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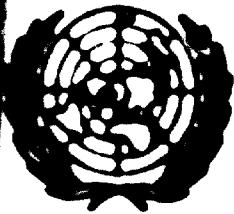
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D03636



Distribution
LIMITED

ID/WG.118/19
30 March 1972

ORIGINAL: ENGLISH

United Nations Industrial Development Organization

Expert Group Meeting on Future Trends in,
and Competition between, Natural and
Synthetic Rubber

Vienna, 27 - 30 March 1972

REPORT
OF THE
EXPERT GROUP MEETING ON FUTURE TRENDS IN, AND
COMPETITION BETWEEN, NATURAL AND SYNTHETIC RUBBER

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.

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I. INTRODUCTION

- 1) The meeting was opened by Mr. N.K. Grigoriev, Director of the Industrial Technology Division, UNIDO, Vienna, on behalf of Mr. I.M. Abdel Rahman, Executive Director of UNIDO, who was away from headquarters.
- 2) Mr. Grigoriev welcomed the participants to this expert group meeting concerned with the main technical and economic aspects relating to the production and utilization of natural and synthetic rubber. He expressed his confidence that the meeting would reach satisfactory conclusions on ways and means of promoting development in the field of production and utilization of natural and synthetic rubber and allied industries in developing countries.
- 3) Following Mr. Grigoriev's welcome, the meeting elected unanimously Mr. L. Bateman as Chairman, Mr. R.T. Lamberson as Vice-Chairman and Mr. G.W. Bricker as Rapporteur.
- 4) Mr. M.C. Verghese, Chief of the Fertilizers, Pesticides and Petrochemicals Industries Section, UNIDO, spoke of the functions and activities of UNIDO and the Industrial Technology Division and the Fertilizers, Pesticides and Petrochemicals Industries Section in particular. He touched upon the projections for demand and prices of natural and synthetic rubber up to 1980 which were contained in the studies to be presented to the meeting. He hoped that the problems connected with the natural and synthetic rubber industries will be discussed and areas in which UNIDO could assist developing countries could be identified.
- 5) Mr. A. Dumitrescu, UNIDO, Technical Secretary to the meeting proposed a few changes in the agenda of the meeting due to the absence of Mr. El Faky the expert from Arab Republic of Egypt. It was proposed that the presentation of Mr. El Faky's report be replaced by the presentation of the report by Mr. G. Ivan and Mr. C. Dragus, representatives of Research and Design Institute for Tyres and Rubber Technical Goods, Romania. It was also proposed that the paper "Selling prices and freight rates of NR" by Mr. P.O. Thomas, representative of the Rubber Research Institute of Malaya, which was received by UNIDO after the agenda was finalized, be included in the agenda.

II. OBJECTIVES OF THE MEETING

6) The Chairman suggested that the meeting should work within the following framework:

- (a) to consider particular problems of the producing industry including the interaction of NR and SR,
- (b) to pinpoint certain developments of particular significance to the future of the industry, both producing and consuming,
- (c) to examine how rubber usage could be stimulated, particularly in developing countries.

7) The Chairman stated that this meeting was taking place at a time when the entire rubber producing industry is facing very difficult business conditions. This situation should give extra relevance to the discussions and lead to a critical consideration of the problems and what could be done about them. He hoped that there would be free and frank comments and the reaching of clearcut conclusions.

8) The following primary objective was adopted:

To examine what UNIDO's role is, and to suggest what UNIDO should and could do for developing countries, in the field of rubber.

During discussion, it was envisaged that action to be considered might include the following:

- (a) to encourage the coming together on a world-wide basis of interested parties in the field of natural and synthetic rubber, producers and consumers, to discuss production and consumption trends in the industry and to co-operate on long-term planning within the industry,
- (b) to actively support the development of rubber consumption in the developing countries and to stimulate development world-wide of major new uses for rubber.

III. BACKGROUND REPORT PREPARED FOR UNIDO BY C.W. ROBINSON AND CO.

9) The representative of C.W. Robinson and Co. then introduced the report on "Future trends in, and competition between natural and synthetic rubber" outlining the main conclusions and recommendations. It was noted that the report had been prepared in the spring of 1971. Amendments and additional information provided by the participants relating to prices, price trends and other statistics are presented in appendix 1.

10) In the ensuing discussion, the present and future pricing situation for SR and NR received much attention. It was generally agreed that the current price levels of NR and SR were quite unsatisfactory for all producers. This situation was giving rise to serious business difficulties for many SR producers and was causing great national and personal hardship in the NR producing countries. The time had come to get firmly to grips with the problems of restoring market health. Unless this were done, there was a danger of the raw rubber supply not keeping up with demand in the years ahead as future investment in the producing industry had become economically unattractive.

11) There was general agreement with the eight recommendations of the report. It was pointed out, however, that recommendations covering technical and financial assistance in improving the cultivation and processing of raw natural rubber are activities which fall within the scope of agencies other than UNIDO. The representative of FAO pointed out the substance of the agreement between FAO and UNIDO which defines the respective areas of interest. ^{1/} These are:

<u>FAO</u>	Production and processing of raw natural rubber.
<u>UNIDO</u>	Manufacture of rubber products and synthetic rubber.

1/ Actual wording of the agreement with respect to rubber is as follows:

For FAO Separating, coagulating, drying and smoking of latex, latex concentration, crepe, sheets and block rubber, baling.

For UNIDO Compounding, moulding, vulcanization, foam rubber development, rubber goods industry. Manufacture of tyres, footwear, belting, tubes, flooring material, etc.

For joint concern - largely UNIDO } Feasibility studies for operations mentioned under UNIDO.

- 12) Concerning recommendation 3, the representative of FAO also stated that FAO is already participating in various projects in NR production and processing, and while it can engage in pre-investment studies, it does not give direct financial assistance.
- 13) The representative of the World Bank group stated that IBRD has been involved in the financing of natural rubber projects in the past and will remain open-minded in considering any future such projects.
- 14) Concerning recommendation 8, the representative of UNIDO stated that UNIDO has not previously participated in many projects of such kind but no doubt this could be considered. In answer to a question whether the U.N. agencies should take the initiative in these matters, it was stated that UNIDO must proceed from a proposition submitted, but can assist any developing country in formulating requests.
- 15) The meeting's assessment of the general aspects of the Robinson report can be summarized as follows:
- (a) The NR industry has to be further modernized if it is to continue being viable and prosperous in the present and future competitive climate.
 - (b) Modernization of the smallholder sector of the industry is particularly imperative in this regard.
 - (c) Encouragement in the establishing of rubber manufacturing industries in the NR producing and other developing countries is called for to increase rubber off-take and increase employment opportunities.
 - (d) Present prices of NR and SR are unsatisfactory, and attention to improving this situation is important, particularly for the future advancement of the industry.
 - (e) The synthetic polyisoprene capacities predicted for the end of the decade appeared to be considerably excessive because future investment in plants is unlikely to be favoured economically on the price trends indicated.

- (f) The SR and NR industries should collaborate as far as legally possible in future planning. If supply-demand balance is to be preserved, an ordered approach by SR and NR producers is a practical necessity.
 - (g) If UNIDO undertakes feasibility studies on establishing SR production then all factors bearing on economic viability should be considered.
- 16) In this assessment, it was recognized that:
- (a) The rubber supply industry in the long-term is a major growth industry, notwithstanding the present depressive situation
 - (b) NR is, and will for many years be, a major source of wealth for a number of tropical developing countries. and
 - (c) The NR industry, being labour intensive, is of great importance as a source of employment in the countries that grow natural rubber.

IV. COUNTRY REPORTS

17) The representative of the Research and Design Institute for Tyres and Rubber Technical Goods, Romania, presented a paper on "The use of natural and synthetic rubbers in the Romanian tyre industry", and the representative of the Federation of Industries of the State of Guanabara, Brazil, presented a paper on "Natural rubber and synthetic rubber in the developing countries (Brazil)". These papers showed that two countries in different parts of the world and with different economic systems were each experiencing substantial growth in rubber consumption. In both cases, national financial and self-sufficiency factors together with technical considerations are important in determining the proportional use of NR and SR. These factors will have to be reckoned with in forecasting the uptake of NR vis-à-vis SR in other countries. The representative from Brazil made particular reference to the serious effects of indigenous pests and diseases on the local NR producing plantations and sought help in coping with this and other problems.

Y. TECHNICAL REPORTS ON NR AND SR

18) Papers on "Main technical and economic problems faced by developing countries in producing and selling NR", "Natural rubber research in India - its scope and objective", "Some considerations concerning the smallholder's role in NR production", and "Selling prices and freight rates of NR" were presented by the representatives of the Rubber Research Institute of Malaya, the Rubber Research Institute of India, and the Royal Tropical Institute, Netherlands. These papers brought out:

- (a) Notable technical advances have been made in improving NR production and processing
- (b) For these advances to be effective in raising the competitive position of NR, they must be quickly and widely applied, in particular in the smallholders' area. Due to the magnitude and complexity of the difficulties involved, a large input of manpower and financial resources is required for successful implementation.
- (c) Shipping costs in general are rising and they are imposing a disproportionate burden on NR primary producers. Steps required to ameliorate this situation were outlined. In discussion, it was pointed out that rising freight rates were also detrimental to the SR industry.

19) Papers on "New technological developments in NR and their effect on competition from SR", "Trends and achievements of the tyre and rubber goods industries in replacing natural by synthetic rubber", "Natural rubber and the stereo diene synthetic rubbers: current technology and expected trends", and "The extension of rubber to plastics materials" were presented by the representatives of The Natural Rubber Producers' Research Association, United Kingdom, the Dunlop Ltd., United Kingdom, the Goodyear Tire and Rubber Company, USA, and E.I. du Pont de Nemours and Co., USA. From these papers it was noted that:

- (a) Service demands on rubber articles require that the properties of rubber compounds must be continuously improved
- (b) A dynamic approach to this particular problem requires:
 - i) Making the best use of different rubbers available, singly and in blends
 - ii) Fully utilizing property improvements resulting from chemical modifications and compounding techniques.
- (c) The main factors governing the BR/SI usage pattern are technical considerations, economics, availability, and the support demanded for indigenous industries. The predominance of any of these can vary between countries at any given time. It was generally agreed that, based on technological factors alone, there is a fairly high minimum level of both natural and certain synthetic rubbers required in order to produce high quality products.

VI. FACTORS ON THE FUTURE SUPPLY/DEMAND SITUATION

20) Papers on "FAO projections of the world rubber market to 1960", "World synthetic rubber market in 1960", and "Accelerating change and its impact on future planning in the rubber industry" were presented by FAO, The Natural Rubber Producers' Research Association (INRPA), United Kingdom, and the International Institute of Synthetic Rubber Inc. (IISRP), USA. Although there are gaps in information available from large and important geographical areas and although considerable uncertainty inevitably attached to forecasts and predictions for a decade ahead, a broadly consistent framework for planning forward had come into being. In discussion, the following summary of various forecasts was presented:

World Demand (excluding Eastern Europe and Mainland China)

1952

(in '000 of tons)

	US	SI	Total
Robinson Report	3,100	10,550	13,650
I.R.S.G.	3,350	5,450	11,800
FAO	(a) 3,550 - 3,850 (b) 2,910 - 3,150	8,550 - 8,900 9,250 - 9,550	12,100-12,700
I.D.R.D.	3,600	3,400	12,200
H.R.P.R.A.	3,750 - 4,750	6,750 - 9,750	11,500 - 13,500
Mr. P.F. Adams (Secretary-General I.R.S.G. - personal forecast)	4,100 - 4,400	7,850 - 8,150	12,250

Eastern Europe and Mainland China

1952

(in '000 of tons)

Estimated Rubber Imports

Robinson	1,200 (750 and 450)
I.R.S.G.	1,000
FAO	804 - 110 (464 - 620 and 430 - 480)
I.D.R.D.	1,000
H.R.P.R.A.	500 - 1,500
Mr. P.F. Adams (Secretary-General I.R.S.G. - personal forecast)	1,000 (600 and 400)

World Natural Rubber Supply

1990

(in '000 of tons)

Robinson	4,400
I.R.S.O.	5,300
FAO	4,800 (incl. Ethrel effect)
I.B.R.D.	4,800
H.R.P.R.A.	4,750 - 5,750
Mr. P.F. Adams (Secretary-General I.R.S.O. - personal forecast)	5,100 - 5,400

World Rubber Consumption

1990

(in '000 of tons)

	<u>MR</u> ^{2/}	<u>NR</u>	<u>Total</u>
Mr. A.J. Smith (Dunlop Limited)	3,750	11,000	14,750

^{2/} Including MR imports into Eastern Europe and Mainland China

21) An imaginative and stimulating view of newer problems which would face industry in the decades ahead was presented in the IIRP paper. Concern with environmental control and preservation would grow, and this would both impose constraints on, and provide opportunities for, the rubber industry for very many years. In discussion, a representative of the MR industry drew attention to the distinctive ecological benefits that MR production provides while manufacturing an industrial raw material.

VII. REFERENCE TO DOCUMENTS

22) In order that a proper appreciation be obtained of the above matters, particularly those referred to in paragraphs 17 to 21, reference should be made to the C.W. Robinson report and to the papers given at the meeting as listed in appendix 4.

VIII. RECOMMENDATION

23) In arriving at recommendations for action, the meeting kept in mind:

- (a) The present rubber producing situation is widely one of depressive over-supply and hence increasing the consumption of rubber, not its production, is the pressing market and industrial need.
- (b) The spheres of respective responsibility of UNIDO and other U.N. and inter-governmental agencies.

24) Activities within the purview of UNIDO warranting attention are:

- (a) To support actively the setting up of rubber product manufacturing industries in developing countries;
- (b) To evaluate existing but not well exploited usages of rubber and to recommend programmes for promoting their wider adoption.
- (c) To explore and encourage the development of new uses for rubber in order to stimulate a much increased demand for all rubbers.

- (d) To provide all possible assistance to agencies such as IRSG in improving and supplementing statistical information on all aspects of the rubber industry, especially in respect of the centrally planned economy countries
- (e) To ensure that in countries where the creation of the SR production facilities is favoured by local circumstances, critical regard is paid to the realities of the global rubber situation in the evaluation of projects.

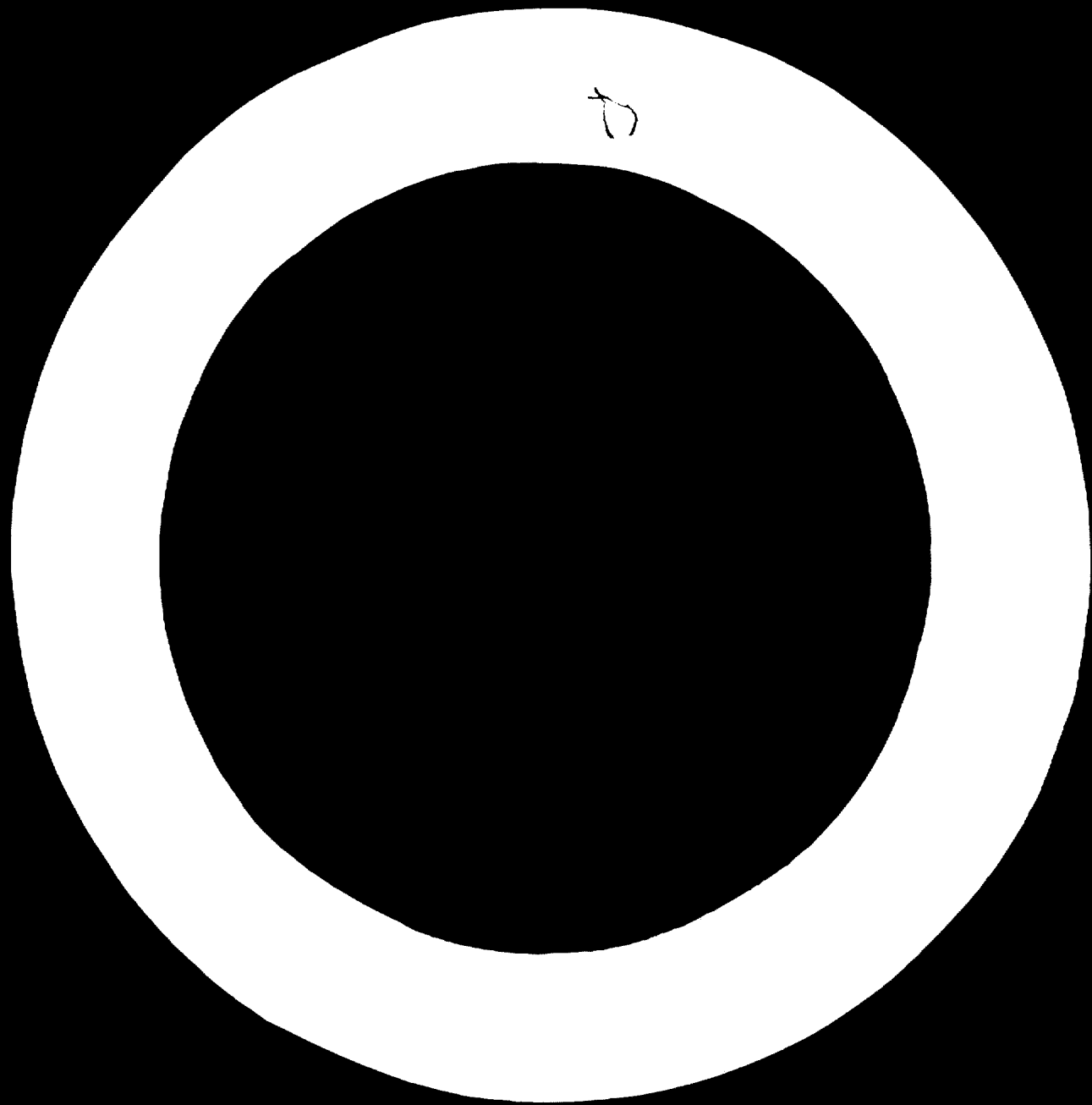
25) Additionally, and following the meeting's concurrence with the recommendations in the C.W. Robinson report on measures to modernize the RR producing industry (paragraphs 15 and 16), the appropriate U.N. agencies are urged to further strengthen their practical assistance to this end and UNIDO should participate within its framework of responsibility, and might do so, for example, by supporting the establishment of machinery making and repairing facilities and of testing and control laboratories.

IX. FOLLOW-UP ACTION

26) Concrete action on most of the activities recommended in Section VIII of this report will be dependent on developing countries coming forward with specific requests for assistance. The meeting hopes that when such requests are made, they will be favourably and positively supported by UNIDO.

X. FURTHER MEETING

27) A meeting in about two years to review progress on the recommendations now submitted and to consider the industry situation at that time, would seem advantageous.

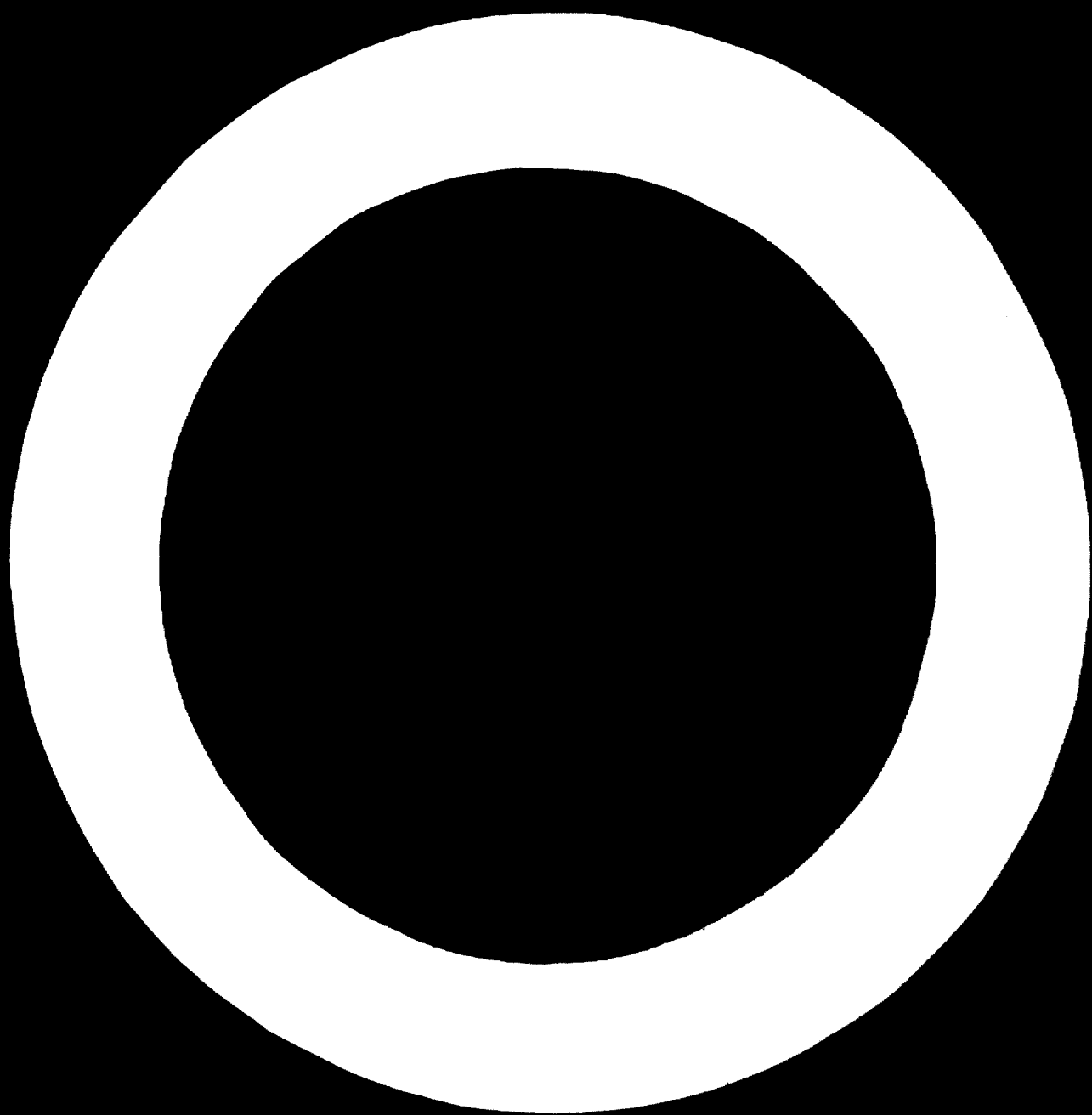


APPENDIX 1

AMENDMENTS AND ADDITIONAL INFORMATION

REGARDING THE C. W. ROBINSON AND CO. REPORT

proposed by the participants



Mr. Arsjad - Department of Trade, Djakarta

NUMBER AND LICENSED CAPACITIES OF S.I.R., 1968-71 IN INDONESIA

<u>Year</u>	<u>No. of factories</u>	<u>License capacities</u>
1968	29	189,300 tons
1969	65	357,700 tons
1970	75	396,000 tons
1971	82	429,000 tons

NUMBER OF PRODUCTIVE FACTORIES, PRODUCTION, AND EXPORTS OF
S.I.R., 1969-1971 IN INDONESIA

<u>Year</u>	<u>No. of productive factories</u>	<u>Production</u>	<u>Export</u>
1969	14	9,000 tons	8,346 tons
1970	30	35,000 tons	32,500 tons
1971	58	126,791 tons	117,511 tons

Source: Department of Trade, Djakarta, Indonesia

Mr. Verhaar - Royal Tropical Institute

Page 22 The paragraph: ✓

"It was expected etc. than Malaysia" should be changed as follows:

"In 1970, Indonesia shipped 35,000 tons of S.I.R.; this quantity increased to 127,000 in 1971".

Page 24 The paragraph:

"In Indonesia, where over etc. for private interests" should be changed as follows:

"In Indonesia, where over 70 per cent of the rubber is produced by smallholders, the Government first contracted for 20 plants to produce technically specified NR. Currently, more than 40 block rubber factories are in operation, mostly handling smallholders' rubber".

Page 25 First paragraph:
to be added -

"In Ivory Coast and Liberia also a number of block rubber processing plants are operative".

Page 109

Correction:

Holland

Plastics and Rubber Institute B90

Zuidpolder

Delft

Director: Dr. P.J. Bakker

Indonesia

Research Institute for Perennial crops

Taman Raden Saleh

Bogor, West Java

Director: Prof. Dr. Sutardi

Mr. Hodge - Polymer Corporation
Mr. Vickers - International Synthetic Rubber Co.
Mr. Garner - Shell International
Mr. Adams - International Rubber Study Group

Observations on the apparent inadequacies arising from the Robinson report have been made by several of the experts attending the conference. We submit the following comments and request that no copies of the Robinson report be sent out without these amendments being incorporated:

1) Forecast prices for synthetic polyisoprene

There is little or no evidence to support the contention that there would be adequate supplies of low cost isoprene monomer in the future and which would permit a viable enterprise capable of putting polyisoprene onto the market at a price of 12.0 US c/lb.

On the contrary manufacturing costs are expected to escalate during the next decade due to higher crude oil prices, increased feedstock and precursor price levels and because of the inflationary influence on the capital costs for new plants.

2) SEM and IR prices

The prices quoted in the DCN are only for spot quantities and bear little or no relationship to prices actually paid.

Additionally prices quoted for the UKA are inaccurate as they refer only to published prices where as in fact industry buys on a heavily discounted basis. Thus prices are shown as at a level of 23.0 US c/lb. but discount levels of around 25 - 30% are prevalent which means effectively a selling price of 16 - 17 US c/lb.

Finally the price available for both SEM and IR which are forecast in the report for 1980 are in fact consistent with prices already prevailing in 1971 and 1972.

3) Statistical data (exhibit 7, page 137)

There is an error in the report regarding the 1980 estimated world production of synthetic rubber (excluding socialist countries).

The world total is given as 12.0 million tons whilst the breakdown of various types add up to 12 million tons.

Also, the figures given for stereo-regular types (IR, SR and SBR) appear as 6.5 million tons or 54% of all SR and therefore, are much too high. The corresponding figure for SBR is 4.0 million tons or 33% of all SR and is much too low.

The stereo rubbers in 1970 actually represented only 20% of all the SR with SBR representing 6%.

There is no evidence to support this dramatic change in product ratios for 1980 and more realistic levels would be 25 - 30% for stereo rubbers and 55 - 60% for SBR.

4) Total demand estimates for 1980 (exhibits 8 and 9)

In the report, demand estimates (excluding the socialist countries) for 1980 appear as 13.65 million tons of which IR is 3.1 million tons and SR is 10.55 million tons.

These figures are considered to be excessively high.

For Japan, the figures given in the report are significantly higher than those quoted officially as can be seen from the total below:

<u>Product</u>	<u>Official Japanese estimate</u> <u>million tons</u>	<u>Robinson report</u> <u>million tons</u>
■	0.375	0.35
■	0.975	1.80
Total	<u>1.350</u>	<u>2.15</u>

It can be seen that the Robinson estimate is 1 million tons higher for this country alone.

Mr. Langer - The Rubber Growers' Association

Page 19 - last two lines

Presumably someone better qualified than I am will take up the point about synthetics having more uniform qualities than NR.

Page 22 - line 3

The SIR grades are not identical with SBR in a number of important respects. E.g. SIR 5 can be manufactured from non-latex source materials. Also there is no SIR 10, but there is a SIR 35.

Page 31 - fourth line from bottom

The word identical is again used.

Page 32

Latex - I believe that this paragraph needs qualification. It should be noted that over the past ten years latex consumption has experienced considerable growth and there is no reason to suggest that this will be halted. On the contrary, developments as carpet backings and applications in the construction industries are substantial growth areas and promise a considerably increased demand.

Page 14 - PARAGRAPH VI

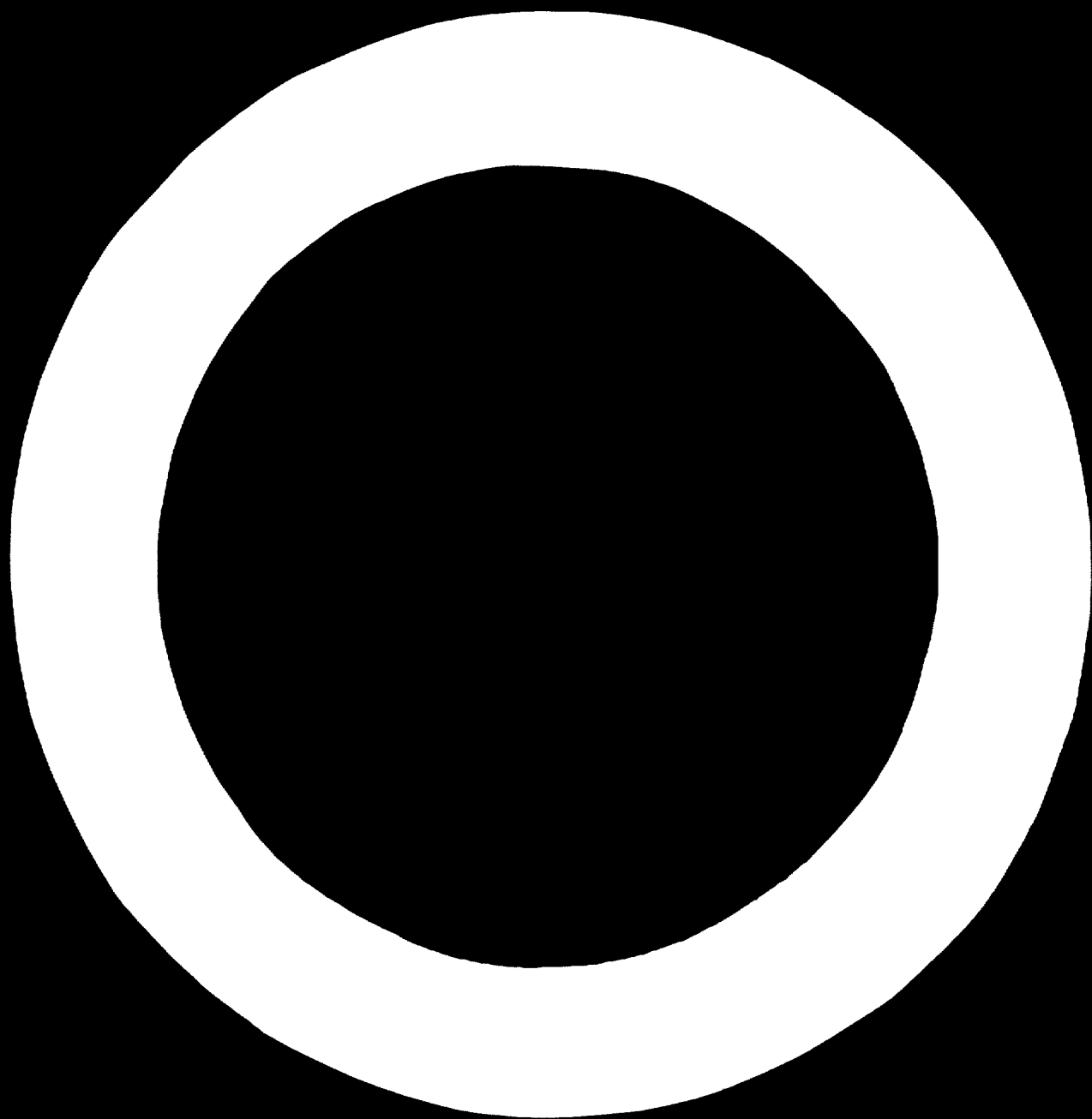
It should be noted that 1972 production is already estimated to exceed the projected 1975 production figure.

Pages 21 and 22

There are a number of inaccuracies in the reporting of the SIR scheme.

Page 22 - last two lines

"70" should read "75" and "1712" - "1500".



APPENDIX 2

AGENDA

Monday, 27 March 1972

Opening Session 10.00 - 12.00

Opening speech Mr. N.K. Grigoriev, Director,
Industrial Technology Division

Election of Chairman, Vice Chairman and
Rapporteur

Statement Mr. M.C. Verghese, Chief,
Fertilizers, Pesticides and
Petrochemicals Industries
Section

Presentation of Mr. A. Dumitrescu, Technical
overall programme Secretary of the meeting.

Discussion on objectives of
the meeting and expected
results and benefits to
natural and synthetic rubber
producing countries - future
UNIDO activities in this area.

Afternoon session

Participants' comments on the
study
ID/WG.118/4
Future trends in, and
competition between natural
and synthetic rubber

by
C.W. Robinson and
Co., Inc.
USA

ID/WG.118/18
Use of natural and synthetic
rubbers in the Romanian Tyre
Industry

by
C. Dragas and
G. Ivan
Romania

Discussions

Tuesday, 28 March 1972

Morning session

ID/WG.118/9
Natural rubber and synthetic
rubber in the developing
countries

by
M. Ramos and
R. Miragaya
Brasil

ID/WG.118/16.Rev/1
Main technical and economic
problems faced by developed
countries in producing and
selling NR

by
B.C. Sekhar and
P.O. Thomas
Malaysia

ID/WG.118/12
Natural rubber research in
India - its scope and
objective

by
V.K. Bhaskaran
Bair
India

ID/WG.118/8
Some considerations concerning
the smallholders' role in NR
production

by
G. Verhaar
The Netherlands

ID/WG.118/17
Selling prices and freight
rates of natural rubber

by
P.O. Thomas
Malaysia

Discussions

Afternoon session

ID/WG.118/7
New technological
developments in NR and
their effect on competition
from SR

by
L. Mallins
UK

ID/WG.118/11
The trends and achievements
of the tyre and rubber goods
industries in replacing
natural by synthetic rubber

by
A.J. Smith
UK

ID/WG.118/10
Natural rubber and the
stereo diene synthetic
rubbers: Current technology
and expected trends

by
R.H. Pierson,
K.W. Scott,
H.H. Nager and
J.P. Urban
USA

ID/WG.118/5
The extension of rubber to
plastics materials

by
J.F. Lewis
USA

Discussions

Wednesday, 29 March 1972

Morning session

ID/WG.118/13
FAO projections of the
world rubber market to
1980

by
B.B. Agostini
Italy

ID/WG/118/6
World synthetic rubber
market in 1980

by
P.W. Allen
UK

ID/WG.118/15
Accelerating change and its
impact on future planning
in the rubber industry

by
R. Lamberson
USA

Discussions

Afternoon session

Discussions

Thursday, 30 March 1972

Morning

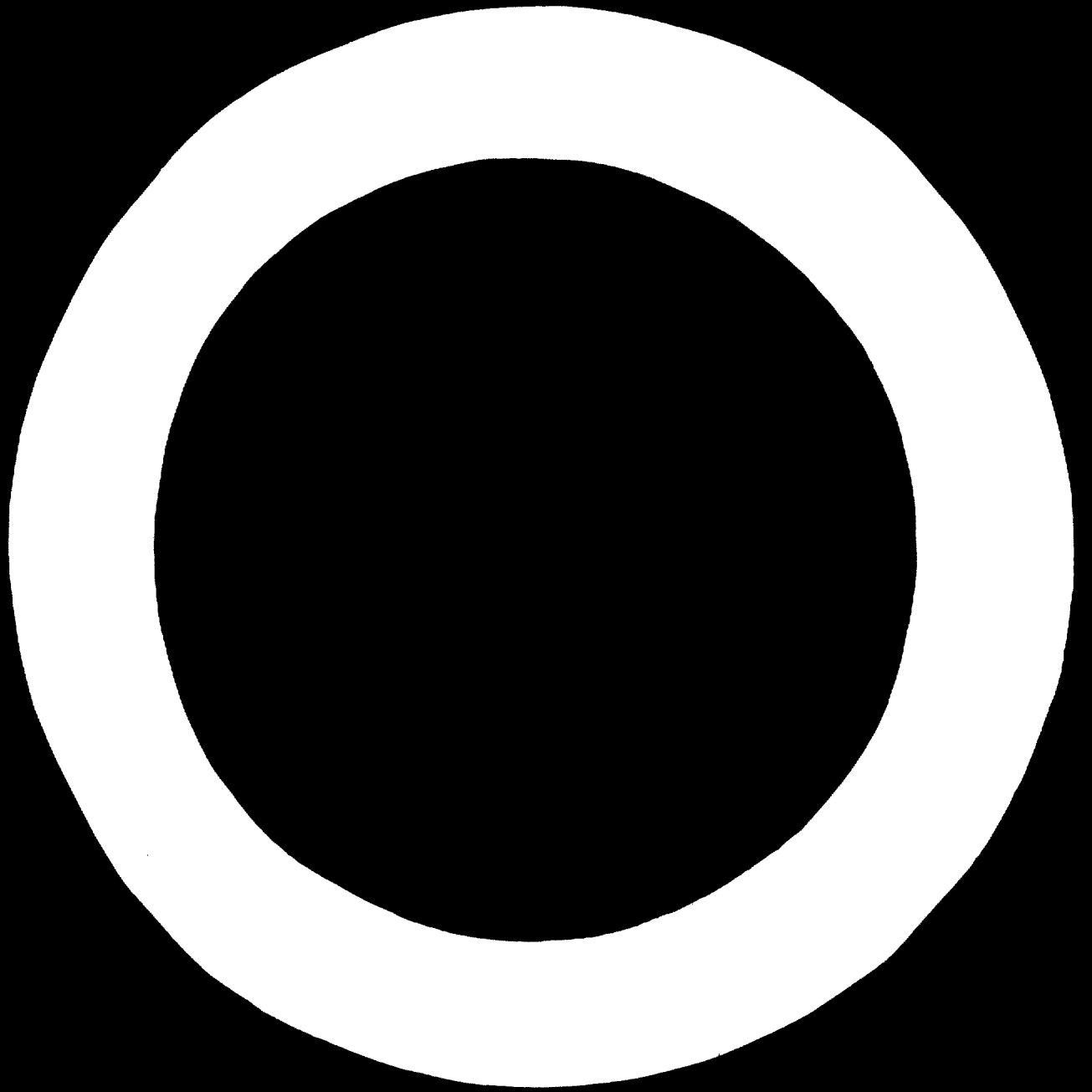
Visit to the Semperit A.G. Traiskirchen
Works, (Tire Factory), Traiskirchen,
Lower Austria.

Afternoon session

Drafting of report.

Adoption of report.

Conclusions of the meeting.



APPENDIX 1

LIST OF PARTICIPANTS

FIELD Secretariat

Name

Position and address

H.C. VINCIGU

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Petrochemicals Industries
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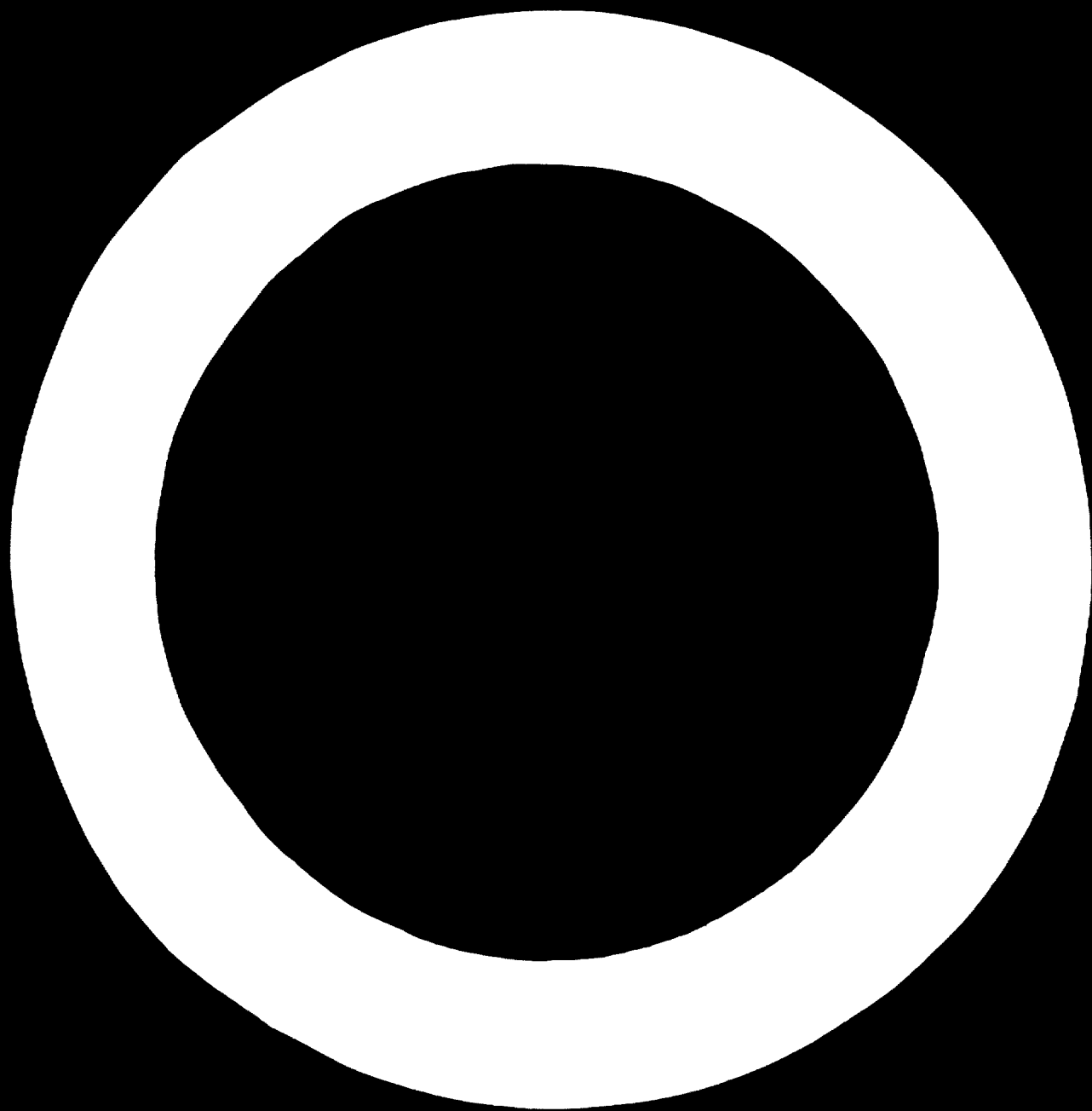
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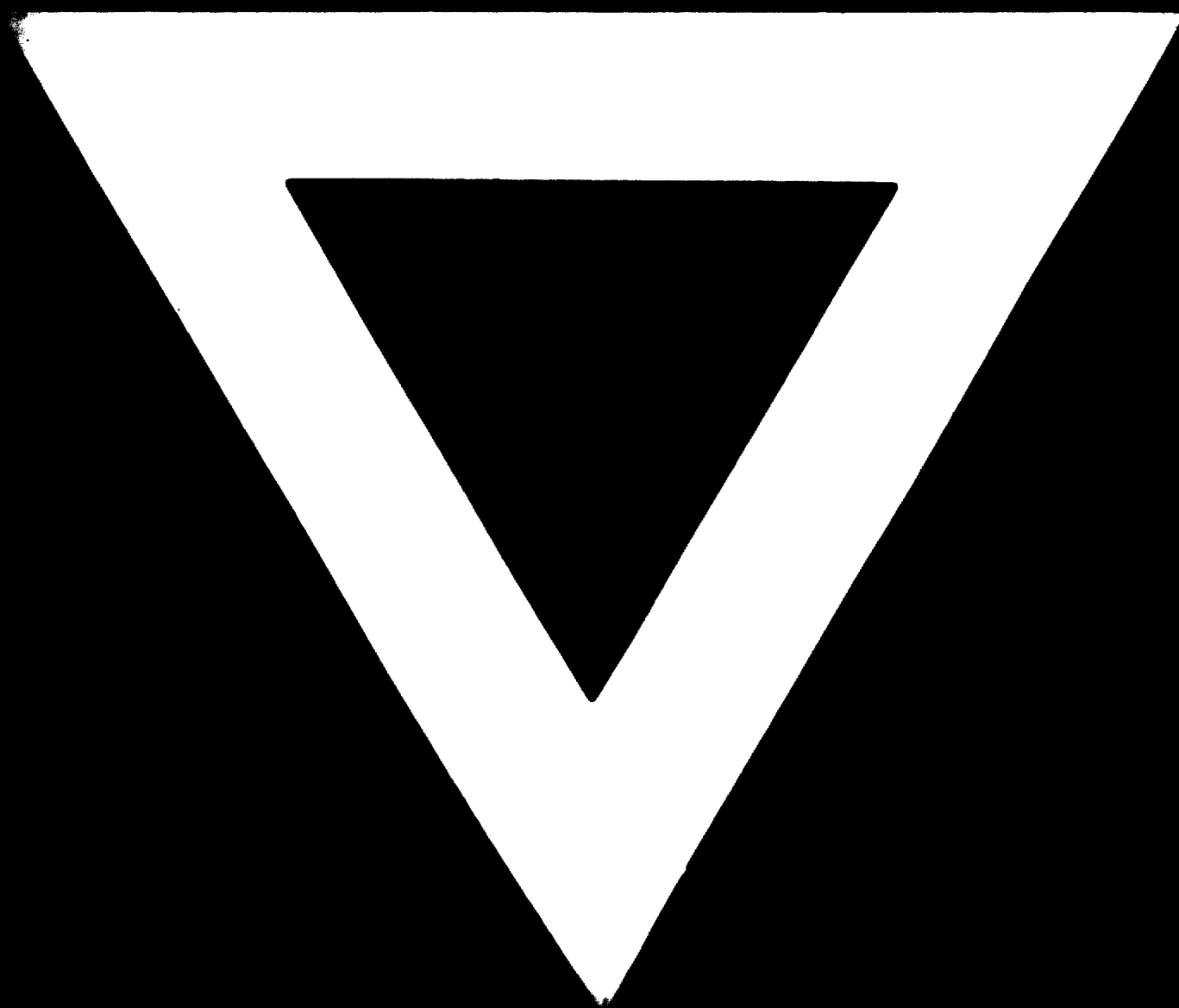
GENERAL

LIST OF DOCUMENTS

SYMBOL	TITLE	AUTHOR, ORGANIZATION AND COUNTRY
ID/WG.118/1	Agenda	-
ID/WG.118/2	List of Participants	-
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ID/WG.118/4	Future trends in, and competition between natural and synthetic rubber	G.W. Bricker C.W. Robinson and Co. Inc. USA
ID/WG.118/5	The extension of rubber to plastics materials	John F. Lontz Consultant USA
ID/WG.118/6	World synthetic rubber market in 1980	P.W. Allen The Natural Rubber Producers' Research Association United Kingdom
ID/WG.118/7	New technological developments in NR and their effect on competition from SR	L. Mullins The Natural Rubber Producers' Research Association United Kingdom
ID/WG.118/8	Some considerations concerning the smallholder's role in NR production	G. Verhaar Royal Tropical Institute The Netherlands
ID/WG.118/9	Natural rubber and synthetic rubber in the developing countries	I. Ramos Vulcan Material Plastico S.A. Brazil R. Miragaya Ministry of Industries and Commerce of Brazil
ID/WG.118/10	Natural rubber and the stereo diene synthetic rubbers: current technology and expected trends	R.M. Pierson, K.W. Scott, R.H. Mayor, J.P. Urban The Goodyear Tire and Rubber Company USA

<u>SYMBOL</u>	<u>TITLE</u>	<u>AUTHOR, ORGANIZATION AND COUNTRY</u>
ID/WG.118/11	The trends and achievements of the tyre and rubber goods industries in replacing natural by synthetic rubber	A.J. Smith Dunlop Limited United Kingdom
ID/WG.118/12	Natural rubber research in India - its scope and objective	V.K. Bhaskaran Nair The Rubber Research Institute of India India
ID/WG.118/13	FAO projections of the world rubber market to 1980	B.B. Agostini FAO Italy
ID/WG.118/14	Present and future trends in utilization of natural and synthetic rubbers in Egypt	M. Fathy El Feky Transport and Engineering Company Arab Republic of Egypt
ID/WG.118/15	Accelerating change and its impact on future planning in the rubber industry	R. Lamberson International Institute of Synthetic Rubber Producers, Inc. USA
ID/WG.118/16 Rev.1	Main technical and economic problems faced by developing countries in producing and selling NR	B.C. Sekhar, P.O. Thomas Rubber Research Institute of Malaya Malaysia
ID/WG.118/17	Selling prices and freight rates of NR	P.O. Thomas Rubber Research Institute of Malaya Malaysia
ID/WG.118/18	Use of natural and synthetic rubbers in the Romanian tyre industry	C. Dragus G. Ivan Research and Design Institute for Tyres and Rubber Technical Goods Romania
ID/WG.118/19	Draft Report	





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