% of British or American coal should be supplied to assist to maintain furnace heats at the required levels.

The problem of the high volatile matter content of Sardinian coal is one which must be left to the individual works engineer to solve. It is stated that the presence of a high percentage of sulphur in this fuel causes it to fuse on to the furnace-sides, choking draught and reducing heat value; ash disposal is also a difficulty.

III. PACKING MATERIALS

An urgent problem is the provision of containers for cement. On the basis of production realizable in the near future, a monthly supply of 404,000 2 or 3 ply paper sacks, each to contain 50 Kg. is essential--this assuming that total production is bagged; if cement is taken for immediate (i.e. daily) consumption, means may be found to dispatch unpacked.

Paper sacks are non-returnable. In ordinary civilian practice, before paper containers were introduced, jute bags, charge and credited on return, were said to show a wastage of 7% to 8%. Wooden kegs are used for export. The problem of containers is difficult and immediate.

IV. ELECTRIC ENERGY To operate the plants which are already in production or which it is proposed to reactivate almost immediately, 1,325,000 KWH of electric energy are required monthly. The provision of this energy is promised.

V. TRANSPORTATION The question of transportation of finished product is at the moment unsolved. Civilian facilities are extremely restricted, and a bottleneck which may tend to strangle production exists. Raw material transportation offers no insoluble problem.

CONCLUSIONS A cement manufacturing capacity exists in liberated Italy sufficient for present military needs, and with a potential substantial surplus for civilian requirements. These problems await solution:

a) Fuel supply of adequate calorific value. It would appear that experience alone will indicate whether Sardinian supplies will solve the difficulty.

b) Provision of containers. The monthly paper bag consumption would be as follows:

Present 404,000 monthly (includes provision for two plants now practically repaired).

664,000 monthly as from seven months hence (includes plants 8/12 inclusive).

944,000 monthly as from ten months hence.

(Bags of 2 or 3 ply each to contain 50 Kg. and measuring 50 c/m x 100 c/m would be suitable 3 ply bags 65 gm p. sq metre preferred).

c) Transportation for civilian needs. It would seem necessary to deliver civil requirements "ex works".

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W. J. MASKREY
Major RAOC
Industry & Commerce Sub-Commission
A.C.C.

PLANTS AT PRESENT INACTIVE

7. CALCE E CEMENTI DI SEGNI, CASTELLAMMARE — This plant is producing lime only, for P.B.S. Engs. owing to lack of availability of previous source of clinker which was obtained from Colleferro. Modern well equipped plant. Possibilities require investigation.

8. ITALCEMENTI MONOPOLI — Small plant closed for transformation. Has not been in operation for some time. Possesses own quarry.

9. DE GENNARO GIROLAMINI & FIGLI MOLFETTA — Small plant, inactive for some time, undamaged. (See Appendix "B").

10. VINCENZO GALLA & FIGLI MOLFETTA — As 9. This firm is anxious to recommence operations, and the position needs investigation at an early moment.

11. CALABRO-PUGLIESE BARI — As 9.

12. S.A.M.I.C.A. BARI — As 9.

11. CALABRO-PUGLIESE BARI — As 9.

12. S.A.M.I.C.A. BARI — As 9.

APPENDIX "A"

UNDER SUPERVISION OF DDWS., AFHQ ADV.ADM.ECH.

1. CEMENTERIE DEL'IONIO TARANTO

This plant is stated to be working at capacity, considering that it has been damaged. It is on contract to DDWS up to 31.3.44 at the following prices:

1st Quality 3,000 tons @ L 448 per 1,000 Kg.
2nd " 600 " @ L 418 " " "

3,500 3 ply sacks @ 1.55 each.

Production is at 1,200 tons monthly. A stock of sacks imported from N. Africa exists at R.E.S.D. at Cimino: these are for W.D. deliveries only - quantity said to be 203,000. Stock of coal of German origin about 300 tons but plant said to be using now BACU ABIS of which 100 tons received ex ship at Gallipoli. This plant will shortly be taken over by ACC.

2. S A CEMENTERIE MERIDIONALE BARLETTA

Said to be producing 2,000 tons monthly of good quality cement. Situation with regard to stock of sacks at the moment unknown.

3. ITALCEMENTI MODUGNO

UNDER SUPERVISION OF PBS ENGINEERS

Working to capacity - but production in December only 3,000 tons against theoretical 5,000. Sacks have been provided by British R. E.

4. ILVA, BAGNOLI (ING. FERETTI)

This plant badly damaged and at the moment grinding and bagging stock of 1,500 tons and despatching finished cement. This factory previously worked on 20/30% clinker and 80/70% granulated furnace slag. Owing to destruction of part of the plant, production proceeds on 100% slag. Sig. Feretti states that he cannot use 100 Bacu Abis coal but could use 75%--remaining 25% hard imported coal for drying product. Sacks (of poor quality) sufficient for present stocks only.

5. ITALCE- Production here:

received ex ship at Gallipoli. This plant will shortly be taken over by ACC.

2. S A CEMENTERIE MERIDIONALE BARLETTA

Said to be producing 2,000 tons monthly of good quality cement. Situation with regard to stock of sacks at the moment unknown.

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Working to capacity - but production in December only 3,000 tons against theoretical 5,000. Sacks have been provided by British R. E.

4. ILVA, BAGNOLI (ING. FERETTI)

This plant badly damaged and at the moment grinding and bagging stock of 1,500 tons and despatching finished cement. This factory previously worked on 20/30% clinker and 80/70% granulated furnace slag. Owing to destruction of part of the plant, production proceeds on 100% slag. Sig. Ferotti states that he cannot use 100 Bacu Abis coal but could use 75%--remaining 25% hard imported coal for drying product. Sacks (of poor quality) sufficient for present stocks only.

5. ITALCEMENTI. SALERNO (ING. ZANUTTI)

Production here:

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	Portland cement	Porzelanno (Seawater resistant cement)	Lime
coal consumption	28%	24%	8%

Portland cement production 170 tons per day. Coal: has 5/6,000 Qli German in stock. Sig. Zanutti states that if forced he can use 100% Sardinian coal, but that he cannot get the same results as with British or German coal. Suggests 80% Sardinian and 20% British. Own quarry 5 kilometers from plant; raw material by teleferica. Electric power consumption high. Repairs to plant will be completed very shortly. Has 100,000 sacks in stock.

6. CEMENTERIE MERIDIONALE ARIANO IRPINO (ING. COLOMBO)

This plant has been out of action for some time, partly owing to the destruction of the local hydro-electric plant. It is now possible to re-establish electric power supply, but the company is short of funds for the recommencement of activities. An advance of L 2,000,000 is needed monthly for full production. This matter is in the hands of Lt. Col. Lester J. Hensley (A) Region III. Production from stone at own quarry transported to plant by teleferica. Stock of 100,000 paper bags said to be at Rly. Station at Carpinone. Coal consumption 20% of cement produced. Mg. Colombo consents under pressure to endeavour to use 100% Sardinian.

Appendix «B» CEMENT PRODUCTION IN LIBERATED IT

Name and Address of Plant	Condition of Plant G - Good D - Damaged	Estimated Time for Repair months	Production		Coal Requirements +		Electric Energy KWH monthly	Sack Requirements monthly
			Normal monthly	Planned monthly	Sardinian monthly	Imported monthly		
			m. tons	m. tons	m. tons	m. tons		
East Side (under supervision of DDWS Adv Adm Ech AFHQ).								
1 Cementerie dell'Ionio, Taranto (Ing. Longo)	G	—	1500	1200	280	52	200 Kw 75.000	24,000
2 Cementerie Meridionale, Barletta	G	—	5000	2500	590	110	850 Kw 125,000	50,000
3 Italcementi, Modugno	G	—	5000	5000	1060	200	100 Kw 250,000	100,000
West Side (under supervision of PBS Engrs).								
4 Ilva, Bagnoli (Ing. Feretti).	D	1 7	6000	3000 6000	480 960	90 180	400 Kw 150.000 800 Kw 300,000	60,000 120 000
5 Italcementi, Salerno (Ing. Zanutti).	D	1 10	20000 (Inc. Lime)	6000 20000 (inc. Lime)	1240 4050	232 760	900 Kw 600.000 5600 Kw 2,000,000	120 000 400,000
6 Cementerie Meridionale, Ariano Irpino (Ing. Colombo)	G	—	2500	2500	530	100	350 Kw 125,000	50,000
Not under supervision								
7 Calce e cementi di Segni, Castellammare.	G-Has been repaired	—	5000	5000	—	—	—	—
8 Italcementi, Monopoli,	G	—	5000 (Inc. Lime)	5000 (inc Lime)	1170	220	700 Kw 250,000	100,000
9 De Gennaro Girolomini, Molfetta	G	—	1300	1300	320	60	180 kw 65,000	26,000
10 Vincenzo Galla & Figli, Molfetta	G	—	1300	1300	320	60	180 kw 65,000	26,000
11 Soc. Calabro-Pugliese, Bari	G	—	1200	1200	300	56	170 Kw 60,000	24,000
12 S A. M. I C. A., Bari	G	—	1200	1200	300	56	170 Kw 60,000	24,000

+ Coa

Plants 8

N IN LIBERATED ITALY AS AT JANUARY 1944

ents + / ported onthly	Electric Energy KWH monthly	Sack Requirements monthly	Percentage of coal to cement produced +	Raw Material Supply and Means of Transport	Remarks
tons					
52	200 Kw 75,000	24,000	22%	Own quarry at Montegiordano (7 wagons daily supplied by Mob. & Tn Taranto Works sidings-12 trks. capacity).	This works reported using 100% Bacu Abis coal: some complaints on quality.
110	350 Kw 125,000	50,000	22%	Local arrangements by M.T Also from Canosa by rail.	Good plant, producing first class cement.
200	100 Kw 250,000	100,000	20%	From Venusia (Matera) By rail.	As (2).
90	400 Kw 150,000				
180	800 Kw 300,000	60,000 120 000	15%	Uses clinker mixed with furnace slag.	Low coal consumption due to nature of raw material used.
232	900 Kw 600,000	120 000 400,000	10%	Own quarry, by teleferica to plant.	As a proportion of cement produced is of special quality involving 15% coal consumption only, mean consumption is 19%.
760	5600 Kw 2,000,000				
100	350 Kw 125,000	50,000	20%	As (5).	Manager claims cannot produce firstclass cement on 100% Sardinian coal.
—	—	—	—	Clinker from Colleferro (not now available)	Producing Lime only for PBS Engs. Good plant: alternative source of raw material should be studied.
220	700 Kw 250,000	100,000	22%	Own quarry: transport by M. T.	Closed for transformation.
60	180 kw 65,000	26,000	23%		
60	180 Kw 65,000	26,000	23%	Recommended for reactivation.	
56	170 Kw 60,000	24,000	23%	Dalmatia, by sea.	
56	170 Kw 60,000	24,000	23%	As (11)	

+ Coal consumption. It is considered that all plants should operate on 100% Sardinian Coal. If this is the case, the figures for imported coal should be increased by 8:5 and added to Sardinian coal figure. Percentage of coal consumed to cement produced should be increased accordingly.

Plants 8 to 12 inclusive are in occupation of military and have not produced for some years, for lack of facilities to import raw materials, and for other reasons.

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Report
on
Chemical Fertiliser Production
in
Liberated Italy

February 1944

February 1944

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CHEMICAL FERTILIZER PRODUCTION

in liberated Italy, Sicily and Sardinia.

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Preliminary Remarks.

GENERAL The object of this Report is to present as clear a picture as is practicable at the moment of the possibilities of production in liberated territory of fertilizers necessary to maintain domestic food supplies and thus to reduce or avoid imports.

REQUIREMENTS. It is estimated that the annual requirements of nitrogenous and superphosphate fertilisers for regions I, II, III, IV, VI and Apulia are as tables 1, 2 and 3 which follow these remarks. In the case of Sicily and Sardinia no specific requests at this date (early Feb.44) are in the hands of the Agricultural Sub-Commission ACC. and requirements shewn in the tables are based on a careful study of former consumption. Similarly as parts of region IV which comprises Lazio, Abruzzi and Molise, are as yet unliberated, estimates of requirements have necessarily had to be made.

CHARACTERISTICS OF FERTILISERS. Superphosphates is ordinarily used as part of a balanced fertiliser program, and gives best results in conjunction with other chemicals: the increased yield is due to the combination. Land to which superphosphate has been applied for vegetable and legume crops is then planted for grain; the increased yield in vegetables and legumes is of great importance to the local food situation and results in a considerable saving in import tonnage, even bearing in mind the necessity for heavy imports of raw materials for fertiliser manufacture. The amount of shipping space saved can be roughly computed from Table 3.

NITROGENOUS FERTILIZERS. It will be noted from the particulars contained in this report that the capacity for nitrogenous fertilizers which exists, cannot at this time be utilized.

SUPERPHOSPHATES. There is a possibility of production of superphosphates to an extent which is woefully inadequate, and which in any case can only be attained after repairs to certain installations. Importation of substantial quantities of raw materials would be necessary. Sources of supply of these raw materials are North Africa for phosphate rock, Spain (or Tuscany when liberated) for pyrites and Great Britain or the U.S.A. for sodium nitrate or nitric acid.

Abruzzi and Molise, are as yet unliberated, estimates of requirements have necessarily had to be made.

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CONCLUSIONS. Lack of time and of sufficient technical personnel has prevented the thorough investigation of four plants more or less seriously damaged. These plants have been reported by Regional AMG and further information has been obtained from other sources. They undoubtedly have an important production potential, but in compiling this report it has been considered that a sufficiently heavy program of rehabilitation and supply of raw materials has been presented. If the program of rehabilitation recommended in this report finds approval and as time and circumstances allow a survey and review of requirements of these other factories will be made. 169

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TABLE 1.

Minimum annual requirements 1944 in M.T. - Nitrogenous Fertilizers.

Regions.	Ammonium Sulphate.	Calcium Cyanamide.	Ammonium Nitrate.	Calcium Nitrate.	Sodium Nitrate.	
I	15,000	800	2,400	5,000	2,700	
II	8,660,	3,650	200	4,000	365	
III	20,700	880	600	1,700	1,700	
IV	3,800	10,000	2,400	8,300	2,200	
VI	660	770	None.	540	None.	
Syria.	9,000	1,000	600 .	2,530	1,400	
TOTAL...	57,820	17,100	6,200	22,070	8,365	
Total expressed as Ammonium Sulphate -	57,820	17,100	7,130	20,967	7,947	=

TABLE 1.

Requirements 1944 in M.T. - Nitrogenous Fertilizers.

Calcium Cyanamide.	Ammonium Nitrate.	Calcium Nitrate.	Sodium Nitrate.	
800	2,400	5,000	2,700	
3,650	200	4,000	365	
880	600	1,700	1,700	
10,000	2,400	8,300	2,200	
770	None.	540	None.	
1,000	600 .	2,530	1,400	Total
17,100	6,200	22,070	8,365	
17,100	7,130	20,967	7,947	= 110,964

TABLE 2

ESTIMATED MINIMUM ANNUAL SUPER PHOSPHATE REQUIREMENTS 1944 FOR REGIONS I, II, III, IV, VI AND APULIA IN METRIC TONS.

APULIA		AMOUNT IN M.T.
Bari		16,250
Teranto		5,250
Brindisi		7,250
Lecce		10,000
	Total	38,750
REGION I		
Agrigento		30,000
Caltanisetta		18,000
Catania		25,000
Enna		7,000
Messina		2,500
Palermo		20,000
Ragusa		4,000
Siracusa		3,000
Trapani		5,500
	Total Region I	115,000
REGION II		
Matera		12,000
Potenza		5,000
Salerno		14,593
Catenzaro		16,000
Cosenza		4,200
Reggio		3,800
	Total Region II	55,593
REGION III		
Naples		30,233
Benevento		7,032
Avellino		6,991
Foggia		16,250
	Total Region III	60,506
REGION IV		
Aquila		2,000
Campobasso		12,000
Chieto		15,000

REGION II		
Matera		12,000
Potenza		5,000
Salerno		14,593
Catenzaro		16,000
Cosenza		4,200
Reggio		3,800
	Total Region II	55,593
REGION III		
Naples		30,233
Benevento		7,032
Avellino		6,991
Foggia		16,250
	Total Region III	60,506
REGION IV		
Aquila		2,000
Campobasso		12,000
Chiete		15,000
Pescara		6,000
Teramo		14,000
Frosinone		5,500
Littoria		14,500
Rieti		4,000
Roma		11,000
Viterbo		16,000
	Total RegionIV	100,000
REGION VI		
Cagliari		16,000
Nuoro		1.000
Sassari		3,000
	Total Region VI	20,000
Region I		115,000
" II		55,593
" III		60,506
" IV		100,000
" VI		20,000
Apulia		38,750
	GRAND TOTAL	389,849

TABLE 3.

SUPERPHOSPHATE REQUIREMENTS IN 1944 FOR TOTAL CROP AREAS IN SICILY, CALABRIA, LUCANIA, PUGLIE, CAMPANIA, ABRUZZI e MOLISE, LATIUM.

1944 Fertilization Program.

Crops by Priority.	Area Planted 1940 (000 Ha)	Area (000 Ha) For Super-phos. Applic-ation.	Rate per Ha (Qtls)	Super-phosphates required (000 M.T.)	Expected range of increase (000 M.T.)
Legumes (I) followed by grains.	896	507	3	152	152 - 254
Truck crops potatoes & sugar beets	350	285	4	114	285 -1,425
Grain. mostly wheat.	3,529	456	2.5	114	91-182
TOTAL	4,775	1,248		380	

(I) Including Horse Beans, Kidney Beans, Chick Peas, Lentils.

CHEMICAL FERTILIZER PRODUCTION - ITALY.

1. NITROGENOUS FERTILIZERS. These consist of the following:

a. Ammonium Sulphate.
b. Biammonium Phosphate.
c. Sodium Nitrate.
d. Potassium Nitrate.
e. Calcium Nitrate.

The manufacturing situation for these fertilizers is reviewed below.

Produced only at Crotone and Coghinas - Electric power for Crotone appreciably available from the S.I.E.

REVIEW OF PLANTS BY REGIONS.

REGION I Chemical Plants in Region I consist of the following, all operated by the Montecatini Company.

a. Tomaso Natale, Palermo.
b. Campofranco, Agrigento.
c. Licata, Agrigento.
d. Bicocca, Catania.
e. Milazzo, Messina.

None of the above plants can today, nor ever did, produce nitrogenous fertilizers; they are dealt with later in this report as regards their capacity for superphosphates.

REGION II. The Montecatini Plant at CROTONE normally produced of the items mentioned in the first paragraph of this report, ammonium sulphate, biammonium phosphate, sodium nitrate and calcium nitrate; but is badly damaged. As a result, the only possibility of production is ammonium sulphate which could, subject to prompt putting in hand of repairs, commence in about 3 months. Complete repair, to take approximately 5 months, should result in a monthly production of 1920 tons per month of ammonium sulphate, as against the normal tonnage of 3000.

The reactivation of this plant for the production of ammonium sulphate will call for a fairly substantial supply of hydro-electric energy. This will be a call upon the resources of the SOCIETA' MERIDIONALE DI ELETTRICITA'. The annual production of ammonium sulphate at the rate of 64 tons daily at Crotone involves the expenditure of approximately 90,000,000 Kwh.

It would seem that this

d. Bicocca, Catania.
e. Milazzo, Messina.

None of the above plants can today, nor ever did, produce nitrogenous fertilizers; they are dealt with later in this report as regards their capacity for superphosphates.

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The reactivation of this plant for the production of ammonium sulphate will call for a fairly substantial supply of hydro-electric energy. This will be a call upon the resources of the SOCIETA' MERIDIONALE DI ELETTRICITA'. The annual production of ammonium sulphate at the rate of 64 tons daily at Crotone involves the expenditure of approximately 90,000,000 Kwh.
It would seem that this energy should be provided in view of the importance to liberated Italy of the valuable fertiliser supply which would result.
Crotone would require some 750 tons of Sardinian coal per month for the production of distilled water for the ammonium sulphate plant, and to cope with other heat demands.
The problem of raw materials from overseas also arises: pyrites from SPAIN, or TUSCANY when liberated, are necessary for the production of sulphuric acid which is used, not only in the manufacture of superphosphates, but also for ammonium sulphate. Nitric acid (at 36° Be') at the rate of 30 tons per month or an equivalent amount of sodium nitrate would be required for ammonium sulphate production. This would need to be produced at another plant or to be imported. 105
In addition, as with all fertilizer products, the question of containers involves importation.

APULIA. There are Montecatini Fertilizer Plants at BRINDISI and BARLETTA. That at Brindisi has been damaged and is not in a condition to function for some months. The Barletta plant is in perfect order. Neither works ever turned out nitrogenous fertilizers.

/REGION III..

REGION III. The Montecatini plant at BAGNOLI has been heavily damaged, and in the report on superphosphate prospects which follows these remarks it is recommended that this factory be not reactivated. In any case, it never did produce nitrogenous fertilizers.

At PORTICI there is a further Montecatini plant which it is recommended should be considered for restarting, if necessary, by cannibalization of equipment ex Bagnoli. This establishment does not produce nitrogenous fertilizers, but is suggested as a source of supply of superphosphates.

The third Montecatini plant in the Naples area is at PONTECAGNANO (Salerno). This establishment is in good order but never did produce nitrogenous fertilizers.

A further plant, independent of Montecatini, exists at Cancello. This is the FABBRICA INTERCONSORZIALE DI CONCIMI E PRODOTTI CHIMICI DELLA CAMPANIA. It does not produce nitrogenous fertilizers and is in any case heavily damaged.

It is reported in AFHQ letter of 12 Dec 43, "Report on Montecatini Plants", that there existed in Naples a plant described as FOSFO ORGANICO DI GENOVA. This is not the case; the S.A.F.F.O. - Soc.Anon. Fertilizzanti Fosforganici - has a head office at Genoa. It is a small concern with a capital of Lire 1,200,000 with one plant only, located at SERRAVALLE LIBARNA, producing copper sulphate, superphosphates, sulphuric acid and oleum. It has not, and never has had a plant in Naples; neither can a sales or other office of the concern be traced as ever having existed in the Naples area.
It was indicated in AFHQ letter of 12 Dec. 43 that ILVA Bagnoli owned a fertilizer plant--this actually is the Montecatini establishment already reported on and which adjoins the ILVA Factory.

REGION VI. There is a fertilizer plant at COGHINAS OSCHIRI - the SARDA Plant. This could under favourable conditions produce ammonium sulphate, and is reviewed in Appendix A. This factory is dependent on hydro-electric power of erratic provision- in some years the plant has only worked three months. The establishment is reported as closed down owing to necessity to repair slight damage, and lack of hydro-electric power. The plant has a moderate capacity and should be put into a position to produce nitrogenous fertilizers.
Shipping facilities would need to be found in this instance, not only for the import of raw materials, but for shipment to the mainland of completed fertilizers.

CONCLUS... In liberated Italy, Sicily and Sardinia at the present moment there

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Shipping facilities would need to be found in this instance, not only for the import of raw materials, but for shipment to the mainland of completed fertilizers.

CONCLUSIONS. In liberated Italy, Sicily and Sardinia at the present moment there exist facilities for the manufacture of nitrogenous fertilizers only at CROTONE and COGHINAS OSCHIRI (SARDINIA)
The rehabilitation of the two plants concerned would seem to be of primary importance. After rehabilitation a production as indicated below would be available to assist in the agricultural program.

II. SUPERPHOSPHATES. The surveys and investigations mentioned in this report have, for reasons of urgency of fertilizer supply, been conducted under pressure and must be considered as provisional. They are subject to revision as more details are gathered. The reports appear in detail as Appendix B, and are dated as at 1st January 1944. 104
Appendix A shows in tabulated form the possibilities of production in given periods, time estimated for repairs, and figures of partial and complete production. Estimates of raw material requirements also appear. No figures are given for fuel and electric power consumption as these--for the production of superphosphates--are unimportant. Figures of constructional materials for repair of these plants are stated by the managements to be available.
Plants are reviewed by Regions as follows :
(N.B. All belong to the MONTECATINI combine with the exception of the establishment at CANCELLO and the Sarda plant at COGHINAS and Oschivi Sardinia).

/Review of plants by Regions.....

REVIEW OF PLANTS BY REGIONS.

REGION I. There exist in SICILY the following plants

a. TOMASO NATALE, PALERMO.
b. CAMPOFRANCO, AGRIGENTO.
c. LICATA, AGRIGENTO.
d. BICOCCA, CATANIA.
e. MILAZZO, MESSINA.

Survey report on (a) is included in Appendix B.

(b) reported as in same position as (a), i.e., able to recommence activities but reported as requiring pyrites.

(c) seriously damaged; not surveyed by this sub-commission. Reported as unlikely to be of use, except for cannibalization in (a) and (b).

(d) not surveyed by this sub-commission, but seriously damaged. The installation may be repairable, but possible production has not been considered in estimating total resources.

(e) not surveyed; reported damaged; situation as (d).

REGION II. CROTONE has the only plant in Region II and a detailed report is included in Appendix B. This is an important plant, able to make a possible maximum contribution after rehabilitation of about 21,600 tons of superphosphates per year.

APULIA. In APULIA (considered apart from Region II) there exist three Montecatini fertilizer plants, at TARANTO, BRINDISI and BARLETTA. That at Brindisi has been damaged, and is in occupation by British Ordnance as a Depot. It is not considered here as a possible source of supply, but may repay later investigation. A report on the Barletta Factory is included in Appendix B. This factory is capable of being rapidly put into operation and would at maximum produce 30,000 m. tons per annum of superphosphates, enough to cover the requirements of Apulia and Lucania. The Taranto plant has, it is understood, been damaged and is out of operation; this sub-commission, owing to lack of time and personnel, has not been able to make a survey.

REGION III. In the NAPLES area there are four plants for the manufacture (inter alia) of superphosphates. One of these, at BAGNOLI, is extensively damaged and it is considered that for immediate purposes it can only be regarded as a source of equipment for the rehabilitation of plants better able to go into production. This plant is reviewed in Appendix B. Another plant is at PORTICI, and it is suggested that this factory should be considered for rehabilitation. Its theoretical maximum productio

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FABBRICA INTERCONSORZIALE DI CONCIMI E PRODOTTI CHIMICI DELLA CAMPANIA, (Cancello (Naples). This plant is independent of the Montecatini combine, and is reported in Appendix B. Unfortunately it is extensively damaged and will require about six months for repair.

REGION VI. The Sarda ammonia plant, considered in the report on nitrogenous fertilisers, does not produce superphosphate. This is the only fertiliser factory in Region VI.

III. CONCLUSIONS. There exist in liberated Italy and Sicily plants capable of :

(a) an early production of superphosphates at the rate of 93,600 m. tons per annum.

(b) a total production of approx. 147,600 m. tons per annum after rehabilitation.

A note of the raw materials necessary is contained in Appendix A. These, unfortunately, will all need to be imported from overseas. /Page 8.

APPENDIX A. -
REGION I.

A. REPORT ON MONTECATINI SUPERPHOSPHATE PLANT TOMAS NATALE, PALERMO.-

Submitted by Capt. W.E. Mydans, Industry & Commerce Sub-Commission A.M.G.

This plant, situated on a rail line some 10 Kilometres from the center of Palermo, is in excellent condition and is substantially ready to go into production of superphosphate fertilizer as soon as essential raw materials are available. The plant has suffered no visible war damage, and though it has not been in operation for some time due to lack of raw materials, it has been maintained excellently and the time has been utilized to instal some desired improvements.

Requirements:

1. About 15,000 metric tons of phosphate rock from N. Africa per annum.
2. 150 metric tons of 36° Be nitric acid - formerly obtained from the Montecatini plant at Crotone. About five sixths weight of sodium nitrate may be substituted for this acid.
3. 5,000 metric tons of Sicilian Sulphur or 7,200 metric tons of pyrites.
4. Plant requirements in materials or new equipment: none.
5. Coal requirements: none.
6. Electric Power requirements: small, 85 Kw to operate pumps, grinders, etc. This power is promised by January.

Production:

Normally produces about 25,000 metric tons per annum of superphosphate fertilizers.

Small amounts of by product Sodium Silico Fluoride are produced and is used largely in the ceramic industry.

Also some sulphuric acid may be available for sale if the need for that material should arise.

There is a shortage of bags (paper) in which the superphosphate fertilizer is normally packed and shipped, but there appears to be no reason why, if this material is to be used locally on the Island, bags cannot be dispensed with entirely and the material handled loose in rail trucks or lorries.

The sulphuric acid plant normally produces acid of 66-70% (50° Be) strength which is suitable for superphosphate manufacturers.

(92 parts by weight of about 70 sulphuric acid.
(100 ". " " " finely ground phosphate rock (Calcium Phosphate).
required to produce superphosphate fertilizers.

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CROTONE - A 1

APPENDIX A -
REGION II.

B. REPORT ON MONTECATINI FERTILIZER PLANT, CROTONE-

- Submitted by Capt. W.E. Mydans, Industry & Commerce Sub-Commission AMG.

Director of Plant : Dr. Ing. Giorgi, Giuseppe.

Employment : At present about 250 men engaged on repairs and replacements.
Normally employ (a) 50 technicians and administrators.
(b) 800 plant workers.

Finances :
Invested capital in Crotone Plant about 400,000,000 lire. Now have available in banks about 5,000,000 lire, or about one half the funds required to cover immediate repairs. An additional 5,000,000 lire must be secured as bank loans. Further, additional funds will be necessary to cover operations when plant gets under away.

List of Component Units of Plant :

I. Electrical Transformer and Converter Station.
II. Hydrogen Plant - Electrolytic.
III. Nitrogen Plant : A. Linde Plant.
: B. By burning hydrogen from I.
IV. Ammonia Plant.
V. Nitric Acid Plant.
VI. Calcium Nitrate Plant.
VII. Sodium Nitrate Plant.
VIII. Distilled Water.
IX. Electrolytic Caustic Potash Plant.
X. Caustic Soda Plant.
XI. Sulphuric Acid Plant.
XII. Ammonium Sulphate Plant.
XIII. Superphosphate Plant.
XIV. Phosphoric Acid Plant.
XV. Biammonium Phosphate.
XVI. Trisodium Phosphate.
XVII. Sodium Cyanide.
XVIII. Electromechanical Workshops.
XIX. Industrial Water.
XX. Air Compressor Plant.

Brief Comments on the above Plants:

II. Hydrogen Plant - Electrolytic.
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XVIII. Electromechanical Workshops.
XIX. Industrial Water.
XX. Air Compressor Plant.

Brief Comments on the above Plants:

I. Electrical Transformer and Converter Station:

A. Electric power is purchased from Soc. Meridionale Elettrica in two circuits which can furnish 900,000 - 1,000,000 KWH of power per day. Present power contract runs until 1950, calls for minimum of 300,000,000 kwh per annum at 0.05 lire per kwh. This power is generated hydroelectrically at Timpa Grande, some 40 Km. by wire from the plant.
About 85% of the power is transformed and converted to direct current of 500 volts for use in the electrolytic cells. The remaining 15% of the power is transformed to 500 volts A.C. and is used for plant power.

B. Equipment: All of the transformers and all but one of the converters are in good and operative condition. One Oerlikon Converter of 4,000 kw capacity has a burnt commutator which cannot be repaired at the plant.

C. Immediate requirements: Repair of roof.

II. The Hydrogen Plant:

The hydrogen is generated by the electrolysis of caustic potash solution (25%). This method was employed because large amounts of cheap electric power were available.

There are 8 batteries of electrolytic cells of which two are badly damaged by bombing and are inoperative, leaving 6 operative batteries. One will be held as a spare to permit necessary repairs, leaving 5 batteries for continuous operation.

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Production with 5 batteries operating full will be about 3000 cu. metres of hydrogen gas and about 1500 cu. metres of oxygen gas per hour.
The hydrogen gasometer of 5000 cu. metres capacity is entirely destroyed.
Requirements:

(a) Distilled Water: about 250 cu. metres per 24 hours which requires about 25 m. tons of coal per day for its production.
(b) The caustic potash output from caustic potash plant is used here.
(c) Four 150 cu. metre barrage balloons to act as temporary gas holders for hydrogen to replace the gasometer destroyed by bombing.

N.B. The R.A.F. is now taking about 1000 cu. metres of hydrogen per day (and have an arrangement to take up to 2000 cu. metres per day) for balloon purposes. This demand for hydrogen should not be disturbed. They have installed their own compressor and auxiliary equipment.

III. The Nitrogen Plant:

A. Linde Plant: This method, employing the liquifaction and fractional distillation of air, has been used to produce the pure nitrogen required to combine with hydrogen to form ammonia. This plant is entirely inoperative due to general internal breakdown of the cooling - factionating towers and to the burnt out condition of one large compressor motor. None of this damage is attributed to bombing.
B. It is proposed to make sufficient pure nitrogen for ammonia production of 17 tons per day by burning some 400 cu. metres per hour of hydrogen produced in II above with controlled amounts of air to yield some 600 cu. metres of nitrogen gas per hour. This method was employed when the plant was first constructed and three burners with auxiliary equipment still remain. Of these burners, two are in operative condition, a third will become operative after necessary repairs.
C. Nitrogen gasometer: 5000 cu. metres capacity. Extensively damaged by bombing but is repairable.
D. Nitrogen production: 600 cu. metres per hour.
E. Immediate requirements : Repairs to equipment.

IV. Ammonia Plant:

A. Employs the Fauser process which operates at high pressures (3500 pounds per square inch). This plant has some damaged equipment (not from bombs), but enough of it can be put into operation to consume the hydrogen and nitrogen produced and yield 17 tons of pure ammonia per day (to be used to make ammonium sulphate fertilizer). Biggest difficulty in this phase of operations is securing a supply of catalyst, formerly made by the Montecatini Company at their Novara plant under secret conditions. However, one small plant is now

with hydrogen to form ammonia. This plant is entirely inoperative due to general internal breakdown of the cooling - factionating towers and to the burnt out condition of one large compressor motor. None of this damage is attributed to bombing.

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C. Nitrogen gasometer: 5000 cu. metres capacity. Extensively damaged by bombing but is repairable.

D. Nitrogen production: 600 cu. metres per hour.

E. Immediate requirements : Repairs to equipment.

IV. Ammonia Plant:

A. Employs the Fauser process which operates at high pressures (3500 pounds per square inch). This plant has some damaged equipment (not from bombs), but enough of it can be put into operation to consume the hydrogen and nitrogen produced and yield 17 tons of pure ammonia per day (to be used to make ammonium sulphate fertilizer). Biggest difficulty in this phase of operations is securing a supply of catalyst, formerly made by the Montecatini Company at their Novaro plant under secret conditions. However, one small plant is now said to be operating in Sardinia, and a large one in Canada using this catalyst and a supply may be located. One filling of catalyst is good for from 5 to 12 months of operation, depending upon the care with which the entering gases are purified. At present, all four catalyst towers are filled with partially exhausted catalyst, and may permit operations for 2 -3 months. Each tower requires 3 m. tons of catalyst - i.e. 12 m. tons for the four towers. Two towers filled with fresh catalyst would be adequate for initial plant operations.
Requirements : Other than for catalyst above: None.

V. Nitric Acid Plant:
Inoperative, due to destruction to some important elements and to the fact that platinum burners, and other essential elements were sent north prior to the Allied invasion.
Much fine stainless-steel equipment, resistant to nitric acid, is still present in the plant.

VI. Calcium Nitrate Plant:
Inoperative due to absence of nitric acid (see V above).
Plant is in fair condition, could be repaired. 37 electric motors sent to Milan.

VII. Sodium Nitra[illegible] Plant:

No plant now. Old plant demolished to make way for new plant for which plans were completed and building started.

VIII. Distilled Water:

Large modern facilities, adequate for all needs of plant, and undamaged.

IX. Electrolytic Caustic Potash Plant:

Plant is modern and essentially undamaged and consists of 12 cells of which 10 are normally operated in series with two as spares or under repairs.
Much of the mercury required as cathode was sent north prior to Allied invasion and only enough is now on hand to operate 5 cells. Each cell requires 1.5 m. tons of mercury for operation.
Each cell consumes between 800-1000 KWH per 24 hours, and converts 4.5 quintals of high quality potassium chloride (98% KCl formerly secured from Germany and Spain) into 3 quintals of Caustic Potash in dilute water solution.
N.B. 1. The entire output of this plant is utilized in the hydrogen electrolysis plant. None is available for sale.
2. The product of this plant is not dry caustic potash suitable for shipment, but a dilute water solution of 30° Be.
3. On hand are about 325 tons of Potassium Chloride (KCl) which will be adequate for about 5 months of operation, using but five electrolysis cells.

By-Products of Caustic Potash operations:

1. About 48 cu. metres of hydrogen gas are produced by each cell per 24 hours. This gas production is normally mixed with the main hydrogen supply.
2. About 48 cu. metres of chlorine gas are produced by each cell per each 24 hours. This gas has, in the past, been thrown away. With 5 cells in operation, 240 cu. metres of chlorine gas will become available, but without equipment with which to dry and liquify it and without pressure cylinders for shipment.

X. Caustic Soda Plant:

This is a small capacity, primitive unit utilized to produce the plant's requirement for this material which is used in purifying air utilized in making nitrogen. Under normal conditions, the product is only 6 quintals of NaOH per day, and that in the form of dilute water solution of 8 - 10% concentration.
This unit must be deemed inoperative until a supply of soda ash equivalent to 9 quintals per day can be made available. The slaked lime requirements

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This unit must be deemed inoperative until a supply of soda ash equivalent to 9 quintals per day can be made available. The slaked lime requirements for this process are readily met from local sources.

N.B. This unit cannot be considered as a suitable source of caustic soda for soap making as its product is available only as a dilute water solution.

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XI. Sulphuric Acid Plant:

Sulphuric Acid of 50° Be (63% H_2SO_4) is made by the old lead chamber process. The plant is old and has suffered extensive bomb damage. However, repairs can be effected to restore it to about three quarters normal production (about 115 m. tons of 50° Be sulphuric acid per day). A plan has been worked out by which initial repairs would permit operations to commence within 60 days with the production of 38 m. tons of acid per day and gradually increase output with continued repairs so that full $\frac{3}{4}$ output (115 m. tons of acid) could be reached in 4 to 5 months.

The buildings housing the acid chambers have suffered very severe bomb damage and repairs to these will be started as soon as a release and transportation can be secured for the following materials now held for the Company at Bari :

2000 m^2 of corrugated Eternit (asbestos cement board)
1500 m^2 of flat sheet Eternit (" " ").

This material can be transported on one rail truck. An adequate supply of wood, nails, etc. for the work is on hand.

Further, for the repair of the lead chambers, acid storage tanks, Glover and Lussac Towers, the following lead sheet is required. This material, it is claimed, is now in Bari awaiting release and transportation, from FAC-Zanoletti, 119 Via Cavour, Bari.

a. 600 Sq. m. 3mm. sheet lead : circa 30 m.
b. 200 Sq. m. 4mm. sheet lead : tons- one rail truck.

Attempts to effect repairs to lead equipment by cannibalizing lead from damaged chambers has been unsuccessful, for the equipment is in excess of 15 years of age and the lead is now very thin, weak, and brittle.

A major difficulty in resuming sulphuric acid production is a source of raw materials. There are 12 pyrites burners or furnaces, of which two are inoperative due to bombing and other damage. These burners are designed to burn high grade pyrites from Tuscany or Spain and cannot burn pure Sicilian sulphur nor low grade Calabrian pyrites.

To produce 115 m. tons of 50°Be sulphuric acid per day will require 54 m. tons of high quality pyrites per day, or, 1620 m. tons per month.

Up to but not in excess of 20% of low grade Calabrian pyrites may be used with 80% of high grade pyrites.

On hand: About 200 tons of Tuscanian pyrites.

To produce 115 m. tons H_2SO_4 (50°Be) per day, normally required 1.5 m. tons of nitric acid (36°Be), formerly produced at the plant.

It is proposed now to build a small nitric oxide unit to meet this need which will use sodium nitrate instead of nitric acid which is very difficult to secure and to transport. The total need of sodium nitrate for 115 m. tons sulphuric acid per day will be 1.1 to 1.3 m. tons. On hand in the plant at present are about 35 m. tons of sodium nitrate - at present frozen by A.C.C. order. It is contemplated to start operations with number 2 sulphuric acid unit which requires the least repairs. This unit could convert 18 m. tons pyrites into 38 m. tons of 50°Be sulphuric acid per day, and for this operation, there is on hand enough sodium nitrate for 3 - 4 months.

Another proposal for securing the essential nitric acid (as nitric oxide gas) is to oxidize some of the ammonia that is produced in the ammonia plant with air to NO and NO_2. This method would be ideal and all materials are at hand to construct such a small unit, except 3 pieces of platinum gauze, fine mesh, about 300 - 350 grams in total weight. Such a unit would produce about 7 quintals of nitric oxide gas per day, equivalent to about 2 m. tons of 36°Be nitric acid.

Of the 115 m. tons of sulphuric acid production per day, it is contemplated to use 75 m. tons with 17 m. tons of Ammonia to produce 64 m. tons of ammonium sulphate per day. The remaining 45 m. tons of sulphuric acid would be used in superphosphate production.

N.B. Normally 80 m. tons of sulphuric acid 50°Be were obtained daily from the adjoining Pertusola, Zinc Plant. If and when that plant is again set in operation, it will require 1.5 to 2.0 m. tons of nitric acid per day to [illegible]

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N.B. Normally 80 m. tons of sulphuric acid 50°Be were obtained daily from the adjoining Pertusola, Zinc Plant. If and when that plant is again set in operation, it will require 1.5 to 2.0 m. tons of nitric acid per day to produce this sulphuric acid.

XII. Ammonium Sulphate Plant.

Plant is in good condition and minor repairs can make it operative. Normal capacity is 100 m. tons per day; present plan for production 64 m. tons per day.

XIII. Superphosphate Plant:

This unit of the plant is in good and operative condition.
Requirements per month :

Morocco Phosphate Rock	1080 m. tons.
Sulphuric Acid	1050 m. tons.
Production Superphosphate Fertilizer	1800 m. tons.

On hand at present, 400 - 500 m. tons phosphate rock.

XIV. Phosphoric Acid Plant:

Badly bombed and inoperative; beyond repairs for the duration.

XV. Biammonium Phosphate Plant:

This plant is in fair condition but will be inoperative since it depends on XIV for phosphoric acid. Further, the large coal requirement of this unit of the plant, makes any considerations for its operation undesirable.

XVI. Trisodium Phosphate Plant:

Inoperative without phosphoric acid from XIV and large amounts of imported soda ash and caustic soda.

XVII. Sodium Cyanide Plant:

All dismantled and cannibalized.

XVIII. Electromechanical Workshops.

Machines are almost without exception old and obsolete in design. It is a poor shop for so large a plant and accounts in part for the tendency of the Company to send damaged equipment to Northern Italy for repairs. The roof of this shop has been blown off, and there has resulted much damage to equipment through rust and corrosion.

XIX. Industrial Water System.

Acqueduct now fully repaired and adequate for all plant purposes. Normal daily consumption about 35,000 cu.metres; under contemplated operations, somewhat less.

XX. Air Compressor Plant:

Large and modern air compressor plant with very large capacity up to 3.5 - 5 atmospheres pressure. Roof of building blown off.
Table of requirements to put essential components of plant back into operation :

1. Sheet lead: (a) 600 sq. m. 3 mm.
   (b) 200 sq. m. 4 mm.
2. Eternit (asbestos-cement board) for roofing and wall repairs, chiefly on sulphuric acid plant, machine shop, etc.
   2000 sq. m. corrugated board
   1500 sq. m. flat board
3. Phosphate Rock from N.Africa per month — 1050 m. tons.
4. Pyrites from Spain (Tuscany) per month — 1620 m. tons.
5. Coal (Steam or Sardinian) per month — 750 m. tons.

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XIX. Industrial Water System.

Acqueduct now fully repaired and adequate for all plant purposes. Normal daily consumption about 35,000 cu.metres; under contemplated operations, somewhat less.

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4.	Pyrites from Spain (Tuscany) per month	1620 m. tons.
5.	Coal (Steam or Sardinian) per month	750 m. tons.
6.	Sodium Nitrate (Chili Saltpeter) per month	35 m. tons.
7.	Potassium Chloride for Caustic Potash Prodn. (5 cells) per month	68 m. tons.
8.	Non-reoccurring items:	
	(a) Tin for solder for repairs	20 Kg.
	(b) Calcium Carbide for welding repairs	1 m. ton.
	(c) Electrical Insulating Varnish	50 Kg.
	(d) 150 cu.metre barrage balloons for temporary gas storage	4 Kg. ?
	(e) Mercury for each additional KOH cell it is desired to operate above 5.	1.5 m. tons.
	(f) Platinum gauze circles, 60 cm.diameter, wire 0.04 - 0.06 mm. diameter, mesh 1024 per cm.- Weight each 100 - 100 grams.	3

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Conclusions:

1. With repairs quite within the scope of the immediate future, and with such minor transportation as two or three rail-trucks from Bari, essential elements of this plant can be put into operation.

/2.....

2. The desirability of working this plant will depend in large measure upon the shipping situation since relatively large amounts of raw materials must be brought to the plant for its continuous operation. A further consideration over a longer period of time is the contention of the Agriculture Sub-Commission that every pound for fertilizer now available will reduce the shipping burden of foodstuffs by 5 to 6 pounds, conservatively, some 6 to 8 months hence.

A summary of the shipping required:	m. tons per month.
(a) Phosphate Rock from Morocco	1050
(b) Pyrites from Spain (until Tuscany is liberated)	1620
(c) Coal from Sardinia	750
(d) Sodium Nitrate from Chili	35
(e) Potassium Chloride	68
Total m. tons per month	3523

3. The production of this plant when set into operation as fully as is contemplated in this report would be :

	Per month.
(a) Ammonium Sulphate	1920 m.tons
(b) Superphosphate Fertilizer	1800 m.tons
(c) Oxygen gas - recoverable circa	1,000,000 cu. metres
(d) Chlorine gas - recoverable "	7,200 cu. metres

Note: very effort should be made to put this A-1 plant in operation - Electricity is now available - A number of ships should be permanently assigned to this plant - 176

L.W.

June 1944

C. VISIT TO MONTECATINI FACTORY, BARLETTA, AND CONVERSATIONS BETWEEN LOTT. ENGR. RISSO (Production Superintendent) and Lieut (jg) TREUTLE.C.E. Industry and Commerce Sub-Commission A.M.G.

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The MONTECATINI FACTORY at BARLETTA has the following production capacity:-

FERTILIZER PLANT

	Tons
Superphosphates.....	50,000
Sulphuric Acid.....	38,000
Hydrochloric Acid.....	4,000
Silicate Sodium Solution. 38/40.....	500
Fluosilicate of Soda-By-product.....	150
Pyrites Ash-By-product.....	12,000

This plant, although almost 60 years old is nevertheless in good operating condition. Although the plant stopped operating in June 1942, they have kept on the payroll a staff of 150 "Key" employees. These men have been used on maintenance. The normal payroll was (a) Fertiliser Plant 150 (b) Tartaric Acid Plant 220 - Total 370.

At present the plant warehouses are used as billets for troops and by the men of the R.E.M.E. Unofficially I was advised by Capt. Montgomery, R.E.M.E., BARLETTA, that R.E.M.E. would be vacating the plant by the end of December and that troops would probably leave sooner. For definite departure dates contact should be made with Major Yates, D&A & MG, 151 Sub-Area who handled the requisition.

FINISHED PRODUCTS ON HAND

There are 3,800 tons of Superphosphates in their warehouses at BARLETTA, which is ready for distribution in FOGGIA.

NOTE:At present the plant is making SULPHURIC ACID and DISTILLED WATER for 8 ARMY contract. It is reported that they are producing 500 gals. of ACID per week. 8 ARMY contact is Major BISHOP, 500 A.O.D. This is the ONLY operation in the plant.

SUPERPHOSPHATES

Dott. RISSO estimates that 30,000 tons of SUPERPHOSPHATES would be sufficient to take care of one years requirements for APULIA and LUCANIA. The BARLETTA plant is equipped to produce this quantity of Superphosphates. It is estimated that a 15% to 20% increased yield in crops will be obtained in this agriculturally important area if this tonnage of Fertiliser be made available.

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To produce 30,000 tons of Superphosphates the BARLETTA Plant will require:-

175

16,800 tons PHOSPHATE ROCK - 65/70% content P2 05 - obtainable from TUNISIA, ALGERIA, MORROCCO and EGYPT.

16,800 tons SULPHURIC ACID - @ 50Bé - obtainable from own Plant.

BARLETTA Plant can produce SULPHURIC ACID. To produce 16,800 tons Sulphuric Acid, BARLETTA will require:-

8165 tons PYRITES (S46.60%) obtainable from SPAIN

or

12250 tons SULPHUR MINERAL (S30%) from SICILY or AVELLINO

plus

145 tons NITRIC ACID - 36 Bé

or

120 tons NITRATE OF SODA from CHILE (Fuel used is wood for superphosphate production)

/;;;;;;; PACKING MATERIALS

PACKING MATERIALS

To handle 30,000 tons of SUPERPHOSPHATES, BARLETTA will require the following:-

600,000 PAPER SACKS of Three sheet thickness to handle 50 Kilos ea.
(50 cm. x 100 cm. - gm 65 to Sq. metre)
0.3 ton cord for closing sacks.

SUBSIDIARY MATERIALS

TRANSFORMER OIL	0.1 ton
TRANSMISSION OIL	1.0 ton
BEARING GREASE	0,03 tons.

TRANSPORTATION.
RAW MATERIAL IMPORTS.

The BARLETTA Plant has its own docking facilities at BARLETTA PORT adjacent to the factory.

Horses and carts were used from the PIER at BARLETTA to the Warehouses of the Plant, however, horses and carts are no longer available and such transport would have to be provided.

FINISHED PRODUCT EXPORT.

The Plant does not have its own RAILROAD SIDING, but it is only 1½ Km. from the Railroad. The railroad would serve the APULIA and LUCANIA consumers. It is estimated that 6 lorries of 3 tons carrying capacity, with petrol and so forth would be necessary for loading cars. These could also be used for transport from PIER to WAREHOUSE.

LABOUR.

As far as LABOUR SUPPLY is concerned there is adequate supply of both skilled and unskilled labour at BARLETTA.

CAPITAL

There is adequate capital for payroll and operating expenses, but NOT sufficient to cover RAW MATERIAL IMPORTS. Dott. RISSO suggests the possibility of exporting BAUXITE from their MINE - S. GIOVANNI ROTONDO (Manfredonia) FOGGIA in payment of RAW MATERIAL IMPORTS

D. REPORT ON MONTECATINI FERTILISER PLANT.

B R I N D I S I

GENERAL - This plant had a substantial capacity in the production of Superphosphate but has not been in operation since 1940. At that date a heavy program of enlargement was commenced, which has never been completed.

The premises are at present in military occupation, and it is obvious that rehabilitation would involve some months, and the probable importation of machinery. It has not, up to the present, been considered useful to make an expert survey.

PROLUCTION - The following are stated to be figures of production actually attained :-

Superphosphate	35,000	m. tons per annum
Sulphuric Acid (for super phosphate and copper sulphate production) 50°Be'	25,000	" " " "
Copper Sulphate	5,500	" " " "
Pyrites Ashes (by product)	8,300	" " " "

RAW MATERIALS -The materials utilised for this production are stated as being the following :-

Phosphate Rock	19,600	m.tons per annum
Sulphuric Acid at 50°Be' (produced in plant)	19,600	" " " "
Pyrites for sulphuric Acid plant	11,900	" " " "
Copper 98.9% for Copper Sulp.	1,490	" " " "
Coal (imported) (for copper sulphate)	200	tons " "
Naphtha	590	" " "
Nitric Acid	175	" " "

It is stated that Sulphur can be burned in place of pyrites: this has not been confirmed.

RECOMMENDATIONS -
If it is anticipated that the materials for rehabilitation - and raw materials for production - will be available, this plant should be expertly surveyed.

APPENDIX A ((E):

E. REPORT ON MONTECATINI FERTILIZER PLANT -

T A R A N T O.

GENERAL. This plant is stated to be undamaged, but in military occupation. It has not been surveyed and the condition of the equipment is not known.

PRODUCTION. The following are stated to be figures of production actually attained :

Superphosphate	30,000 m. tons p.a.
Sulphuric Acid 50°Be(used in process)	18,000 m. tons p.a.
Pyrites Ashes	6,000 m. tons p.a.

RAW MATERIALS. The materials utilised for this production are indicated below :

Phosphate Rock	16,800 m. tons p.a.
Pyrites	8,900 m. tons p.a.
Nitric Acid	126 m. tons p.a.
Sulphuric Acid at 50°Be produced in plant	16,500 m. tons p.a.

RECOMMENDATION : This plant should be considered and surveyed in due course. It is stated that Sulphur can be burned in place of imported pyrites: this has not been confirmed.

F. REPORT ON MONTECATINI FERTILIZER PLANT, BAGNOLI NAPLES.

---- Submitted by Capt. W.E. Mydans, Industry & Commerce Sub-Commission AMG.

Works Manager: Signor MAISANO. Business Manager: Sig. MONDELLO.

I. GENERAL.

This plant has suffered extensive destruction from German mines and demolition, and it is doubtful if the superphosphate part of the plant can be returned to production except after far reaching repairs. The copper sulphate producing portion of the plant is virtually undamaged.

II. PRODUCTION.

Its normal production was:

(a) About 110 m. tons of superphosphate fertilizer per day.
(b) 12,000 m. tons copper sulphate crystals ($CuSO_4.5H_2O$) per annum.

III. CONDITION OF SUPERPHOSPHATE PLANT.

(a) Pyrites burners: 15 in number, all destroyed or damaged by German demolition mines. It is the claim of the plant managers that 3 or 4 of these Lurgi furnaces can be repaired and put back into service again if they are supplied with about 10 tons of a special fusion cement. They further contend that they can burn Sicilian sulphur in these furnaces as well as the pyrites for which they are designed.

This view is not shared. So extensive is the damage that it is doubtful if 3 or 4 units could be put back into service except at an undue cost in labour and materials. Further, there are serious doubts of either the veracity or the proper judgment of the managers in their contention that sulphur may be employed in this plant. If pyrites must be used, 4 repaired pyrites burners would be inadequate for production.

(b) Sulphuric acid lead chambers: 12 in number; 8 good or repairable; 4 destroyed and useful for cannibalization for repairs to damaged lead equipment.

(c) Lead acid storage tanks: all in good condition.

(d) Lead lined sulphuric acid pumps: 6 in number, 3 completely destroyed, 3 good.

(N.B. These pumps may be of value at the Montecatini Superphosphate Plant at PORTICI, where acid pumps were destroyed).

(e) Superphosphate reactors: agitating equipment completely destroyed.

(f) 4,500 m. tons copper sulphate crystals ($CuSO_4.5H_2O$) per annum.

III. CONDITION OF SUPERPHOSPHATE PLANT.

(a) Pyrites burners: 15 in number, all destroyed or damaged by German demolition mines. It is the claim of the plant managers that 3 or 4 of these Lurgi furnaces can be repaired and put back into service again if they are supplied with about 10 tons of a special fusion cement. They further contend that they can burn Sicilian sulphur in these furnaces as well as the pyrites for which they are designed.

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(d) Lead lined sulphuric acid pumps: 6 in number, 3 completely destroyed, 3 good.

(N.B. These pumps may be of value at the Montecatini Superphosphate Plant at PORTICI, where acid pumps were destroyed).

(e) Superphosphate reactors: agitating equipment completely destroyed.

(f) A modern contact system sulphuric acid plant which formerly produced 60 m. tons of sulphuric acid (Oleum monohydrate -$SO_3.H_2O$) per day has been completely destroyed.

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(N.B. The catalyst tower is filled with valuable vanadium pentoxide catalyst which should be salvaged under the aegis of ACC against such time as it becomes urgently needed elsewhere. It should be packed and stored in steel barrels). Nothing else, except scrap steel appears to be salvageable from this unit.

(g) Superphosphate storage sheds: now all taken over by U.S. Army Automotive Repair Shops.

IV. STOCKS ON HAND.

(a) 50 m. tons of 36°Be Nitric Acid distributed between 3 local Montecatini plants: Bagnoli, Portici, Pontecagnano.

(N.B. It is imperative that ACC freeze and safeguard this stock of valuable acid for use in sulphuric acid manufacture in superphosphate production.)

(b) Phosphate Rock: on hand at Bagnoli plant, 600-700 m. tons from Gafsa, Tunisia. (N.B. On hand at Ilva steel works on adjoining property: 7000 m. tons of phosphate rock, formerly used there in Thomas steel furnaces. This may be of value in fertiliser production and should be frozen and safeguarded pending investigation of its suitability for the purpose. It is reported that American engineers have already used 200 tons as road paving material.)

(c) 6000 m. tons of superphosphate fertiliser under control of AMG Region III.

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V. COPPER SULPHATE PLANT.

Virtually undestroyed. Normal capacity was 12,000 m. tons per annum. This plant cannot be considered as operable since it depends on scrap metallic copper as one essential raw material. 3000 m. tons of scrap copper and 7500 m. tons of 50°Be sulphuric acid would be required to produce 12,000 m. tons of product.

VI. CONCLUSIONS.

(a) The only factors which favour operation of this plant for superphosphate production is the facility which exists for the direct handling of water-borne cargoes.
(b) This plant is so extensively damaged that it is doubtful if any attempt should be made to repair and operate it.
(c) This plant should be considered a logical source for cannibalization for materials for the Portici plant.

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G. REPORT ON INSPECTION OF MONTECATINI FERTILIZER PLANT, PORTICI -Submitted by Capt. W.E. Mydans, Industry & Commerce Sub-Commission, AMG.

I. WORKS MANAGER.

Signor VIOLA, Alberto. This man appears both well-informed, reliable and co-operative.

II. NORMAL PLANT PRODUCTION.

Metric tons per annum:

(a)	Superphosphate	20,000
(b)	Hydrochloric acid 22° Be	10,000
(c)	Sodium sulphate $Na_2SO_4.10H_2O$	180
(d)	Sodium fluosilicate	100
(e)	Sulphuric acid 50° Be	12,000

III. STOCKS ON HAND.

(a)	Raw Phosphate rock	600
(b)	Superphosphate fertilizer (controlled by AMG Region III)	4,000
(c)	Nitric acid 36° Be	10
(d)	Sodium fluosilicate	20
(e)	Sodium sulphate (Glauber's salt)	200
(f)	Sufficient paper sacks for packing (b)	

IV. NORMAL PLANT REQUIREMENTS.

(a)	Raw phosphate rock	10,000
(b)	Pyrites (Spanish or Tuscanian)	6,000
(c)	Nitric acid 36° B2	120
(d)	Salt	50

V. CONDITION OF PLANT (SULPHURIC ACID & SUPERPHOSPHATE)

(a) Pyrites burners: 5 in number. One is good, two capable of repair, two destroyed beyond repair. These are standard Lurgi furnaces, the same as at Bagnoli, and the latter may be considered as logical source for cannibalized parts. This group at Portici have shown commendable initiative in setting about repair of plant damage.

(N.B. These furnaces can burn only pyrites, NOT sulphur).

Note: Cement for repair of furnaces - cemento fuso; Soc. Italcementi, Salerno.

(b) Lead chambers: 7 in number, 5 with dimensions 5 x 5 x 17 metres, two with 5 x 6 x 20 metres. All are repairable.

(c) Other sulphuric acid plant equipment: Glover tower and Gay Lussac towers good or repairable. Of six sulphuric acid pumps, all [illegible]

(c)	Nitric acid 36° Be	10
(d)	Sodium fluosilicate	20
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(f)	Sufficient paper sacks for packing (b)	

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(b) Lead chambers: 7 in number, 5 with dimensions 5 x 5 x 17 metres, two with 5 x 6 x 20 metres. All are repairable.

(c) Other sulphuric acid plant equipment: Glover tower and Gay Lussac towers good or repairable. Of six sulphuric acid pumps, all but one destroyed.

(N.B. Three good and suitable pumps exist at the Bagnoli plant. These, together with the good one at Portici, could be made to operate this plant). Electric motor drive for pumps is in operative condition.

(d) It is necessary to construct a furnace to employ sodium nitrate instead of the usual nitric acid. There is, however, a stock of about 50 m. tons of nitric acid distributed at Bagnoli, Portici and Pontecagnano, and if all could be concentrated to be used at Portici this would be adequate for the production of 5000 m. tons of sulphuric acid 50° Be or approximately 9000 m. tons of superphosphate.

(N.B. This 50 tons of nitric acid should be frozen by ACC to ensure its being preserved for this purpose.)

(e) Warehouses for storage of raw materials and superphosphate fertilizers are in good condition. Part of these buildings are in use by British Ordnance, but this should not seriously interfere with operation of the plant.

(f) Equipment for pulverizing raw phosphate rock: 2 machines, one good, one damaged and capable of repair with difficulty; only one is needed. An electric motor of 30 H.P. (260 v., 45 cycles, 3-phase A.C.) must be made available.

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(g) Superphosphate reactors: two in number, one in good condition, one requiring repairs. Electric motor drive is in satisfactory condition.

VI. HYDROCHLORIC ACID.

Condition good. Needs minor repairs. No immediate need for this material.

VII. SODIUM FLUORSILICATE PLANT.

Sodium fluorsilicate is produced as a by-product of superphosphate production. The plant is damaged but repairable.

VIII. TRANSPORTATION FACILITIES.

(a) A good rail siding into plant exists.
(b) Good docking facilities for vessels not in excess of 3000 tons is reported available.

IX. COAL & ELECTRIC POWER REQUIREMENTS.

(a) Steam coal: need 1 m. ton per day.
(b) Electric power demand: maximum 100 KW, minimum 60 KW, at power factor of 0.75.

X. CONCLUSIONS.

This plant should be seriously considered for production of superphosphate fertilizer in the Naples area, particularly bearing in mind the lightness of necessary repairs as compared with those for Bagnoli, and the transportation facilities mentioned at VIII.

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H. REPORT ON MONTECATINI FERTILIZER PLANT, PONTECAGNANO (SALERNO)-

Submitted by Capt. W.E. Mydans, Industry & Commerce Sub-Commission AMG.

I. This plant is relatively new, entirely undamaged and is ready to commence operations immediately on receipt of raw materials. It is the best and most modern superphosphate plant inspected anywhere in Italy or Sicily (built in 1930 and not operating since 1941).

The entire plant has been taken over by HQ. 557 AOD RAOC by authority of AFHQ - Advance Admin. Echelon. Col. G.C.H. Wortham, O.B.E. is the Commanding Officer. This unit has already occupied six weeks in taking over the plant and getting the supply dumps organized.
Col. Wortham and Capt. Wilkes, who is in charge of the actual installation, are emphatic that the plant could not be operated whilst the RAOC are in occupation of the factory area, and this view is concurred in by the inspecting officer. Further, the single track rail facilities of 10 Km. connecting the plant with the harbour of Salerno is already overtaxed in handling the Ordnance supplies, and could hardly carry in addition huge quantities of phosphate rock, pyrites and superphosphate fertilizer.

This is a relatively small superphosphate plant.

II. PRODUCTION: Normally produced 1,000-1,100 m. tons superphosphate and 2 quintals of sodium silicon fluoride by-product per month. Also some sulphuric acid of maximum strength 50°Be was produced and sold for battery acid, etc.

III. REQUIREMENTS:

A.	Phosphate rock	:	700 m. tons per month
B.	Pyrites	:	350 m. tons per month
C.	Nitric Acid 36°Be	:	6 m. tons per month
D.	Electric power	:	50 KW from S.M.E.
E.	Coal	:	None
F.	Plant repair materials	:	None

IV. STOCKS ON HAND:

A.	Phosphate Rock	:	only 15 tons
B.	Pyrites	:	none
C.	Sulphuric Acid 50°Be	:	30 tons
D.	Nitric Acid 36°Be	:	600 flasks of 50 Kg each, enough for 4-5 months'operation.
E.	Superphosphate fertilizer	:	none
F.	Paper shipping sacks	:	about 1,000
G.	Sodium silico fluoride	:	about 20 m. tons.

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V. Stored at this plant are about 35 electric motors and pumps taken from the Bagnoli plant and belonging to the Montecatini plant. Two large motors have the following characteristics :

A. Brown-Boveri 110 h.p., 117.5 KW, 220 V, 373 A, 750 r.p.m. 50 frequency
B. Brown-Boveri 100 h.p., 99 K.W., 500 V, 290 A.

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APPENDIX A (J) REGION III.

J. REPORT ON : SUPERPHOSPHATE PLANT AT CANCELLO - Submitted by

-- Capt. W.E. Mydans, Industry & Commerce Sub-Commission AMG.

I. GENERAL: The plant of the Fabbrica Interconsorziale di Concimi e Prodotti Chimici della Campania manufactured superphosphate fertilizer and an insecticide based on copper sulphate purchased from outside sources.
The company is capitalized at 2,650,000 lire.
The plant was built in 1929 and was of fairly modern design.
Since no copper sulphate is available and since that portion of the plant which prepared the insecticide has suffered serious injury from Allied bombing, this report will not consider that product.
It is believed that the company (not a Montecatini unit) can finance its rehabilitation.

II. PRODUCTION: 1,200 m. tons superphosphate per month.

III. PLANT AND EQUIPMENT: The plant has suffered severely from Allied bombing, and extensive repairs requiring much time and materials will be needed to return the plant to operation.

A. Four pyrites burners are all damaged. The building housing the burners is wrecked. It is estimated that about four months will be required after the receipt of repair materials for the reconstruction of the burners.
B. Sulphuric acid lead chambers, three in number :
1° 25m x 13m x 9m needs only minor repairs
3° 4m x 13m x 9m " " " "
2° 15m x 13m x 9m badly torn. Can be repaired, but needs considerable quantity of sheet lead, oxygen and hydrogen gas. Gay and Lussac and Glover towers need only minor repairs.
C. Sulphuric acid pumps: 5 in number, all good. Attilio Ferraric type and require new supplies of white mineral oil (60 Kg. per pump) for operation. Sulphuric acid storage tanks are in good condition.
D. Building housing acid chambers and auxiliary equipment needs extensive repairs.
E. Superphosphate plant: very badly wrecked. Building and storage sheds must be rebuilt. Much of equipment can be resurrected, but it is estimated th that 5 to 6 months will be needed for this phase of repair.

IV. MATERIALS required for plant repairs:
A. Pyrites burners: about 4,000 special bricks (can be cannibalized from Montecatini plant at Bagnoli); also about 60 quintals of special fire clay (Longobardi - Corso Umberto I, Naples).
B. Sulphuric acid chambers and towers: about 10 m. tons of 3 m, sheet lead and 200 cu. m. oxygen gas and 80 cu. m. hydrogen gas. (or 300 Kg. scrap zinc

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IV. MATERIALS required for plant repairs:
A. Pyrites burners: about 4,000 special bricks (can be cannibalized from Montecatini plant at Bagnoli); also about 60 quintals of special fire clay (Longobardi - Corso Umberto I, Naples).
B. Sulphuric acid chambers and towers: about 10 m. tons of 3 m. sheet lead and 200 cu. m. oxygen gas and 80 cu. m. hydrogen gas. (or 300 Kg. scrap zinc for generation of hydrogen). Need 12 water atomizers for 2° lead chamber; ½" of lead with platinum orifices to handle water at 6 atmospheres. Possibly may be cannibalized from Bagnoli.
C. Leather belting for acid pumps and other machinery. All belting was removed by the Germans. Exact amount and sizes will be furnished by the plant manager.
D. Need much light wood to repair acid house.
E. 300 Kg. of special white (vaseline) mineral oil (Vacuum Oil Company) for sulphuric acid pumps.
F. 200 Kg. calcium carbide for metal repairs.
G. Need 3,000 Raschig ceramic rings for acid towers. These can be secured at Bagnoli.
H. Superphosphate equipment repair materials will have to be more accurately determined when excavation has progressed further. Two large electric motors to operate this part of plant appear undamaged: 45 h.p., 260 V., 45 frequency,; 60 h.p., 260 V., 45 frequency.
It is estimated that 50 tons of cement and 10 tons of concrete re-inforcing bars are prime requisites.

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V. MATERIALS REQUIRED FOR OPERATION:

A.	Phosphate rock from N. Africa	: 600 m. tons per month
B.	Pyrites	: 300 m. tons per month
C.	Nitric Acid 36° Be	: 6 m. tons per month
D.	Electric Power	: 9,000 KWH. per month.
E.	Coal	: None.

VI. STOCKS ON HAND:

A.	Pyrites	: 20 tons
B.	Phosphate Rock	: none
C.	Nitric Acid	: none
D.	Superphosphate sequestered by AMG Region III	: 1,000 - 1,500 tons
E.	Paper sacks 50 Kg. capacity	: 4,000
F.	Bentonite	: 55 tons
G.	Ammonium sulphate purchased from outside sources	: 70 tons
H.	Copper sulphate	: none

VII. TRANSPORTATION: All phosphate rock from North Africa, also Pyrites must be unloaded at the port of Naples and moved by rail to the plant. A spur line into the plant has been cannibalized by U.S. Army engineers and must be replaced.

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APPENDIX A (K).

K. REPORT ON SARDA AMMONIA PLANT AT COGHINAS AND OSCHIRI, SARDINIA.

Societa Sarda Ammonia e Prodotti Nitrici: financed and controlled by Societa di Elettricita Sarda.

I. GENERAL.

This plant is operated in two parts:

(a) Plant at Coghinas at which ammonia is made by synthesis from hydrogen prepared electrolytically and nitrogen separated from the air by the Linde process. The resulting ammonia is dissolved in water and piped 18 kilometres to the second plant.

(b) Plant at Oschiri. Here Sulphuric acid is made from pyrites and combined with the ammonia from Coghinas to form ammonium sulphate.

II. PRODUCTION.

The normal production of this plant:

(a) 1,260 m. tons ammonium sulphate per month.

(b) 360,000 cu. metres by-product oxygen per month.

It should be noted that production in this plant varies markedly with the hydroelectric power available. In years of small rainfall the production falls. The average monthly production of ammonium sulphate over 15 years was only 540 m. tons.

No phosphate fertilizer manufacture is carried on in this Company.

Only enough nitric acid is produced in this plant to fill the needs of sulphuric acid production.

III. PLANT AND EQUIPMENT.

(a) Hydrogen Production (COGHINAS)

Comprises the following equipment in good condition:
transformers and converters, two batteries of Fauser electrolytic cells of 130 cells each, a distilled water plant and a hydrogen gasometer.
Daily production is 24,000 cu. metres of hydrogen and 12,000 cu. metres of by-product oxygen. The latter is not utilized.

(b) Nitrogen Plant (COGHINAS)

The nitrogen is produced by a Linde-Messer unit which yields 8,000 c. metres of nitrogen per day and 2,000 c. metres of oxygen by-product. The oxygen is not utilized.

(c) Ammonia Plant (COGHINAS)

Fauser synthetic ammonia system which yields 10 m. tons NH_3 per day. 164
This product is dissolved in water and pumped via a pipe-line 18 Km. to

hydroelectric power available. In years of small rainfall the production falls. The average monthly production of ammonium sulphate over 15 years was only 540 m. tons.
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The nitrogen is produced by a Linde-Messer unit which yields 8,000 c. metres of nitrogen per day and 2,000 c. metres of oxygen by-product. The oxygen is not utilized.

(c) Ammonia Plant (COGHINAS) 164
Fauser synthetic ammonia system which yields 10 m. tons NH_3 per day.
This product is dissolved in water and pumped via a pipe-line 18 Km. to the OSCHIRI plant.

(d) Sulphuric acid Plant (OSCHIRI)
Four pyrites Lurgi type furnaces, 8 lead chambers and the usual Glover and Gay Lussac towers are all in operable condition. A small unit which converts ammonia into 1.0 m. ton of nitric acid per day furnishes the nitric acid required in this sulphuric acid plant.

Sulphuric acid production 45-50 m. tons 50°Be per day.

(e) Ammonium Sulphate (OSCHIRI)
In this plant the ammonia solution from Coghinas is combined with sulphuric acid in the usual equipment: two stills, three saturators, two centrifuges and auxiliary tanks to yield 42-45 m. tons product per day.

IV. REQUIREMENTS:

(a) Electric power: 3,600 - 3,800 KWH per m. ton of ammonium sulphate produced.
For normal production of 42 m. tons per day, 6,500 KVA are required.
It is reported that water now in the hydroelectric storage basins is at a very low level. The lack of electric power will, of course, limit operation of this plant.

(b) Pyrites for sulphuric acid production: 750 m. tons of Tuscan or Spanish pyrites per month required.

(c) ...overleaf..

(c) Miscellaneous requirements:

1. Sacks for shipment of ammonium sulphate.
2. Lubricating and transformer oils.
3. 100 m. tons Sardinian coal per month.
4. Rubber tubing 30 mm. 50 metres. Rubber tubing 38 mm. 50 metres.
5. Rubber belting 50 mm. 100 metres. Rubber belting 70 mm. 100 metres.

V. TRANSPORTATION.

Double track sidings in plant connect with lines to all points in the island and port. This company formerly owned a fleet of small vessels which carried much of the product to the mainland. None of these vessels, nor any lorries for local transport remain.

VI. PERSONNEL.

Dr. Fadda, plant manager, is on the premises and is deemed to be efficient and capable. Sufficient labour is available locally and technicians are said to be at short call.

VII. RECOMMENDATIONS:

It is recommended that serious consideration be given to reactivation of this plant. Difficulty in transporting raw materials to the island and fertilizers to the mainland is a grave bottleneck. Consumption of nitrogenous fertilizers on the island to a higher degree than formerly should be encouraged.
The matter of increasing water storage to provide adequate power is a matter of great importance. The availability of hydroelectric power is the chief determining factor as to whether this plant can be operated.

::::+::::

Appendix "B"

Possibilities of SUPERPHOSPHATE FERTILISER PRODUCTION

(all Montecatini Plants except (14)

Name & Address of Plant	Condition of Plant (a)	Estimated time for reconstruction (months)	Production-monthly		Monthly Raw Material Require		
			Normal (b)	Planned (c)	Phosphate Rock (d)	Pyrites (d)	Nitric Acid (d)
REGION I			m. tons	m. tons	m. tons	m. tons	m. tons
1. Tomasso Natale, Palermo	G —	—	2100	2100	1200	600	12
2. Campofranco, Agrigento	G —	—	2100	2100	1200	600	12
3. Licata, Agrigento	N	—	—	—	—	—	—
4. Bicocca, Catania	N	—	—	—	—	—	—
5. Milazzo, Messina	N	—	—	—	—	—	—
REGION II							
6. Crotone, Calabria	G to P —	3	2000	1800	1000	500	11
APULIA							
7. Barletta	G —	—	4000	2500	1600	700	15
8. Brindisi	G to P —	2	2700	—	—	—	—
9. Taranto	G to P —	2	2500	—	—	—	—
10. Gallipoli	—	—	—	—	—	—	—
REGION III							
11. Bagnoli	N	—	3300	—	—	—	—
12. Portici	G to P —	2	1700	1500	850	450	9
13. Pontecagnano	G —	—	1800	1100	650	300	6
14. Cancello (Naples)	P	7	1200	1200	700	350	7
REGION VI							
15. Sarda Ammonia Plant, Coghinas Oschiri	G —	—	—	—	—	—	—
			23.400	12.300	7.200	3.500	71

Total Import Requirements per month:

Phosphate Rock	7,200 m. tons
Pyrites	3,500 » »
Nitric Acid *	71 » »
Paper Sacks (50 Kg. content)	246,000

* Should it be decided to import Sodium Nitrate inplace of Nitric Acid, 800 Kg. of the former will suffice for each metric ton of Nitric Acid listed in column 8.

Appendix "B"

ER PRODUCTION in Sicily, Liberated Italy, and Sardinia

ini Plants except (14) and (15))

nthly Raw Material Requirements			Remarks
Pyrites (d)	Nitric Acid* (d)	Sacks (d)	
m. tons	m. tons		
600	12	42.000	Equipped to burn either Sulphur or Pyrites. Recommended use Sicilian Sulphur.
600	12	42.000	Recommended for reactivation.
—	—	—	Reconstruction not recommended, on data in hand.
—	—	—	These plants not surveyed: reported extensively damaged.
—	—	—	
500	11	36.000	Recommended plant be reactivated for Superphosphate production.
700	15	50.000	Recommended plant be reactivated for Superphosphate production
—	—	—	Plants not surveyed. In Military occupation. No stocks of raw materials or Superphosphate.
—	—	—	Plant under construction: building work suspended.
—	—	—	See Appendix 'A'
450	9	30.000	See detailed information in Appendix 'A'
300	6	22.000	» » » » »
350	7	24.000	» » » » »
—	—	—	No production.
3.500	71	246.000	

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N. B. — Considerable variation will be observed in the figures for raw materials in the reports on individual plants (Appendix 'A'). These figures were provided by plant managers, and have been screened for the purposes of this report.

a. G — Good, operable after minor repairs.
P — Poor, operable after major repairs.
N — Non-operable, except after expenditure of uneconomic amounts of labour and materials. To be considered for cannibalisation.

b. Pre-war production.

c. Production resulting from present plans.

d. Required in accordance with present plans for rehabilitation.

APPENDIX B.

RAW MATERIAL REQUIREMENTS (SUPERPHOSPHATE PRODUCTION).

(Quantities required monthly)

Plant.	Phosphate Rock 65/70%	Pyrites.	Nitric Acid	Sodium or Nitrate	Paper Sacks. +
Prompt Shipment	m. tons.	m. tons.	m. tons.		
1. Campofranco	1200	600	12	10	42,000
2. Tomaso Natale	1200	600	12	10	42,000
3. Barletta	1600	700	15	12	50,000
4. Portici	850	450	9	7½	30,000
5. Fontecagnano	650	300	6	5½	22,000
	,Repeat above monthly.				
Shipment 3 months hence (i.e. increase 3rd shipment and later ones by figures below).					
6. Crotone	1000	500	11	9	42,000
Shipment 7 months hence (i.e. increase 7th shipment and later ones by figures below).					
7. Cancello	700	350	7	6	24,000
Therefore:-					
1st shipment	5500	2050	54	or 45	186,000
2nd "	5500	2050	54	or 45	186,000
3rd "	6500	2550	65	or 54	228,000
4th "	6500	2550	65	or 54	228,000
5th "	6500	2550	65	or 54	228,000
6th "	6500	2550	65	or 54	228,000
7th & following	7200	2900	72	or 60	252,000

+ Sacks 2 or 3 ply to carry 50 Kg. 50 c/m x 100 c/m (3 ply 65 gm p. sq. metre preferred).

DISCHARGE PORTS FOR SUPERPHOSPHATE RAW MATERIALS AND MONTHLY QUANTITIES.

	Phosphate Rock. m. tons.	Pyrites. m. tons.	Nitric/ Sodium Acid / Nitrate. m. tons. +	Paper Sacks	To Commence.
REGION I.					
Palermo/Catania.	2400	600	24/20	84,000	Promptly.
REGION II.					
Crotone/Taranto Gallipoli	1000	500	11/9	42,000	3 months hence.
APULIA.					
Barletta/Bari.	1600	700	15/12	50,000	Promptly.
REGION III.					
Naples.	1500	750	15/13	52,000	"
"	2200	1100	22/19	76,000	7 months hence & repeat each subsequent month.

+ Alternatively Nitric Acid or Sodium Nitrate.

COMPAGNIA NAPOLITANA
D'ILLUMINAZIONE E SCALDAMENTO COL GAS
NAPOLI - Via Chiaia, 138

Ing. Paolo Costa

capo stabilimento Ilva Azoto Terni

Salita Piedigrotta N. 3
interno 19

Highly recommended - A little
English - modest -
L. W.

Ing. Roberto Tedesco -
Very good - very little English -
modest - L. W.

Mod. 34 D. - Stab. Tip. l'Espresso - 100 blocchi) - 10.939

Naples, April 15th 1944

General Sir FRANK N. MASON MACFARLANE Esq.
Chairman of the Allied Control Commission
N A P L E S

Dear Sir,

I beg you to be kind enough to excuse the liberty I am taking of writing without having had the honour of being introduced to you.

I have just come back to Naples from the Molise where, last September, I have been caught by the events while spending a short vacation with my family refuged up there, and I am now anxious to offer you my sincere, enthusiast and loyal cooperation.

Gratuated, in 1921, doctor of mechanical engineering at the Royal Polytechnic of Turin, I went to New York to specialize in Electrical Engineering with the New York Edison Co.

From 1925 to 1927 I cooperated, as assistant Electrical engineer, with the Electric Bond and Share Co., associated to the General Electric Co.

I have been sent to Rugby, in 1928, to specialize in steam turbines and turbo-alternators design and construction with the British Thomson Houston Ltd and then to Paris for steam boilers, steam condensers, Diesel motors and large steam power plants.

In 1929 I joined the Aluminium Limited, associated to the Aluminium Company of America, in Zurich and later in Geneve, Milan, Genoa and Rome to take care of the plants to be built in Italy

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When Alluminium Limited, in 1935, decided to liquidate all investiments in this country, on acconnt of the knowh difficulties created by the fascist government, being I not allowed to leave Italy as an officer of the Italian Army, was compelled to accept a position with Ansaldo S.A. in Genoa and, at present, I am manager of the ~~main~~ branch office in Naples for Southern Italy and Sicily.

While I am enclosing herewith some copies of certificates regarding my training, I wish to assure you I have gained a through knowledge of all technical and economical questions related to the organization and control of important industrial concerns.

It may be interesting to know that I am in possession of the first paper of citizenship of the United States of America n°213394 dated August 12th 1926, have always been antifascist, but free from political and financial connections, and I know personally the most influent Italian business men.

About my correctness and honesty you may refer to.

P. Torchio - Vice President of the New York Edison Co.

EA. Silver - Chief Electrical Engineer of the Electric Bond and Share Co. New York.

T.H.M. Nichols of the British Thomson Houston Ltd. Export Department Rugby.

W.C. Bins Manager of Aluminium Limited - Staten Strasse 6 - Zurich.

While I consider myself at your disposal for the kind of cooperation you may judge best suited for your purposes, I wish to inform you that I have no particular reasons to remain in Naples and therefore, shall be always willing to follow you in Rome and in Northern Italy.

Thanking you in advance for your kind interest on my behalf, I beg you to accept my best greating and remain

yours faithfully

Note: He is making

T.H.M. Nichols of the British Thomson Houston Ltd. Export Department
Rugby.

W.C. Bins Manager of Aluminium Limited - Staten Strasse 6 - Zurich.

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yours faithfully

Mr. Doct.Eng. AGOSTINO CASCIATI
Villa Ammendola
SAN GIUSEPPE VESUVIANO (per S.Leonardo)

Note: He is making 15.000 Lire monthly with Anzaldo - High standard, excellent connections but too expensive -
L.W.

Mr. Wickersham (File)

ALLIED INFLATION COMMITTEE (ITALY)
INDUSTRIAL REHABILITATION SUBCOMMITTEE

(Meeting of 20 May 1944)

Members Present:

Colonel Norman E. Fiske (A)
Colonel W. P. Evans (B)
Major W. T. Maskrey (B)
Capt. W. E. Mydans (A)
Mr. H. Glasser (A)
Mr. E. M. H. Lloyd (A)
Mr. L. C. Wickersham (A)

In this first meeting the work done in the last eight months by the Industry and Commerce Subcommission, Allied Control Commission, was briefly described and the present conditions of the heavy industry and chemical plants in liberated Italy analyzed. The requirements of the civil population in regard to clothing and shoes were set forth. It was decided to have a report prepared within a week or ten days giving a concise picture of the present situation in regard to:-

1. Electric Power
2. Fertilizers
3. Cement (and paper bags)
4. Chemicals (Sulphuric Acid, Soda)
5. Textiles and Shoes

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1. Electric Power
2. Fertilizers
3. Cement (and paper bags)
4. Chemicals (Sulphuric Acid, Soda)
5. Textiles and Shoes
6. Small tools, machine parts
7. Availability of means of transportation for delivery of above items

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It was also decided to invite to future meetings Mr. Livengood, former Commercial Attache in Rome. Next meeting will be held as soon as the required reports have been prepared.

Second meeting held 26 may - Col Fosla has the minute - L.W.

Col. Fiske's copy

INTERIM REPORT ON HEAVY INDUSTRIES IN LIBERATED ITALY

PREPARED BY INDUSTRY & COMMERCE

SUB-COMMISSION, ALLIED CONTROL COMMISSION

INTERIM REPORT ON HEAVY INDUSTRIES IN LIBERATED ITALY

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SUB-COMMISSION, ALLIED CONTROL COMMISSION

INTERIM REPORT ON HEAVY INDUSTRIAL PLANTS IN LIBERATED ITALY

Preliminary remarks

It is intended that this report should follow the same general lines as those already prepared by Industry & Commerce Sub-Commission ACC on the Fertiliser and Cement Industries in occupied Italy. It is not claimed that the reviews of individual plants which follow are exhaustive or that they do more than present an overall picture of the situation. From these surveys however, a more or less current picture can be gained, thus enabling broad policy on rehabilitation to be formulated. Much care has been exercised to present each report in a realistic light, having regard primarily to military requirements in production potential. Reviews in each case have been made bearing in mind the deficiencies of other partly-destroyed plants already surveyed. For this reason the grim but descriptive word « cannibalisation » will often be discovered lurking in the penultimate paragraph of surveys.

Personnel with technical knowledge enabling accurate estimates of production possibilities are necessarily not available to ACC in sufficient numbers to enable a completely detailed survey to be presented in each case. It is however felt that with the cooperation of the Italian authorities, an organisation, perhaps directly controlled by Allied officers and experienced personnel could be formed for this purpose. Many skilled Italian technicians and workpeople from demolished plants are on the open labour market, and could be recruited for the work. Parenthetically, as regards controlling staff, it should be noted that the present top salary for highly skilled Italian supervisory engineers and technical experts of 9,600 lire per month is quite

inadequate to attract the quality of personnel desired. Consideration and action is sought for the creation of a special classification of personnel for this work, the experts of which should receive a higher and more suitable level of remuneration.

It has been increasingly borne in upon the inspecting officers that damage from aerial or artillery bombardment is of secondary importance to that caused by the skilled demolitions carried out by the Germans on the engineering equipment of their late Ally. In a plant damaged more or less haphazardly from the air or by gunfire, many machines and installations escape or are lightly damaged; and production can often be resumed on a reduced scale with small delay. The German expert destruction policy aimed at, and achieved a complete stoppage of production within a measurable period of time. Batteries of machines suffered systematic destruction in the same part throughout, by the application of HE or in the case of electric motors, by drenching with petrol and subsequent burning. To complete the chaos power lines, transformers and switch gear were destroyed, and the factory buildings with overhead conveyors and cranes brought crashing upon the machines beneath.

In each and every engineering plant surveyed, valuable raw and part-worked materials as well as some repairable or undamaged auxiliary machines, lie exposed to the weather, and have already suffered serious deterioration. Damage by weather is moreespecially to be regretted in the case of valuable alloy-steel stocks. Hundreds of tons of these materials, priceless in the conditions of today, lie exposed to weather and to other dangers.

A point which is of considerable importance is that of the occupation of manufacturing engineering plants by military units. At the time of actual military operations it can be well understood that factory buildings must be utilised as billets. It can also be understood that consumable stocks on the premises will be utilised for any purpose which seems essential or desirable by the military. When the Engineer services of the Allies arrive on the scene it is frequently the case that they utilise or remove any item of machinery which they need. Urgent operational requirements obviously come before any short-or long-term manufacturing policy or needs (no matter of what importance the latter may be) but it is evident that

a) a good deal of thoughtless damage is done which requires Allied effort later to restore;

b) plant is often removed. In some cases the removal of one small machine-tool or motor causes the stoppage of a complete manufacturing program, because replacements are not available from domestic sources, and in the present emergency are not obtainable elsewhere in countries under Allied control.

After operations have moved forward, it is found that useful plants are either occupied as billets, dumps or stores, or are taken over by Engineer units who can use only a very limited partof the plant or space. They have little interest in the rest of the factory, except for the purpose of searching the ruins for small tools or parts for use in or repair of their own equipment. There appears to be at the moment no machinery by which the vacation of a useful plant by the military can be secured, or if once secured, can be maintained. When one unit moves on, and efforts at cleaning up and rehabilitation commence, there seems no regulation which prevents another unit from taking over, thus putting a stop to all activities. Some system is considered to be urgently necessary by which these anomalies can be avoided.

Recommendations

(1) By means of « cannibalisation », a useful amount of productive capacity in the fields covered by this report to date, can be achieved. Certain repairs should be made to a number of factories, as soon as cement and other constructional materials can be made available. Only such reconstruction as is urgently necessary should at the moment be undertaken, to enable machinery capable of being put into operation to be protected from the weather.

(2) Inventories should be made of all raw and partly finished materials lying in the various plants. It can then be considered what use can be made of these (mostly scarce and critical) items in occupied Italy or elsewhere. Amongst them figure:

a) Brass, phosphor-bronze, copper, white metal and aluminium castings, rods, shapes and sheets.
b) Alloy steels in the form of ingots, drawn bars and sections.
c) Steel billets, mild, carbon and alloy.
d) Mild Steel Rods, sheets, plates, wire, sections, chequerplates.
e) Press-die steels in blocks.

Such inventories require skilled personnel, and much time to prepare.

(3) An inventory should be made and recommendations submitted in connection with plant equipment not at the moment capable of being put into action where it stands i. e. gas cylinders and bottles, motors, openhearth furnace equipment, electric magnets, lathes.

(4) Scrap, of which many thousands of tons exist, should be catalogued and disposal arranged.

Gathering of information on industrial potentialities is an essential prerequisite to the efficient utilisation of Italian resources in the war effort. It is therefore recommended that adequate skilled personnel be made available to expedite this labour.

This report is not intended to be considered as being complete: additions will be made as further opportunities occur for surveys to be carried out and as additional territory falls into the hands of the Allies. The surveys which follow were carried out by Major W. J. Maskrey, Captain W. E. Mydans, and Captain T. G. Elliott of Industry and Commerce Sub-Commission, HQ A. C. C.

REPORT ON ANSALDO ORDNANCE WORKS - POZZUOLI

1. This establishment was an important one employing in 1941 a total of about 2500 workpeople and consuming annually 7.200.000 kwh of electric power. It was a large and well developed ordnance factory, equipped with the most modern machine-tools and production layout and is now a complete shambles of devastation as a result of the most efficient and effective demolition-mining so far seen by these inspecting officers. Almost every machine-tool was individually mined. Long rows of lathes, milling machines, radial drills, planers and hydraulic presses were destroyed by placing explosive charges in gear boxes or machine beds, and in almost every case the machine was destroyed in the same way so that reassembly to secure one good machine from 5 or 10 demolished machines is not usually possible. Electric motors were in almost every instance, destroyed by fire or explosive.

2. This plant is under the control of REME who are endeavouring to recover a few usable machines and to set up a relatively small repair shop. U. S. Army engineers are cutting out steel beams from demolished buildings for use as roadbridge trusses.

3. There are available in this plant considerable stocks of valuable materials which should be thoroughly explored and catalogued in order that they may more rapidly and fully serve the Allied effort. Among the valuable materials present there are:

a) Large quantities of steel billets, mild, carbon and alloy.

b) Large stocks of flat steel sheets in a multitude of thicknesses; also steel checkerplates.

c) Large stocks of alloy steel bars, rods, hexagons, tool steels, etc.

d) Much phosphor-bronze, brass, white metal and copper, both as parts, sections, wire and scrap.

e) Heavy blocks of press die-steels.

f) Some electrical switch-gear and transformers.

g) Much high-pressure steel piping and valves available by cannibalization of the extensive hydraulic system.

h) 25 high pressure Hydraulic cylinders of 1005 litres water capacity and 4000 psi pressure. These cylinders are of great value, are very difficult to build and are critical items in U.S.A. and U.K.

i) From destroyed machines, many valuable tools and parts may be recovered such as lathe chucks, reamers, milling cutters, endless rubber belts, pulleys, shafting.

j) Much heavy steel scrap suitable for export.

k) Large amounts of aluminum electric wire, cable and busbars.

Recommendation

It should be pointed out that while this plant is under the control of REME, it would appear that their interest is limited. A very heavy program of recovery should be instituted at once. This, for the reason that at the present moment alloy steels of very high intrinsic value and of very scarce provision are lying unused and exposed to rust and corrosion.

While deterioration by exposure to the weather proceeds, these valuable and critical stocks contribute nothing to the allied effort. Such materials are subject to the most extreme rationing in U.S.A. and U.K.

Whilst the non-ferrous items are not subject to such rapid deterioration as the quality steels, they are in exceedingly short supply and of great intrinsic value.

REPORT ON ILVA STEEL WORKS — BAGNOLI

General

This concern is a large iron and steelworks of the most modern design and construction. It is the largest and most modern plant in Italy and compares favourably in size and design with any plant in Great Britain or the United States. Its main items of plant and equipment are as follows:

1. Two large batteries of Coke Ovens.
2. Three Blast Furnaces.
3. Sintering Plant for the Ores.
4. Siemens Martin Open Hearth Steel Plant.
5. Thomas Steel Plant.
6. Electric Furnace Steel Plant.
7. 1150 M/M Blooming Mill.
8. 920 M/M Rail and Section Mill.
9. 750 M/M Rolling Mill.
10. Two smaller mills 450 M/M and 350 M/M for small sections, rounds and strip rolling.
11. All ancillary plant necessary to make an integrated and balanced steelworks.

The whole of the plant and design with the exception of the three blast furnaces are of German origin.

A most thorough job of demolition has been done by the Germans, and there can be no such thing as a short term reconstruction programme. The following items of plant are the *least* damaged: 1) Coke Ovens, 2) Thomas Steel Plant 3) the Blooming Mill; and to get these items working would take at least 9 months, and they would be of little value except for breaking

down ingots to blooms. Partly finished steel would have to go to other plants for re-processing, calling for considerable transport and extra handling.

Given supplies of roofing material, replacements to demolished plant and the importation of coal, it would take 2 years and the expenditure of considerable sums of money to put this plant into anything approaching its former condition, (this, assuming replacement items are availalble on the world market).

Plant details

1) *Coke ovens.* A modern plant only comparatively lightly damaged, designed to use Welsh and Durham coal. A considerable number of the large gas pipes have been removed by the U. S. Engineers for bridge building. Could probably be on part production in six months.

2) *Blast furnaces.* Three blast furnaces, Italian design and construction. All elevating gear has been damaged. The firm's representatives consider one complete unit can be salvaged by a process of cannibalisation. These furnaces worked on imported North African ores and were designed for an output of 1200 tons per day.

3) *Sintering plant.* This unit is reasonably intact, its rated output is 1200 tons per day.

4) *Siemens martin open hearth steel plant.* This consisted of 5-70 Ton Furnaces with one hot metal mixer. Two of these furnaces might be rebuilt, but overhead tapping-crane, structure of the building and charging machines are extensively damaged. The gas producers were alleged to be intact. At least 12 months work to put this plant in order.

5) *Thomas steel plant.* This consists of 4 Converters each designed for 30 tons per hour each. Only one of these converters ever worked, as the plant had only just been completed at the moment when it was wrecked. It might be possible to get one of these converters working in a period of 6 months.

6) *Electric furnace steel plant.* This has been thoroughly wrecked, and even if power could be made available it can be written off for a long period.

7) *Rolling mills.* These have been thoroughly damaged by explosive charges, and the roof beams and trusses dropped onto the mill floor. The housing of the 1150 m/m mill was intact but the ingot turning manipulators had been destroyed by explosive charges. The gear boxes of the run-out

tables had been wrecked. Damage of varying degree had also been done to the other mills. As all these mills are interconnected and each a part of the final process, the putting to work of one or any part would not be a solution. A complete re-building of this part of the plant is necessary and would take a considerable period of time (at least 12 months).

It should also be mentioned that the steam raising plant, Power house and blowing engines were heavily damaged and would require a long term programme to rehabilitate.

The only shop capable of any immediate work is the firms engineers or maintenance shop and this is at present fully employed on bridge work for the Army Authorities. A large proportion of the plant in this department is old and out of date.

Remarks

1) Any kind of roof covering is virtually non-existent — enormous quantities of galvanised sheeting would be required to cover the plant.

2) We were informed that the complete plant cost 580,000,000 lire or approximately L. 6,300,000 (pre-war) to construct.

3) The plant in its present form was only completed immediately pre-war and never really got into full production.

4) Available throughout the works are approximately 20,000 tons of blooms and ingots. This material is of little use in its present form, but could be made use of by reprocessing down to rails or sections either in other plants in liberated Italy (if available) or in U. K. or U. S. A. In its present state it is contributing virtually nothing to the Allied War Effort.

Conclusions and recommendations

1) Any possibility of short term reconstruction is out of the question.

2) A reconstruction policy would call for the expenditure of a large sum of money and the importation of heavy replacement parts which would have an extended delivery date (even of they were available on the world market). The fact that the plant is of German origin would complicate this problem.

3) The large stocks (20,000 tons) of ingots and blooms should if at all possible be put to use, either on other plants in liberated Italy or in the U.K. or U. S. A.

4) Another tangible asset available for immediate use is some hundreds of expensive forged steel rolls of various sizes, and ancillary equipment for the mills. These are of no use where they are, other plants could probably utilise a portion of this equipment.

5) The firm's chief metallurgist (Dott. Ing. CIRIL REKAR) who accompanied us round the plant gave the impression of being a man of wide experience in the steel trade and of a go-ahead outlook.

6) It is suggested that should any policy for the reconstruction and rehabilitation of this plant be undertaken, enormous quantities of coal will require to be imported from either U. K. or U. S. A.

7) Considerable shipping space will also be required for the importation of the necessary raw materials in the form of iron ores.

8) Any reconstruction would also require large quantities of oxygen. It is well-known that supplies of oxygen in liberated Italy now and in the near future are very short.

REPORT ON SILURIFICIO TORPEDO PLANTS — BAIA & FUSARO

General.

This Company had a captial of Lit. 27,000,000 and an investment of Lit. 57,000,000. It employed in 1941 about 3500 hands.

The establishment has been thoroughly investigated. It is especially laid down for the production and assembly of torpedoes for the Royal Italian Navy and the Italian Air Force. The works are divided into two units, a) Baia and b) Fusaro. The original plant at Baia consists almost completely of special purpose torpedo machinery and has suffered extensive damage to buildings and machinery from both aerial bombing and intensive demolition mining. Due, however, to the fact that individual machines in a large number of cases were not separately destroyed, considerable salvage work is possible, but exposure to the weather is having a serious effect on valuable plant.

The works at Fusaro contain a large number of expensive and modern machine tools, a great part of which can be salvaged, as only the buildings at this place were wrecked. These building were of re-inforced concrete construction. These were mined and allowed to drop on to the machines, so that the damage to the machinery consists largely of wreckage caused by falling masonry and corrosion due to long exposure to the weather. The use of fire as a destructive agent was also employed.

Plant Details.

1. *Baia Works*: These works handled the heavy machining of the torpedo chambers, the warheads and the general assembly and testing. Most of the plant in this works is especially designed and constructed for torpedo work and it is difficult to visualise what other work this plant could do.

Efforts have been made by the management to salvage certain machinery and they have laid out a small machine shop and are now making 1'' dia. nuts and bolts on contract for the Royal Navy. Further efforts to reclaim certain plant are in progress in this connection, although it was understood from the management that the firm are running towards the end of their financial resources. They also stated that, after salvaging plant at their own expende it was then requisitioned and they found this process rather disheartening.

Large numbers of torpedoes in various stages of manufacture were observed throughout the works. There were approx. 250 rough machined chamber forgings (it was understood these came from Sta' Cogne, Val d'Aosta, Piemonte). Numerous war-heads in various stages of manufacture, quantities of propellors, motors and other parts were observed.

There was also a considerable number of finished torpedoes, and a further quantity under repair for the Royal Italian Navy. The firm had also managed to salvage and put to work their valuable testing equipment. Considerable stocks of blooms, billets, bars and flats were also noticed.

2. *Fusaro works*: These were a completely new works, finished just prior to the outbreak of war. Their main job was the production and assembly of the driving motor. They also had a brass and iron foundry, forge and smithy, and special purpose machinery for bending and fabricating the rear portion of the torpedoes.

Except for a large office block, one other building and also the works canteen, the buildings of this plant have been thoroughly wrecked.

The buildings were of re-inforced concrete construction and considerable expenditure in time, money, and labour will be involved in clearing the debris away from the machinery. The machinery buried, however, is of such value that it is urgently recommended that consideration be given to this proposal.

The firm themselves have shown energy in endeavouring to salvage plant, and have rescued large numbers of general purpose centre lathes, slotting and shaping machines, horizontal borers, radial and pillar drills, vertical and horizontal milling machines.

In addition the plant installed in the heat-treatment shop in the form of nitriding and annealing furnaces are repairable. The following items of heavy plant are also of interest:

a) 2 Hydraulic Presses approx. 400 tons

b) 1 Hydraulic Press 150 tons

c) Large Bending rolls about 10'-0'' long

d) 1-500 Kg. Power Hammer complete with furnace equipment in working order

e) Complete Sandblasting Unit

f) Pickling Plant, and

g) Low Pressure Acetylene Plant.

In addition the hydraulic pumping plant and accumulators are intact and undamaged.

Large quantities of valuable parts are being salvaged by the firm, e. g. engine cylinders, engine crankshafts, piston rings, light alloy castings, ball and roller bearings, etc.

GENERAL INFORMATION.

1. The firm's output was given as 120 Torpedoes per month, plans were in hand to step this up to a figure of 300 per month.

2. A very high degree of technical skill is evident in the work turned out by this plant, and they evidently possessed a large reservoir of highly skilled workmen and technicians.

3. The following representative of the firm were met:

Sig. Dr. Ing. Riva (Technical Manager)

Sig. Dr. Ing. Ricci

Sig. G. Stowasser (Commercial Manager)

They gave the impression of being men of energy and ability and eager to cooperate in any allied activity.

4. The work involved in the manufacture of torpedoes is engineering of the very highest degree, and the management have not been content to wait, but have made considerable efforts to help themselves and have shown commendable initiative.

RECOMMENDATIONS & CONCLUSIONS.

1. Repairs to torpedoes can be carried out at the BAIA Factory, for the Italian Navy.

2. The question of rehabilitation of this plant for the complete manufacture of torpedoes would be a long term policy calling for large reinvestment of capital and the use of much crtiical materials. It is also pointed

out that the rough machined forgings would have to be imported from U.K. or U.S.A. as there are no plants in Southern Italy capable of doing this part of the process. It is therefore, not recommended that the manufacture of torpedoes be resumed.

3. It is strongly recommended that assistance be furnished the company to proceed *rapidly* with the salvage work necessary to recover the remainder of the plant, particularly at the Fusaro Works, and especially to interrupt the serious inroads of corrosion of much fine machinery lying exposed to the elements.

The company's funds for this work are nearing exhaustion, and the managers are growing discouraged in the face of extensive requisitioning of machines after they have been recovered from the wreckage, repaired, cleared of corrosion and set in order, all at the expense of the company. It is submitted that some fair policy should be adopted, such as the selection of machines for requisitioning before the company has expended its limited funds in recovering them; then making funds available for the specific recovery of the selected machines.

Some funds have been promised the company by the Italian Government on account of the Royal Navy, but this appears to be contingent on their setting shops in order to undertake Italian Navy work. Requisitioning of machinery recovered for this purpose by Allied Services has made the setting up of such shops virtually impossible and no funds have been forthcoming on that score.

The machinery is of such a wide and diverse character that it would be possible to utilise all or part as a complete unit for the re-building of engines, transmission shafts, repairs to ordnance and tanks, etc.

4. One of the biggest assets of this plant is the large reservoir of highly skilled Italian mechanics. In order to employ these people usefully in the Allied effort, and further to afford them some means of a livelihood, it is recommended that the company be aided to set up some shops and to undertake large scale automobile, tank and ordnance repairs, the rebuilding of engines and the like, under contract with either U. S. or British Ordnance, or both. The plant managers expressed much interest and a willingness to do all in their power to further such a project.

The main difficulty would be the provision of the necessary buildings. At these works there are three shops in a reasonably undamaged condition. They are at present occupied by U. S. and British Troops as billets and it

was gathered these troops changed monthly. There is sufficient space in these buildings to make excellent machine shops in which the company could undertake work for the Allied Services.

5. The plant is equipped with some special purpose profiling machines for the accurate machining of torpedo propellors. The possibility of using these machines for the manufacture of small propellors for the Navy or Army Amphibious Landing Craft should be explored.

REPORT ON PLANT OF NAVALMECCANICA — NAPLES

1. This important company has a share capital of Lit. 96,000,000, and an investment of Lit. 185,000,000. It employed in 1943 upwards of 6000 hands. Consumption of electric energy in normal years was 13,400,000 Kwh.

The plant was only partially destroyed by air and ground attack and the managers have shown commendable energy and initiative in restoring the establishment to operation, employing all means within their power.

2. The plant contains electric steel foundry, cast iron foundry and pattern shop, non-ferrous metals foundry, heavy and light machine shops equipped for a wide variety of operations.

They are prepared to build heavy duty air compressors, machine tools including lathes and radial boring mills, marine type winches, and a multitude of heavy industrial equipment.

This industrial establishment appears to have a large reservoir of highly skilled artisans. Its director, Sig. Ing. Vidulich-Premuda is a man of considerable organizing and operational ability. Sig. Ricciardi, deputy for Mr. Pattison, was also introduced. Commander Bonny, R. N., supervising the plant for Royal Navy purposes, accompanied inspecting officers on their tour of the factory.

3. Orders from the Royal Navy appear to be tapering off, and a considerable capacity for heavy industrial machine operations is now available. Attention is called to this fact, for such capacity is scarce in present-day Liberated Italy, and efforts should be made to keep this installation working at its utmost capacity.

4. Some consideration should be given to securing certain pieces of important machine tools needed to round out more fully the capacities of this plant particularly large bending rolls, shears, and plate bevellers. Be-

cause this industrial unit contains the trained personnel to make full use of such machines for the Allied Effort, and because the plant manager appears to be sympathetic toward our cause, it is recommended that HQ/ACC give what assistance it can toward:

a) Further equipping the plant at the expense of other plants so severely damaged as to be without value to the Allied Effort for the duration of the emergency, and

b) making fuller use for the Allied Effort of the facilities now available at this establishment.

5. In this respect, it is to be noted that the Navalmeccanica plant is well adapted to undertake work of urgent importance, i. e. repair of Italian rolling stock. There are in liberated Italy at the moment about 1000 steam locomotives, 400 electric locomotives and 200 Diesel locomotives, together with about 30,000 goods wagons. Most of these are in bad repair, and it is recommended that consideration be given to allotting work of this urgent nature to Navalmeccanica. It may be considered advisable to transfer for this purpose materials suitable for the work, now lying unused at the Ansaldo Works, Pozzuoli.

REPORT ON ALFA ROMEO AIRPLANE WORKS

1. This plant employed in 1943 over 5000 hands and consumed annually at its aeroplane plant 7,200,000 Kwh.

At the inception of the Allied bombing of Italy, the Alfa Romeo Airplane Works at Pomigliano, Naples, embarked on an ambitious project of transferring the bulk of their fine and modern machinery to the San Rocco Caves, there to continue operations under conditions of comparative safety. These caves, hewn in ages past from solid sandstone, have the proportions of cathedrals, and after extensive floor levelling and the installation of electric power lines, transformers and auxiliary gear, made almost ideal wartime factories. There, most of their machine tools were installed with careful attention to desirable plant layout, and the production of airplane motors and machined parts was resumed with vigor.

2. The main plant of Alfa Romeo at Pomigliano, adjacent to the airport is of vast proportions and its many buildings and equipment were thoroughly modern, with much American, English and German machinery. Large underground warehouses exist for the storage of raw materials. After the transfer of most of the machine operations to the San Rocco Caves, there remained at Pomigliano a fine hydraulic press plant with a modern pump and accumulator system, storage and assembly units.

3. Before evacuating Naples, German demolition units removed Alfa Romeo effectively from usefulness to the Allied Effort for the duration of the emergency.

a) *Pomigliano*: Almost all buildings were wrecked, as well as practically all important machine installations. Giant hydraulic presses had their beds blown out, forges, hammers, electrical transformers and switch gear were wrecked.

For some strange reason, the hydraulic pumps and accumulators appear to be undamaged. Detailed investigation of this unit was rather cursory for fear of residual mines. This equipment is of great value and the possibility of its use elsewhere in the Allied Effort or export to U.S.A. or U.K. should be thoroughly explored.

Present also at Pomigliano are stocks of virgin aluminum ingots, sheet, and alloys. Also available is a large electromagnet suitable for loading steel scrap for export.

b) San Rocco Caves: All machines in these caves were individually and thoroughly destroyed by German demolition. Aside from recovery of lathe chucks and other small machine parts, almost all of this equipment may be regarded as scrap. Many hundreds of machines are so involved. These destroyed machines have been removed in large measure from the caves to make room for RAF storage of materials there. Most of the damaged machines have been returned to Pomigliano there to be scrapped or otherwise dealt with by the Alfa Romeo Company.

4. The plant at Pomigliano is under control of the U. S. Air Force. That at San Rocco Caves is under control of the RAF.

5. *Recommendations*:

a) No consideration should be given to reconstruction of the plant at Pomigliano.

b) The stocks of metals and engineering materials should be referred to the AFLR (I) B for disposition.

c) The electromagnet should be referred to AFLR (I) B for transfer to the docks or other locality where advantageous use of it could be made for loading and unloading scrap steel.

d) Extensive cannibalization of existing miscellaneous tools, materials and scrap both at Pomigliano and at San Rocco Caves.

REPORT ON BOMBRINI-PARODI-DELFINO PLANT — NAPLES

General.

This Company, the extent of whose capital and investment is unknown to this Sub-Commission, has an extensive and well designed plant for the production of cartridge cases and sintered iron bands for artillery ammunition. The factory buildings are extensive and well laid-out, but the main part of the plant is housed in a system of caves at the rear of the factory buildings. The inspecting officers were able to inspect the caves only by means of flash-lamps as no complete electric lighting system was functioning.

These caves have been driven into the cliff side by Italian engineers, are of recent origin, and in total will be at least 2 miles in length and all interconnected. They are perfectly bomb-proof. It was evident that the firm were in the process of installing and enlarging their plant in these caves, and it also appeared that this work had only been partially completed when the Armistice was signed.

The German demolition squads had only partially damaged this equipment and many thousands of pounds value of new tools and plant are installed in these caves. In addition, enormous quantities of valuable and critical materials are stored underground.

Attached as Appendix « A » to this report is a brief list of tools and materials noticed, and it is explained that this list is by no means complete. The only method by which a full inventory could be made would be to clear these caves out completely. This would take considerable time and expenditure.

The products of this plant were: (a) Sintered iron driving bands for artillery ammunition (b) Steel cartridge cases for 20 m/m ammunition.

Plant details.

The buildings and plant all gave the impression of being of modern construction and were probably completed just prior to or during the war. It appeared that the whole of the works was engaged on war production and there was no evidence of any civil background.

The main item of technical interest was the cartridge case plant. This plant consisted of large batteries of power presses, upsetting machines, trimming lathes, continuous annealing furnaces, and muffle furnaces. It was clear that only part of this unit had ever worked but the maximum output would probably be in the region of 250,000 cases per 100 hour week.

It was also noticed that these cases were being drawn down in one solid piece and details of the press tooling and heat treatment processes would no doubt be of great interest to British and U.S.A. ammunition production experts.

Details of the production of the sintered iron rings would also be useful if these can be obtained.

General information.

1. This is a fairly large unit and a small number of the machines are being recovered by the U.S. Engineers (PBS) under Major Hasie, for the production of nuts and bolts. A small shop is being laid out by them for this purpose.

2. Large quantities of valuable materials and plant are stored in the extensive caves in the hillside.

3. Three of these caves are now being used by the U.S. Supplies for storage of medical supplies, and another portion of the plant and caves are in the possession of U.S. Ordnance.

Conclusions & Recommendations.

1. This plant in its present form was designed and installed for the production of war materials.

2. It is recommended that a thorough survey and an inventory be prepared of the highly valuable materials and plant, now hidden away in the caves.

3. It is intended to try and obtain details of the tooling layout and

processes for (a) Steel Cartridge Cases and (b) Sintered Iron Rings for transmission to British and U.S. ammunition production experts and this will be the subject of a subsequent report. So modern and highly developed and complex is the process and equipment for the production of steel cartridge cases that it is suggested that metallurgical and ordnance experts from U.S.A. and U.K. be invited to study the plant and process with a view to securing highly valuable technical information. Much of the special machinery, particularly the upsetting machines are of German origin and this process, no doubt, includes the best and latest German technique.

4. The large coal-fired distilled water plant is at present operating only at infrequent intervals to produce water for the electrolyte oxygen-hydrogen plant. This unit has large surplus capacity and should be operated for U.S. and British Ordnance for distilled water for battery electrolyte.

The great value of the equipment and raw materials available at this plant indicate the probability of direct Italian Government finance or supply.

Appendix « A »

LIST OF MACHINE TOOLS, PRESSES & OTHER EQUIPMENT

AT BOMBRINI-PARODI-DELFINO WORKS — NAPLES

1. 7 Power Presses, crank driven medium stroke, good condition.
2. 10 Power Presses damaged in varying degrees.
3. Special Treatment Plant (20 rotary drum units).
4. Complete water distillation plant in good condition.
5. Blue print machine.
6. A number of unpacked porcelain resistance tubes.
7. A big quantity of water valves large and small.
8. A large number of pipe fittings and flanges.
9. A large number of hard rubber serpentines (pipe coils) (unpacked).
10. Numerous drums of Pirelli cable (various sizes) both lead and composition covered.
11. Drums of 24 strand bare aluminium electric cable.
12. Large quantities of switch gear (unboxed).
13. A quantity of high pressure piping.
14. 3 Electric Trucks (appeared in good condition).
15. 1-2 stage vertical compressor.
16. 1 Power Hacksaw.
17. Drum of lead piping, approx. 1½" dia.
18. Cyclone Separators.
19. Approx. 250 tons of 16 gauge black annealed wire.
20. Dozens of distilled water barrels.
21. A number of 2 Gallon Fire Extinguishers.
22. A number of tug-lift trolleys.
23. Approx. 20 full drums of oil (large).

24. 3 unpacked new weighing machines — 300 Kg. capacity.
25. Unpacked boxes of glass laboratory equipment.
26. Grab for oxerhead crane.
27. 18 Electric Heat Treatment muffle type furnaces, approx. 7'-0" square, some uncompleted.
28. 1 Mohr & Federhoff Tensile Testing Machine up to 10000 Kg. and 2 wrecked Brinell testing machines.
29. Large quantities of timber baulks from 6" to 12" dia.
30. Large quantities of timber planks approx. 1¼" thick.
31. Large continuous annealing ovens (new).
32. A number of sprocket chains of varying sizes.
33. Large quantities of finished and semi-finished cartridge cases.
34. Large numbers of sintered iron driving bands.
35. Several barrels of caustic soda.
36. Large numbers of special purpose machines for the fabrication of cartridge cases.
37. About 80 Electric Motors (25-35 H.P.).
38. Large quantities of cabling (Pirelli) steel tubing and aluminium bus bars.
39. Drums of resins, probably copal.
40. Drums of crystalline material resembling sileca gel.
41. Electric Transformers of various sizes.
42. Five large electric stress relieving furnaces about 7 feet high by 5 feet diameter, outside dimensions, 950° C maximum operating temperature.
43. Set of electrolyte cells producing oxygen and hydrogen, together with auxiliary gear, high pressure pumps, etc.

REPORT ON VISIT TO CELLULOSA-CLORO-SODA PLANT — NAPLES

I. GENERAL: Dr. Cotena — Acting Manager. 142,000,000 lire invested in Naples plant. Consumption of electrical energy annually was in normal times 15,800,000 Kwh. The plant employed 450 hands.

II. PRODUCTION: Plant formerly produced the following materials:

Caustic soda, both in solution and fused
Chlorine gas
Hydrogen gas
Hypochlorite of lime
Hydrochloric acid
Purified cellulose from straw or esparto.

III. PLANT: The plant is so thoroughly destroyed by German demolition mines that no part of it can be considered useful beyond salvage or cannibalization of isolated equipment or materials of value to Allies.

A. *Electrical Equipment*: destructions of transformers, converters (motor-generator units), switch gear, and auxiliary facilities complete: salvage-scrap copper and steel.

B. *Electrolytic cells*: many are good or repairable, but cells without electrical equipment, gas-handling compressors, etc. are valueless. The cells have very little salvage value, aside from much copper in bus-bar leads.

C. *Hydrogen Compressors*: Three in number. Management claims that they are good and can be assembled this appears doubtful, since parts of these disassembled machines were distributed haphazardly over a wide area

and exposed to the weather. Efforts of the management to preserve this valuable machinery should be characterised as worse than apathetic. These compressors were designed to compress gas to 150 Kg. per c/ cm. (2,200 lbs per sq. inch.).

D. *Chloride of Lime* (*Hypochlorite of Lime*) *plant*: 8 chambers of 3 mm. lead, each 400 cu. meter capacity (2 × 10 × 20 meters). The condition of these chambers varies from good to destroyed, and they can be considered as a source of sheet lead.

E. *Paper producing plant*:

1. Huge pulp digestors of heavy steel appear intact (ca. 3 ½ m. diam. × 7 m. deep).

2. Most of paper making machinery is suitable only for salvage and scrap.

F. *Machine Shop*: Small and inadequate for so large a plant. Most of the machines are undamaged but are archaic.

G. *Additional Materials*:

1. Large coal stock pile estimated in the order of 1,000 tons. One large pile near gate is Sardinian coal. Several piles near boiler house are Silesian, Sardinian and mixed Silesian-Sardinian.

2. Large stock of new wooden barrels ranging from half hogsheads down to small barrels. These were uncounted but estimated at several hundred.

3. Considerable stock of cut lumber, suitale for packing box manufacture: circa 1 m. × 1.5 cm. × 30 cm.

4. Large number of valuable high pressure oxygen and hydrogen cylinders. N. B. Hydrogen cylinders, properly cleaned, tested and fitted with new valves, may be used for oxygen storage. The demand for oxygen cylinders is expected to grow acute as production of that gas mounts:

a) about 50 large German-made hydrogen cylinders of 76 litre capacity at 160 Kg. cm^2.

b) about 60-70 hydrogen cylinders of approximately one half capacity of (a).

c) about a dozen or more oxygen cylinders in and around machine shop.

N. B. - Valuable cylinders are scattered all over the plant, even high in the wreckage of the paper plant. Little effort has been made by the management to gather valuable materials together.

5. Two gasometers for hydrogen:

a) Large one of concrete, estimated at 5,000 cu. meter capacity, totally wrecked.

b) Smaller steel gasometer of ca. 500 cu. meter capacity is repairable.

6. Large number of electric motors of varying size and H. P. are available, many with valuable built-in gear reduction boxes.

7. Of 5 electrically driven cellulose centrifuges, 3 appear to be undamaged.

8. There are several undamaged overhead track hoists of varying tonnage scattered about the plant.

9. There is a considerable stock of scrap copper wire and bus-bars stored in what was the office building.

IV. Comments and Recommendations:

A. This plant and its contents are now frozen by AMG Region III.

B. So completely destroyed is this plant that no consideration should be given to its rehabilitation. Extensive cannibalization of salvagable material and equipment should be made in the interests of the Allied effort.

C. The attitude of the management appeared somewhat less co-operative than could be desired, and the inspecting officer came away with a feeling that the management was neither too anxious to help us nor very diligent in the care and safeguarding of such plant assets as remain. The situation of the hydrogen compressors gives point to this observation: the management contends that the compressors and electric motor drives were undamaged, yet the compressors were all disassembled and scattered about the landscape and the motors were not in evidence. The conclusion was inescapable that this state of affairs is deliberately intended to discourage Allied organisations from requisitioning and taking away any assets.

Further, when an officer who was present pressed the management as to their position relative to sale or lease of equipment to U. S. or British Armies, they were most emphatic that they would not do so voluntarily.

D. In view of the attitude described in (C) above, it is recommended that diligence be exercised to prevent destruction, disappearance or injury to such assets as remain.

E. Small gasometer should be earmarked for one of Army oxygen or acetylene plants (see III G5 above).

F. Hydrogen compressors and motors should be earmarked, if found reasonably complete, for Crotone Plant for gas handling. (see IIIC).

G. All high pressure gas cylinders should be collected and transferred to some proper army agency for immediate disposition and use. Action is urgent.

H. The overhead track hoists should be dismantled and removed for use elsewhere (see III G8 above).

V. A COLLATERAL REPORT BY LT. COL. REITER IS APPENDED:

DATA ON « CELLULOSA-CLORO-SODA » PLANT — NAPLES

.1 These observations are supplementary to survey report, and are made by Lieut. Col. Reiter ACC.

2. Power facilities: TOTALLY DESTROYED BY GERMANS.

a) Out of an original bank of 7 transformers; 4-1000 KWA and 3-500 KWA, but 3 remain, completely demolished.

b) All four (4) converters and motor-generator sets are destroyed beyond repair.

3 Brown-Boveri-700 KVA 3250 AMPS., 250 V. D. C.
1 Marelli-350 KWA 3000 AMPS., 150 V. D. C.

c) All switch-gear, panels, etc., in power station have been demolished or removed. Copper (bus-bars) are gone.

d) Power enters plant at 9000 volts, 45 cycles.

3. Electrolytic plant: 130 cells, each consuming 5 volts current, arranged in electrical series from 25 to 50 cells to accomodate above D. C. voltage capacities.

a) Caustic Soda Capacity: from cells: 90 Kg. Na OH per day (24 hours) as solution containing 12 % Na OH. This has been evaporated in appropriate department to 36° Be (330grams Na OH per liter) or to 48° Be (480 grams Na OH per liter) solutions. They have equipment to produce fuzed Caustic Soda, by further evaporation by steam, and fuzing in coal fired pans.

b) Chlorine: each cell per day (24 Hours): 80 Kg. Cl_2 as a gas. No means of collection, liquefaction or compression for use elslewhere is available, as chlorine was transmitted in terracotta piping to hypochlorite production.

c) Hydrogen: per cell: 20 cu.M. 0° and 760 mm. barometer standard, per day (24 Hours). Three compressors can be assembled for bottle filling. Larger 5000 cu ft. gasometer partially destroyed. Small 200 cu ft. gasometer intact. Bottle washing plant intact. Have approx. 60 high pressure bottles on hand.

d) Equipment: Most bus-bar and piping manifolds removed. Sufficient copper and piping on hand for only 30 to 50 cells.

(1) Hydrogen compressors: 150 Kg. per cm^2 pressure (2133 lbs. per sq.in.) complete with motors, 260 V. 36 HP., 45 cycles, 636 RPM, for chain drive to reciprocating compressor. Capacity: 50 cells or 1000 cu M. per day (1,500 cuft. per hour) total for all 3 compressors. Those must be assembled. They were directed to accomplish this assembly (for use in other oxygen plants).

Boiler Plant: Two new Tosi water tube boilers in excellent condition, underfeed stoker (coal) fired: Capacity, 40.000 Kg. steam per Hour, 8000 Kg. coal per Hour pressure 15 Atmospheres (225 lbs. per sq. in.). However, the feed water system, pumps, etc., is completely destroyed.

Coal: Estimate of coal supply on hand, in piles and in cars:

Silesian (German) Coal	400 tons
Mixed Sardinian and Silesian Coal (40% Silesian & 60% Sardinian)	200 tons
Sardinian	400 tons
Total stock in plant	1000 tons

Machine Shop: Small machine shop, complete with motors, shafting, but no belts. It is not worthy of consideration as a general salvage shop. It must get its power by transformation from 9000 volt entry lines. No direct connection to external 260 V feed is possible.

Salt supply for chlorine, caustic soda, etc. available from state monopoly, from Sicily, Sardinia and Foggia.

RECOMMENDATIONS:

a) Resumption of operations for caustic soda, chlorine, or other products impracticable.

(1) Chieti or Liri Isle (Frosinone Province) Plants may soon be in occupied area, with similar equipment for civilian management's own programs.

b) Coal should be frozen at once and placed under jurisdiction of Coal Section.

c) Capt. Mydans report the 3 gas compressors to Industrial Gases Sub-Committee of Engineering Materials Committee, of AFLR (I) B, for requisition by the proper military organization needing such equipment in oxygen production. Assembly of these compressors by subject concern should be expedited.

d) Region III notify plant owners, after inventory is received, by order, that nothing can be removed without prior approval of appropriate CAO.

REPORT ON PLANT OF CANTIERE METALLURGICI MERIDIONALI CASTELLAMMARE

General.

Large plant originally with a capital of Lit. 14,400,000 and employing 2,500 hands, engaged on:

1) Tin and Black Plate Production
2) Railway Wagon Repair Shop
3) Nut, Bolt, Dog Spike Manufacture
4) Iron Foundry
5) Small Wire Drawing Plant
6) Projectile Manufacture (plant destroyed)
7) Forge and Smithy.

Normal consumption of electric power was 7,200,000 KWH annually.

Plant: general.

The works have expanded around the original Railway Wagon Repair Shop and are long and rambling. The original plant buildings and set-up are somewhat out of date. The Tin plate rolling mills and iron foundry are of more recent construction (approx. 1924) and whilst not being of the latest design are capable of producing reasonably good quality plate in fairly large tonnages.

There is also available a large engineering shop equipped to carry out the firm's own maintenance, and also do small or medium sized jobs of a general engineering character; 50% of the machines in this shop have escaped damage by German demolitions.

Damage to Plant & Plant details.

1. *Tin Plate Rolling Mills.* This plant which is obviously the firm's greatest asset, has, so far as could be seen escaped any serious damage and is at present working to part capacity. One train of rolls out of three being in operation at the time of our visit. Furnaces and gas producer plant are undamaged.

2. *Nut, Bolt, and Dog Spike Plant.* About 50% of the machinery in this department is of no use, due to demolitions and old age. The remainder of the equipment is at present working, making an assorted variety of nuts, bolts, dog spikes, small screws, etc., on a variety of plant, including friction screw presses, Ajax type bolt-upsetting machines, semi-automatic screwing machines. This plant whilst capable of a considerable output would, in our opinion, carry heavy costs and it is difficult to see it competing with modern equipment.

3. *Railway Wagon Repair Shops.* Little damage to the buildings was observed, but it was also noticed that there was an almost complete lack of any kind of lifting tackle in the form of cranes, etc. There was also little evidence of any useful plant in this Dept. We were given the output of 300 wagons per month for repairs but this figure would be difficult to justify. Only simple repairs could be undertaken, i. e., painting, re-plating wagons, etc.

4. *Iron Foundry.* Was visited and was engaged in the manufacture of brake shoes, furnace parts and other general castings. An effort had been made to instal conveyor gear, and this plant should be capable of producing any type of iron casting up about one ton in weight. Little damage by German demolitions appeared to have been carried out.

5. *The Projectile Plant.* This plant, which it was understood was capable of 4,000-75 m/m H.E. shells per day was completely demolished, but it was noticed that quantities of finished shells, and rough shell forgings and shell driving rings were lying around the works.

6. *Forge & Smithy.* A small plant consisting of 1-3 ton Hammer (Steam) and 2 smaller power driven Hammers. None of this equipment is

Damage to Plant & Plant details.

1. *Tin Plate Rolling Mills.* This plant which is obviously the firm's greatest asset, has, so far as could be seen escaped any serious damage and is at present working to part capacity. One train of rolls out of three being in operation at the time of our visit. Furnaces and gas producer plant are undamaged.

2. *Nut, Bolt, and Dog Spike Plant.* About 50% of the machinery in this department is of no use, due to demolitions and old age. The remainder of the equipment is at present working, making an assorted variety of nuts, bolts, dog spikes, small screws, etc., on a variety of plant, including friction screw presses, Ajax type bolt-upsetting machines, semi-automatic screwing machines. This plant whilst capable of a considerable output would, in our opinion, carry heavy costs and it is difficult to see it competing with modern equipment.

3. *Railway Wagon Repair Shops.* Little damage to the buildings was observed, but it was also noticed that there was an almost complete lack of any kind of lifting tackle in the form of cranes, etc. There was also little evidence of any useful plant in this Dept. We were given the output of 300 wagons per month for repairs but this figure would be difficult to justify. Only simple repairs could be undertaken, i. e., painting, re-plating wagons, etc.

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6. *Forge & Smithy.* A small plant consisting of 1-3 ton Hammer (Steam) and 2 smaller power driven Hammers. None of this equipment is

of modern construction, and there is no evidence of any lifting or handling tackle in use. This plant's only use is for small and medium size general forgings, and it is evident production costs would be high.

General information.

1. The monthly max. output of the tin plate mills is: — 1200/1300 metric tons per month, minimum thickness 0.22 m/m, maximum thickness 0.6 m/m (0.3 m/m average thickness).

2. Sufficient tin in stock for a further 900 tons of tinplate.

3. Available steel in the form of sheet-bars in stock is 3500/4000 metric tons of U.S.A. and Luxemburg origin (can be rolled to tin plate or black plate).

4. In addition 100 tons of tin plate which has been damaged by the weather and started to rust will have to be cleaned and re-tinned. This work is in hand.

5. The firm have sufficient coal for 2 to 3 months operating. This coal is of German origin and of the long flame quality. Their requirements are 300 metric tons per month (cannot use Sardinian coal due to its high percentage of sulphur).

6. The power requirements are 850 K.W. per 20 hour day.

7. The firm will also require 20 metric tons of 50° Be' H_2SO_4, but have the necessary containers for transport and storage.

8. The management of this plant gave the impression of being of average ability.

Conclusions & Recommendations.

1. Assuming a supply of raw materials in the shape of coal, tin and steel sheet bars can be made available, it is recommended that the tin plate rolling mills should be encouraged to continue production. Food Sub-Com-

mission, A.C.C. has been asked to submit for examination a note of six months requirements for tinplate and blackplate. It may be possible by building a set of corrugating rolls to produce corrugated sheeting which is in short supply and much needed for civilian and army needs. (Spelter will have to be made available).

2. The firm's iron foundry can probably be found useful work in the production of Railway Brake Shoes, Furnace Castings, small bogie wheels and general iron castings.

3. The engineering and maintenance plant is a useful shop for general machine work of a non-repetition character.

4. The nut and bolt factory and the forge are the least promising units of the plant, but as they appear to have considerable orders on hand, the firm's representatives should be pushed into getting this plant into better repair. Old machines should be cleared out and scrapped and some effort made by the firm to reorganise these two departments.

In all of the above matters the following points require consideration:

a) Necessity of coordinating with D.D.W.S, HQ A.A.I. (and Royal Navy or P.B.S. Engineers where necessary) in laying down complete works programme so as to cover essential civilian as well as military needs.

b) Possibility of supply of imported long-flame coal (a critical item).

The plant is at present working, in part, for D.D.W.S., HQ, A.A.I., under the supervision of Capt. W. H. Betts, 80 E.B.W., A.A.E.C., who has lately arrived for this purpose.

REPORT ON VISIT TO CANTIERE NAVALE NAVALMECCANICA CASTELLAMMARE DI STABIA

General.

This concern is a small shipbuilding yard judged by British standards, and was originally capable of the construction of ships up to 200 metres in length. Its main items of plant and equipment are as follows:

1) Four slipways with lifting cranes.
2) Large plate cutting, bending and fabricating shop; with the necessary auxiliary plant for cutting, bending, and drilling.
3) Machine Shop. (now almost completely demolished).
4) Pipe Bending Shop. (completely demolished).
5) Smithy and Rivet Shop. (partly in use).
6) Timber Boat Building Shop.

Plant & General.

This shipyard has suffered serious damage from German demolitions, but energetic action (probably under the guidance of the Royal Navy) is in hand to put the plant and equipment into better order. Considerable work is on hand on the stocks and an order for 10 Lighters had been received from the Naval Authorities. Work had started on the first four units. Large stocks of raw material in the form of plates and sections are available. Three of the dockside cranes have been repaired and further crane repair is on hand. Considerable work has been done to repair the building and also the plant in the plate fabricating shop, and the firm are showing init-

iative on this reconstruction work. Shortage of galvanised sheeting and glass for roofs and side-sheeting is slowing down reconstruction.

PLANT DETAILS.

I. *Slipway & Lifting cranes.* The slipways are undamaged, but the lifting cranes have been demolished. Work is on hand to get these into working order again.

All this part of the plant is engaged on work for the Royal Navy.

II. *Plate fabricating shop.* This shop and the plant therein suffered considerable damage to the structure and certain machines. The management have succeeded in carrying out repairs to a large set of plate bending rolls, large plate shears, and have several drilling machines in operation. It should be pointed out that this equipment is an integrated part of the shipyard and is best engaged on the work it is already doing, i.e., construction and repair of ships for the Royal Navy.

III. *Machine shop.* This department has been most thoroughly destroyed by the Germans, individual machine tools have all been damaged in their most vital parts, and an extensive reconstruction programme over a long period of time would be necessary to get this plant into any kind of order. This equipment can be forgotten for any kind of short term policy. All roofing has been removed by blast and the weather and volcanic dust are completing the work started by the German demolition squads.

The firm's General Manager (Sig. Ing. Viettone) thought 30% of the plant could be salvaged. This figure is doubted, especially if reconstruction is delayed any longer.

IV. *Pipe bending shop.* This department has also been completely demolished and can be written-off. Only the four walls and roof trusses plus a few items of burnt-out and destroyed plant are in evidence. A little hand bending of pipes is in progress with the use of makeshift methods.

V. *Smithy & Rivet shop.* This is a small shop sufficient for the firm's own requirements. They have repaired two steam hammers (500 Kg. & 200 Kg. capacity), and have one « National » Rivet Machine slightly damaged.

All roofing has been stripped off this shop, and the plant is working under difficult conditions.

VI. *Timber boat construction.* This is the old original boat building yard, and is now engaged on repairs to wooden boats and the production of timber chocks and baulks for the yard's own use.

REMARKS.

1. The firm estimate their needs for galvanised corrugated sheeting and glass for re-roofing purposes at:

a) 4,000 standard galvanised corrugated sheets.
b) 1,000 sq. metres of glass.

2. They have also two electrically heated and undamaged galvanising plants of the following dimensions (a) 10'-0" × 6'-0" (b) 35'-0" × 7'-0". These cannot at present be utilised owing to shortage of power.

3. The firm's present power consumption is 1,200 KW per day.

4. Their maximum production *was* in the order of 50 tons of plates per day. Present production is 10 tons of plates per day.

CONCLUSIONS & RECOMMENDATIONS.

1. It is considered that the work now being done by this plant for the Royal Navy is the best contribution to the Allied War Effort it can make.

2. All available and workable plant is engaged on the above work, in fact, Lieut. Noyen R.N., who is resident at the plant, would like to obtain additional machines for which he has useful work.

3. As this plant is a small integrated shipyard, using the available plant for other uses, would result in an unbalanced unit.

4. So long as orders from the Royal Navy are available, the employment of any part of this equipment for Army or urgent civilian needs would appear to be out of the question.

5. The management gave the impression of having initiative and a progressive outlook.

REPORT ON INDUSTRIE MERIDIONALI AZOTO & DERIVATI

NAPLES

This sizable plant was inspected with the result that the following observations are submitted.

1. The Company had a capital of Lit. 21,000,000 and an investment of Lit. 27,000,000. The plant is located at Via Traccia Poggioreale, Naples, and is the only known asset of the above named Company, which was formed 14 Jan. 1938 with head office at Florence. Its President is Sig. Andrea Canale, and its resident manager is Sig. Gina Monteccia (Piazza Mondragone, Vega Mortella 2, Naples).

The entire plant and equipment are under PBS Engineers control.

2. The plant was designed to produce synthetic ammonia and nitric acid from the latter, and was unfinished when its construction was interrupted in 1941. About two-thirds of the construction and equipment was completed. Plant engineering and design are German.

3. The plant consists of four main and essential parts.

a) The plant to produce hydrogen from coal or coke by the water gas process. This part of the plant is about 3/4 complete. Much new equipment is partly or completely installed and includes boilers, huge air blowers, control valves and instruments, catalyst and carbon dioxide scrubbing towers, circulating pumps, heat exchangers, etc.

A competent review should be made of this equipment with a view to facilitating its use in the war effort.

b) Nitrogen Plant: A large Linde-Messer air liquefaction plant, with most of the equipment present, but much of it unassembled. This includes a complete ammonia refrigerating unit.

It is proposed that this plant should be investigated to ascertain fully its possibilities for the production of oxygen.

c) Ammonia Synthesis plant: Largely incomplete, but high pressure pumps, heat exchangers, catalyst towers, etc., are already on the premises. The pumps with large synchronous motor drives should be considered for export to U.S.A. od U.K. as exceedingly valuable pieces of critical equipment.

d) Nitric Acid Plant (by oxidation of ammonia). This plant is incomplete, but much valuablt equipment is already installed or on the premises.

3. As stated in 2 above, this plant was under construction and was left unfinished in 1941 for some undisclosed reason. All equipment on the premises, installed or resting in the plant area is new. Much of the equipment is exceedingly valuable and much of it is suffering damage through weather, corrosion, theft and unwitting damage by Allied troops.

Large Stocks of valuable constructional materials are present and include:

a) Much flat steel, profiles, checkerplates, wire netting, and steel shapes.

b) Steel pipe and seamless tubing.

c) 50 large sacks granulated cork and considerable stock of cork insulating board.

d) 40-50 demijohns of hydrochloric (muriatic) acid.

e) Large stocks of electric motors, some with built-in reduction gears, electrical switch gear, switchboard panels, and instruments.

f) Large nuinbers of valuable high pressure needle-control valves, gate valves, potentiometer controllers, reels of electric cable, copper wire, brass fittings.

g) Large stocks of porcelain Raushig rings.

h) Steel drums of special granulated ammonia catalyst. Some of these have been opened and their contents dispersed.

i) An abundance of miscellaneous materials of value, including fused silica tubes (of great monetary value), porcelain insulators, high grade fire brick, ceramic tubing; also stocks of bolts, nuts, washers, etc.

4. RECOMMENDATIONS: A thorough survey of this plant should be made:

a) To study potentialities for oxygen production.

b) To consider the possible utilization of materials on the site with a view to completing the installation of the plant as originally designed. It may be here remarked that the cost of this work in materials, time and money would be enormous. Much of the material required is highly critical engineering equipment, obtainable, if at all, only by import and under a delivery time of years.

c) Cannibalization.

30 March 1944

ADDENDUM TO REPORT ON INDUSTRIE MERIDIONALI AZOTO E DERIVATI — NAPLES

1. The original report was submitted in February 1944. The following additional information has been obtained in the month of March.

The conclusions and recommendations expressed earlier by Capt. Mydans have been confirmed by specialized assistance secured from:

a) Sig. Ing. G. Giorgi, of Montecatini Co. Crotone.

b) Mon. P. Brunel, general manager and engineer of Air Liquide, North Africa.

2. These conclusions are repeated.

A. Under no conditions is it possible to carry this plant to completion so that any product useful to the war effort may be made available, save only, possibly, oxygen.

B. Preliminary study of the Linde-Messer portion of the plant with a view to oxygen production warrants further study. It is now believed that this unit may be reconstructed to develop a production of urgently needed oxygen of about 60,000 cu. m. (2,000,000 cu. ft.) per month. It should be reemphasized that the engineering involved is exceedingly complicated and progress toward achieving oxygen production will be necessarily slow. No technical personnel of IMAD has been discovered and essential blue-prints are missing. It is proposed to strip down the equipment for more detailed investigation and push the work forward with vigor.

C. Much equipment in unused condition exists in this plant and of a character of great value and in short supply in U.K. and U.S.A. Since

much, in fact most of this equipment cannot find any useful application to the effort in Italy during any immediate future, it is resubmitted that consideration be given the export of this equipment to U.K. or U.S.A. Huge high pressure, forged steel catalyst towers of inestimable value, high pressure pumps, valves, and auxiliary equipment should be of *immediate* value in the fixed nitrogen industry of U.K. or U.S.A. cf. Billingham plant of I.C.I., England. The design of the ammonia synthesis units is said to be that of « Hydro Nitro », New York, U.S.A. and this equipment may be of great immediate value in U.S.A.

D. Removal of gauges, pumps and other portions of the equipment by authorized and unauthorized military groups, many of whom leave no adequate receipts for the equipment removed, is proceeding apace and may well render much of the major equipment of decreased value. Further, vandalism by Allied troops on fine instruments and other equipment has reached a serious stage. It is, therefore, desirable that some decision be reached at the earliest possible time as to the disposition of this installation so that loss by weathering, corrosion, vandalism and unauthorized removal may not nullify future constructive action.

REPORT ON « ILVA » STEEL WORKS — TORRE ANNUNZIATA

GENERAL.

This plant is a fairly large steelworks and rolling mills, part of the works of old design and construction, but an effort has been made to instal modern plant in the form of two new rolling mills. The pre-war number of hands was in the region of 1,800. Theplant consumed in 1942 12,700,000 Kw.H. of electric power.

The following are the principal departments:

1) Siemens Martin Open Hearth Steel Plant
2) Rolling Mills
3) Wire Drawing Plant
4) Nail Manufacturing Shop
5) Iron Foundry
6) Shell Forging Shop.
7. Engineer and roll turning Shop.

PLANT: GENERAL.

These works have expanded round the original rolling mills and the steelworks and new mills were constructed about 1925-26. The plant is a mixture of old and modern. Damage to the plant was sustained both by bombing and by German demolitions, but is in no way so thorough as at ILVA, BAGNOLI, and given a reasonable chance, it is considered that this plant can be re-habilitated throughout in a comparatively short period of time (say 12 months). Parts of the equipment, notably one furnace and two trains of rolls can be got to work in a much shorter period of time (say 2 months) and work on the reconstruction of these items is being pushed ahead with energy.

PLANT DETAILS.

I. *Siemens Martin Open Hearth Plant.* This is a relatively small plant with 3-thirty-ton Furnaces fired by producer gas. The charging machine has been damaged, but is now under repair. One furnace is being reconstructed and re-bricked and the firm hope to be producing steel from this furnace in one month's time. All overhead cranes are intact and the two ladle cars are workable. The gas producers also escaped serious damage. The structure of the building is good but roof and side sheeting is missing. Max. output of this plant would be in the order of 1200/1300 tons per week. The usual ingot size is 1/2 ton metric.

II. *Rolling mills.* The original old rolling mills are as follows:

a) 1-3 High 3 Stand 600 m/m Cogging Mill
1-3 High 2 Stand 450 m/m Intermediate & Finishing Mill

This plant is under reconstruction. Furnaces are being re-built and the driving motors are intact. These units could roll small beams, angles, channels, rounds, billets, flats and squares. At present progress the plant should be in production in two months. No roof covering for the shop is in existence, and work will be done under difficulties unless this can be provided.

b) 1-2 High 9 Stand 260 m/m Mill
1-2 High 4 Stand 260 m/m Mill

These units are of an old pattern, but are still capable of useful work, driving motors are intact and re-construction work is in progress. These mills could roll small rounds, flats or squares. No roof covering is available over the plant. Furnaces to feed the above rolls are of the continuous billet type, fired by pulverised coal. They are at present under re-construction. The whole of this plant should be ready for rolling within 2 months. The new rolling mills are housed in a large modern type shop and consist of the following:

c) One semi-continuous 11-Stand Mill with an output of 10 tons per hour. All the driving motors have been completely demolished by the Germans, but the mechanical damage to the plant is not heavy. There is no prospect of running this plant unless new driving motors can be obtained. This would take considerable time and can be ruled out as a short-term policy.

d) One modern looping mill for wire rods and small flats. This is of modern construction with repeaters, coiling machines, cooling bank and all necessary ancillary equipment. The driving motors have been thoroughly demolished and until these are replaced the plant is unable to operate. Its rated output was approx. 10 tons per hour. Of all the rolling mills, those described under (a) and (b) only can be considered for any work in the near future.

III. *Wire Drawing Plant.* This department has 12 Drawing Benches, and of these 75% are in production, producing wire of various sizes. It was understood that the bulk of the products go to the firm's own nail producing plant. In a short time the firm expect to have the whole of this equipment working. They can draw wire down to 2/10 m/m diameter. The plant appeared to be of fairly modern design and construction.

IV. *Nail manufacturing shop.* This is a medium-size plant consisting of some 70 machines producing an assorted variety of nails from 1/2" in length to a maximum of 8" in length. The plant is at present operating at 300 tons of nails per month, but they expect to boost this output to 450 tons per month in about 2 weeks time by the introduction of further machines which are at present under repair. This department gives the impression of being well organised.

V. *Iron Foundry.* Adjacent to the steel plant there is a small iron foundry with two cupolas, 1-3000 kg. capacity, 1-1500 kg. capacity. This is used chiefly on the firm's own requirements and considered to be only useful for repairs and replacement parts to the steelworks.

VI. *Shell Forging Shop.* Situated at the extreme end of the steel plant with the following equipment:

a) 300 Ton Punching and Drawing Press

b) 150 Ton Punching and Drawing Press

c) Two continuous billet furnaces fired by coal

d) Two sets of three throw hydraulic pumps together with 9 air bottles with a total capacity of 10 cu/meters. Water pressure is at 220 Kg/cm.

e) Two electric furnaces for the heat treatment of shell forgings.

f) Two semi-automatic shell turning lathes.

Of the above equipment the only damaged items are driving motors to the pumps and the electric heat treatment furnaces. This plant was in-

stalled for the production of 105 m/m and 76 m/m shells and should have a minimum production of 100 per hour and 150 per hour of each size concurrently. Large quantities of shell forgings are stocked around the plant.

This department could be easily repaired and put to work again if so desired.

VII. *Engineers & Roll Turning Shop.* This a small shop with an assorted variety of plant to cover the firm's own maintenance needs. Workable machines are at present fully employed.

General information.

1. The firm's power station has been heavily damaged, but three transformers of 2500 KVA each have escaped damage and will serve the factory's needs.

2. The following sizes of products can be rolled:

a) Beams 200 m/m max. *b*) Angles 120 m/m max.
c) Channels 120 m/m max. *d*) Rounds 80 m/m max.
e) Flats 150 m/m × 40 m/m. *f*) Squares 100 m/m sq.
g) Tees 50 m/m. *h*) Rails 27 kg. per metre.

3. The maximum output of the Rolling Mills was given at 6,200 metric tons per month.

4. Present re-construction work now proceeding should give an output of approx. 2,000 tons per month of assorted products.

Conclusions & Recommendations.

1. A good deal of energy is being used to get portions of this plant to work, and in view of the relatively light damage to some items of the plant, should be encouraged.

2. Given the necessary materials in the form of roof-sheeting, replaced motors and certain castings, the plant could be put back to its former condition in a period of 12 months.

3. As a short-term policy much can and is being done, and the re-habilitation of this plant is much less of a problem than at ILVA-BAGNOLI.

4. The output of the steel plant is approx. 1/3 that of the rolling capacity, and it is pointed out that re-habilitation of all the mill equipment is of little use unless supplies of steel in the bloom form can be made available from other sources.

5. The importation of coal for gas producers and re-heating furnaces will be necessary.

6. The following stocks of raw and semi-finished materials were observed:

a) Approx 2,500 tons of steel ingots.

b) Approx 2,000 tons of steel wire and rods in coils and random lengths.

c) Large quantities of 76 m/m and 105 m/m shell forgings.

7. A directive is sought regarding the policy to be followed on munition plants. It is pointed out that there is a modern and almost intact shell forging plant at these works. Also large quantities of shell forgings which may be of use to USA munition plants.

8. We were conducted round the plant by Ing. IMBORONE who appeared to have a thorough grasp of all the various departments.

REPORT ON SOCIETA' MECCANICA « LA PRECISA » — NAPLES

General.

The above factory was found to have suffered heavy damage from aerial bombing and German demolitions.

Il consisted of the following:

1) Modern type 3-story factory building constructed to carry light machinery (partly damaged).

2) Large single story building used as a store, this originally housed offices and cloakrooms.

3) Several small single story buildings, largely demolished, and in their present state, of no use unless re-built.

Their pre-war work consisted of Radio production, manufacture of locks, hinges and keys. They had been producing during the war, gun ammunition fuzes and aero engine parts.

Plant Details.

A considerable portion of the plant has been destroyed or heavily damaged, but work is in hand to salvage a portion of this equipment. The following useful plant was noted:

a) 12-Medium size power presses, without motors or driving pulleys.

b) A considerable number of small bench lathes for the machining of small parts; assorted variety of milling machines, small drills, etc.

c) Three electrical heat-treatment furnaces for non-ferrous parts.

d) Considerable quantities of cone pulleys, line shafting and plain pulleys.

e) Salvageable parts to automatic and semi-automatic machine tools.

f) Considerable numbers of press tools and dies.

g) Numbers of inspection benches, stools, inspection lamps and a few gauges.

It was understood from the firm's management that further machine tools had been sent away for re-conditioning to Santa Maria a Vico, Caserta, and the return of this equipment was expected shortly. This plant was not seen.

The main item of interest, however, with this plant was the enormous stock of various items discovered in the firm's offices and cloakrooms. The situation of these materials gave the impression that the firm were not over-anxious to disclose their presence, and they in themselves were sufficient to last the plant for a considerable period at their normal rate of production.

A list of these items is attached to this report at Appendix « A ». It will be noted that of these items, most are in extremely short supply, and it is recommended that they be thoroughly catalogued and an inventory of the stock be prepared.

The firm's management were instructed by Major Maskrey in the presence of Sig. Ing. Vidulich-Premuda, who accompaniel the inspecting officers, that none of this material was to be removed in any way.

Conclusions & Recommendations.

1. Whilst realising a great deal of material on hand in the plant is in critical and short supply, it should be considered before any action be taken to remove this stock, whether or not re-activation should be pursued.

2. Before a conclusion can be reached it will be necessary to survey the plant stated to be in good order which the management propose to bring back to Naples from Santa Maria a Vico.

3. A later visit to this plant showed little or no progress had been made with clearing up the debris and in view of this apparent inactivity it is difficult to recommend anything constructive.

4. Considerable expenditure will be necessary both in time and money to rehabilitate this plant, and given the necessary raw materials, labour and energetic drive on the part of the management will take about 12 months.

SOC

LIST OF

1. Large qu
kilo carto
manufactu
2. Complete
lock parts
3. Large qu
4. Approx.
width an
Falck, M
5. Considera
6. A quanti
7. Several
8. Spools of
9. 16 rolls
10. Large qu
11. 5 New E
12. A large
13. Fine Ph

Appendix « A »

SOCIETA' MECCANICA « LA PRECISA » — NAPLES

LIST OF MATERIALS NOTED ON THE ABOVE FIRM'S PREMISES

1. Large quantities estimated at several tons of assorted wire nails in 5 kilo cartons and loose, staples, iron and brass woodscrews (Radaelli manufacture).
2. Complete door handles, and large numbers of completed locks and lock parts.
3. Large quantities of brass screws.
4. Approx. 200 tons of cold rolled and hot rolled steel strip in varying width and gauges (manufacture of Acciaierie e Ferriere Lombarde Falck, Milano).
5. Considerable quantities of glass packed in boxes.
6. A quantity of galvanised steel cable.
7. Several dozen finished bench vices and numerous parts.
8. Spools of enamelled copper wire.
9. 16 rolls of building paper, about 1/2 ton each.
10. Large quantities of new electric switches; much switch gear.
11. 5 New Electric Fans.
12. A large quantity of porcelain insulators.
13. Fine Phosphor bronze brass and copper wire on spools.

14. Cotton and silk-covered wire on spools.
15. Brass Wire.
16. Large quantities of telephone connections.
17. A number of porcelain soup bowls and plates.
18. Aluminium Cooking Utensils.
19. Bales of Wool.
20. A quantity of high tensile wire in fine gauges.
21. 13 Tin Ingots (Straits Settlements).
22. Electro-Plating Cooper Anodes; possibly some nickel.
23. A stock of leather and composition driving belting (some unused).
24. A quantity of tracing paper (volumoid type).
25. Stock of emery cloth and sand-paper.
26. Rubber V. Belts.
27. Drawing Boards; drafting table.
28. Insulating Material.
29. 40 Carboys of Varnish.
30. 1 Barrel of Lamp Black.
31. Several Sacks of Colouring Material: Blue and Orange.
32. Rolls of steel netting, Heavy.
33. 1 Concrete Mixer.
34. Large tonnages of extruded brass and aluminium rod in varying sizes up to 1-1/2" diam.
35. A number of small mild steel flats.
36. Several tons Mild Steel Wire in gauges 10 and thinner.
37. Many tons Mild Steel Reinforcing Rods in random langths.
38. A quantity of Oxygen Bottles (about a dozen).
39. Quantities of r
40. Quantities of w
41. A variety of h
42. Complete telep number.
43. Brass turnings
44. Aluminium sc
45. One good 10 t
46. About a doze
47. One good po

39. Quantities of rolled thread machine screws.
40. Quantities of washers (part bright, part black).
41. A variety of hand tools.
42. Complete telephones in large numbers; also telephone parts in great number.
43. Brass turnings to a total of perhaps ten tons.
44. Aluminium scrap and turnings.
45. One good 10 tons, 2 post hydraulic press.
46. About a dozen bench lathes, some in good condition.
47. One good portable electric welding machine (Lincoln).

REPORT ON STÀ. METALLURGICA CORRADINI — NAPLES

General.

This factory is a medium sized plant which in normal times produced non-ferrous materials in the form of sheets, bars, and wire, in copper, bronze, and brass alloys. Consumption of electric energy in 1942 was 3,000,000 Kwh. They employed prewar approximately 600 hands; the capital and investment in the Company is Lit. 25,000,000. The main departments are:

1) Melting and casting plant
2) Extrusion and drawing plant
3) Strip Rolling Mills
4) Small Press Shop
5) Sheet Rolling Mills and Wire drawing plant
6) Rod Rolling Mills and cable making plant
7) Power House
8) Machine Shops

Plant: general.

It was understood that the works have been taken over by the PBS Engineers (Major Hart). This information was received from Sig. Ing. SOMMAVIVA the works manager. Generally speaking, except for one or two items the plant and buildings are out of date, and they have suffered

certain damage from aerial bombardment and demolitions. Parts of the plant are able to work, chief among these being the melting plant, extrusion plant and a number of wire drawing machines. The plant has sufficient raw materials in the form of scrap to enable them to run for one month at their old rate of output of 600 tons per month. Previous to the war most of their raw materials had been imported from U. S. A.

PLANT DETAILS.

I. *Melting Plant.* This unit consists of the following equipment (a) 4 - Coke fired Furnaces of 300 Kg. capacity each (b) 32 - Pot Furnaces each of 100 Kg. capacity (c) 7 - Electric Furnaces of 300 Kg. capacity each (one of these is out of order). These electric furnaces were built in 1929-30 and are the most modern part of the plant. Ancillary equipment in the form of ingot moulds, saws for cutting up the ingots, heat treatment plant and overhead runway is in existence.

II. *Extrusion and Drawing Plant.* This plant consists of:

a) One 2000 ton Extrusion Press *b*) One 1000 ton Extrusion Press, both suitable for rods or tubes *c*) Twofairly modern 3 stage draw benches (badly damaged) and *d*) 7 Old Pattern Draw Benches, out of which two appeared to be undamaged, the motors on the remainder had been demolished or removed. *e*) Two Hammers had been thoroughly broken up *f*) There were also two reeling or straightening machines which were intact, and some heavy spares in the form of columns and a press head for the extrusion plant. One extrusion Press was seen working, producing rod of approximately 3/4" diameter. All the necessary furnace equipment and one set of pumps out of two sets are intact. This equipment is capable of useful work, but is of an old design and out of date.

III. *Strip Rolling Mill.* This unit consists of 6 - Cold Strip Rolling Mills of various sizes, the motors driving these units have all been destroyed, but beyond this the actual mills were intact. Nothing can be done with these units until the driving motors are replaced.

IV. *Small Press Shop.* This consisted of 2 - Heavy and 1 - Small crank Press, 4 - small Hydraulic Presses, 2 - Medium Hydraulic Presses and a set

of shears. All this equipment was old and it was understood had not worked since the last war.

V. *Sheet Rolling Mill and Wire Drawing Plat.* This plant consists of the following: *a*) Modern 3 High « Demag » Sheet Mill *b*) Two other trains of rolls of 4 - Stands each, all of German construction (these mills are of an older type). Generally speaking, this plant has escaped any serious damage except for the driving motors which are in certain cases completely missing and in others heavily damaged. Furnace equipment and ancillary plant is in position and undamaged. Also in this shop are a considerable number of draw benches, most of these are very old (approx. 40 years) and one only is of fairly modern construction (10 to 15 years old). They are at present drawing quantities of copper wire for telephone purposes, but due to lack of lubricating soap the finish on the wire is poor. This plant is still, however, capable of good and useful work.

VI. *Rod Rolling Mills and Cable Making Plant.* This shop is the most heavily damaged section of the works and the roof has collapsed on the plant, driving motors have been destroyed and an extremely valuable roll grinding machine which cost 800,000 lire has been heavily damaged. It was noticed however that the roll trains had escaped serious damage, but it will be many months before this unit can be put to work. Also in this shop are 3 big and 2 - small Cable Winding Machines, capable of repair and of useful work.

VII. *Power House.* Three heavy Diesel Sets had been completely written off by the German demolition squads, beyond any hope of recovery, and these can be completely counted out. The management had salvaged one small converter; two transformers were still intact.

VIII. *Machine Shop.* This plant had been used for the firms own needs, i. e. production of ingot moulds, dies, rolls and maintenance. It has been thoroughly demolished, and little can be done in the way of salvage.

GENERAL INFORMATION.

1. The monthly maximum output of this plant was of the order of 600 tons.

2. They have sufficient raw material on hand for one month's work at their old rate.

3. The plant could draw sizes from 15 m/m diameter down to 0.5 m/m diameter.

4. It is stated that the present output would be in the region of 400 tons per month, assuming a supply of raw materials and further skilled men.

5. The power consumption was 1500 Kw. per day and difficulty was likely to be found in supplying this amount.

6. The plant gave the impression, except for one or two items, of being old and out of date.

Conclusions & Recommendations.

1. Assuming a supply of raw material in the form of scrap copper, brass, etc., can be made available e.g. scrap cartridge cases, it is reccommended that the firm be encouraged to continue and if possible expand production to the limit of the re-construction they are able to do on their own account.

2. To enable the main body of the plant to operate it would be necessary to replace driving motors and other critical parts. It is suggested that a measure of this kind would be a long term policy, and outside the scope of immediate reconstruction.

3. The plant in its present form is suitable for such military and civil requirements as:

a) Telephone Wire
b) Brass Rod for Screws
c) Extruded Rod
d) Extruded Tube

4. The parts or departments which are considered to be capable of reconstruction by the firms own efforts are:

a) The melting plant
b) Extrusion plant
c) Parts of the Heavy Drawing Plant

The reconstruction of the remainder of the plant is in our opinion beyond any short term policy.

REPORT ON SOCIETA'.FRATELLI RADAELLI — NAPLES

GENERAL.

The above factory was visited. It is a reasonably large plant with the most modern equipment. It has escaped any kind of damage, and is completely intact. It was understood from the management that the German demolition squad was driven off after a pitched battle with the workers outside the factory gate. The factory was laid down in 1893, re-built and completely equipped with new machinery, starting in 1930 — this was completed in 1939.

The main departments are:

1) Wire Drawing Plant
2) Nail Making Plant
3) Pickling & Galvanising Plant
4) Screw Making Plant
5) Packing and Dispatch Dept.
6) Maintenance, Engineers Shop and Smithy

PLANT: GENERAL.

This plant has just been taken over by the South African Engineers (Capt. Kane) who are supervising its programme and running. The products are delivered direct to No. 11 E.S.D. The Plant is capable of producing

large tonnages of assorted nails and screws etc., and owing to its modern equipment, the operating costs will be low. The factory is clean and well laid out for mass production.

The finish on the products did not appear to be up to British and U. S. standards. It was understood, however, that they were short of die steel and this is likely to have a bad effect on quality of production.

PLANT DETAILS.

I. *Wire Drawing Plant.* This plant consists of 12 Modern Draw Benches, each with a small electrical butt-welding machine to give a continuous feed to the coils.

The machines are all independent electric drive, and the last machine in this line was installed in 1939.

The range of these machines is 0,5 m/m to 10 m/m. Adjacent to this plant are 16 large annealing pots fed by an electric jib crane. These are fired by coal.

II. *Nail Making Plant.* This plant consists of a battery of 100 machines, in addition 44 spare machines are held as a reserve. The plant is driven by line shafting, but is of reasonably modern construction. Adjacent to this plant is the barrelling shop for polishing the finished nails.

III. *Pickling and Galvanising Plant.* The pickling plant consists of three stone tanks served by an electric overhead hoist. This is of modern construction and used for processing the raw material before drawing. The galvanising plant is of the continuous type, with thermostatic control, this plant is of modern construction.

IV. *Screw Making Plant.* In this department there are 140 machines, all hopper fed, and automatic in action, of British, American and German manufacture. The plant is all driven by line shafting. Only a few of these machines were seen working, and the finish on the product was rather rough, probably due to the hard material, and difficulty in replacing tools.

V. *Packing and despatch dept.* This is a modern two story building, well arranged in an orderly manner, with a packet stapling machine, hoists

and inspection dept. In addition there is an impact testing machine and a tensile machine.

VI. *Maintenance engineers shop and Smithy*. This plant has a number of good tools for general maintenance and tool making work, making the plant virtually self supporting.

GENERAL INFORMATION.

1. This plant which is of modern construction and layout is capable of a large output of screws and nails.

2. It is associated with FRATELLI RADAELLI - MILAN which is the parent company.

3. The finish noticed on the firm's products was not first class, but probably caused to a certain extent by lack of die tool steel.

4. Raw materials are short i.e. tool steel, wire rods and coal.

RECOMMENDATIONS & CONCLUSIONS.

1. It is suggested that as this plant is intact and of modern construction it be encouraged in every way to continue and if the raw materials can be made available, to, if possible, expand its production for military and civilian requirements of nails and screws.

2. It might be possible for this plant to take over the allocations of less modern plants, thus ensuring lower production costs, and concentrating the work in one or two modern plants.

3. The consumption of electric power in 1942 was 533,000 K. W. H.

REPORT ON SOCIETA' GIOVANNI GEROSA — NAPLES

GENERAL.

This is a small factory with old buildings and old plant. It has escaped almost completely any serious damage. Its products are nails of various kinds, varying in size from 3/8" boot tacks to flat headed nails 100 m/m long. In addition it has a wire drawing plant, the products of which feed the nail factory. The prewar employees were in the region of 130 hands. The firm are at present employing 30.

The main departmens are:

1) Nail Making Plant
2) Wire Drawing Plant
3) Annealing Shop
4) Pickling Plant
5) Packing and Despatch Department
6) Barbed Wire Plant
7) Maintenance, Engineers Shop and Smithy

PLANT: GENERAL.

This plant is supervised by DDWS, who it was understood will shortly be moving out and handing over to British Ordnance. The products are delivered direct to various boot factories or sent to No. 2 E.S.D. Cancello.

At present the equipment is only working at about 10% of capacity. All the machinery and buildings are old, and no modern equipment is evident throughout the plant. If however raw material in the form of wire rods can be made available, and the requirements of nails for military and civilian needs warrant its use, the plant can produce large quantities of assorted nails.

PLANT DETAILS.

I. *Nail Making Plant.* This consists of 130 machines in a workable condition; in addition in a bombed out shop there are a further 35 machines all of which appeared to be capable of repair. There was a shortage of driving belts for these machines and also for those in the barrelling plant.

II. *Wire Drawing Plant.* This was an old plant with about 70 spools, only 9 of which were working. The raw material in the form of wire rods are obtained from Ilva - Torre Annunziata, other raw materials such as acid for pickling and coal for the annealing furnaces are obtained through D.D.W.S.

III. *Annealing Shop.* This unit consisted of two annealing ovens fired by coal furnaces. The plant was not working owing to a shortage of coal, their requirements being estimated at 30 tons of long flame coal per month.

IV. *Pickling Plant.* Four wooden pickling tanks of a very old pattern, also one boiler for steam heating purposes. This equipment must be many years old.

V. *Packing & Despatch Department.* It was noticed in this department that there was a large stock of paper for making cartons, also about 80 tons of nails awaiting delivery instructions.

VI. *Barbed Wire Plant.* There are three machines in this Department for the manufacture of barbed wire. None of these units was working, but they might be considered for military requirements and to save importing the finished wire.

VII. *Maintenance, Engineers Shop & Smithy.* This was a small department, with an assorted variety of old machines, suitable for the firm's own die and tool manufacture and maintenance work.

GENERAL INFORMATION.

1. The plant is capable of producing tacks and nails from 3/8" to 4" long, in both steel and copper.

2. The output of the factory was given as 7 Quintals per day.

3. The finish observed on the firm's products was in keeping with the old and out of date plant and equipment.

4. The firm are short of the following raw materials:

a) Wire rods for the Wire Drawing Plant
b) Coal for the Annealing Furnaces.

RECOMMENDATIONS & CONCLUSIONS.

1. Assuming a supply of raw material can be made available, and the demand for nails for military and civilian needs continues at a high level, it is recommended that this plant be encouraged to continue work.

2. If on the other hand the nail producing capacity in Liberated Italy is large enough to more than meet military and civilian needs, it might be a sound policy from the question of production costs to concentrate this firm's work in a more modern plant such as Fratelli Radaelli - Naples.

3. It was gathered that the firm were having difficulty in raising enough money to cover wages and overhead charges.

4. It is difficult to see how this plant with its old equipment was able to compete with modern plants.

5. The consumption of electric power in 1942 was 329,000 Kwh.

REPORT ON SOCIETÀ ANON. NAPOLITANA INDUSTRIE BELLICHE NAPLES

General.

This is a small plant situated in some old caves cut in the sandstone hillside at Posillipo. At present they have a number of machines running and installed in a small shop and working on contract for D.D.O.S. (LP & P) and for the Royal Navy. This work consists of repairs to automobile engines, gear boxes and transmissions. The firm's pre-armistice work had been mainly the production of 75 m/m and 105 m/m shell cases. The works can be divided into two essential departments:

1) General Engineering Shop.

2) Shell Manufacturing Plant.

Plant Details.

1. *General Engineering Shop*: This shop was in production on contract work from D.D.O.S. (LP & P) and from the R. N. This work consisted of (a) reboring of engine cylinders, (b) gear cutting, (c) manufacture of small replacement parts for automobiles and trucks. They were also able to re-grind cylinders and produce a certain amount of precision work in the form of gears etc. A considerable number of the machines in this department were working, and it was considered that the standard of workmanship was reasonably high. Shapers, gear cutters, crank grinding machines, centre lathes were installed and appeared to be in reasonably good condition.

2. *Shell manufacturing plant*: This plant was housed in the caves and was laid out for the production of 75 m/m and 105 m/m H.E. Ammuni-

tion. Shell forgings in the rough state were delivered from Navalmeccanica and the sintered iron driving bands from Bombrini-Parodi works. This plant completed the machining of the projectiles. Most of the gear-boxes of the machines had been filled with cement, and it was understood from the owner, Sig. Ing. Francesco Cosenza, that the Germans had entrusted this work to them; they had therefore filled the gear boxes with rags and poured a thin coating of cement on top of the rags. By this simple trick they had saved 80% of their plant and had already cleaned out the gear boxes of a considerable number of machines. Most of this equipment appeared to be special purpose for shell production and consists of rough and finish turning machines, threadmillers, band turning machines, etc. We were informed by the owner that these machines had been converted from ordinary plant for the production of automobile parts. It is our considered opinion, however, that the plant is special-purpose and probably installed especially for shell production either just prior to or during the war.

Large stocks of finished shells, shell forgings and driving rings were noticed in the caves. If so desired the greater part of this equipment could be salvaged but it is difficult to see what the plant could produce other than shells or other simple parts required on a mass production basis in lerge quantities.

Several other items of useful plant were noticed.

a) Tool and Cutter Grinder.

b) 2 Electrical machines for brazing tungsten carbide tips to steel shanks.

General information.

1. Originally the plant employed about 400 work-people. The present figure is in the region of 100.

2. The consumption of electricity was in 1943: — 62,120 KWH per month; — now 6400 KWH per month.

3. The plant is absolutely bomb proof, due to its situation in the caves.

Conclusions & Recommendations.

1. The general engineering plant is doing useful work for the Army and the Royal Navy and should be encouraged and helped in this respect.

2. Considerable efforts have been made by the management to salvage and get to work many items of plant and equipment.

3. It appeared to us that the shell plant had been installed as a speculative war measure, on the part of the management.

4) Should any consideration be given to the re-activation of this shell plant, it should be remembered that supplies of (a) rough shell forgings, (b) Driving rings, (c) Cutting tools and lubricants will have to be made available to them.

5. The plant manager complained of difficulties in financing rehabilitation. He desires more work for his shop. Where useful work for the shop can be found, it is to be encouraged, but it is submitted that an Ordnance Plant which mushroomed in five yers from virtually nothing was a speculative wartime development and efforts to recover this investment for the owners should not be encouraged.