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SOUTH AFRICAN
WOOL AND TEXTILE RESEARCH INSTITUTE
OF THE CSIR

P.O. BOX 1124
PORT ELIZABETH

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SAWTRI BULLETIN

Editor: P. de W. Olivier

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WOOL AND TEXTILE RESEARCH INSTITUTE
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P.O. Box 1124
Port Elizabeth

EDITORIAL COMMITTEE

Dr D. W. F. Turpie, Chairman
P. de W. Olivier, Editor
Dr L. Hunter
Dr N. J. J. van Rensburg
M. A. Strydom

EDITORIAL

SAWTRI — A Catalyst for the South African Textile Industry

July 1982 has undoubtedly become a milestone in the history of SAWTRI and the South African Cotton Industry for it was during that month that the important Symposium "New Technologies for Cotton" was held in Port Elizabeth.

For many years now the Institute has played a rôle in collaboration with others in organising Conferences and Symposia on matters of common concern and interest to the South African textile industry. In more recent years the Director and staff have realised that not only can the Institute play a rôle in this direction but that it should, perhaps, become the seat for initiating these events. To this end, it is proposed to create a calendar for such events bearing in mind, of course, that they do not clash with those on the international calendar such as ITMA and similar events.

With the enormous growth of the textile industry predicted for the remaining years of this century and looking towards an unprecedented area of advancing technology with automation, robotics and computers becoming the order of the day, it will be one of SAWTRI's prime tasks to monitor these developments and timeously to bring them to the attention of the textile industry through Symposia.

INSTITUTE NEWS

Assistant Director attends First World Merino Conference

Dr L. Hunter, Assistant Director of SAWTRI, attended the first World Merino Conference in Melbourne, Australia which was held from 14th to 17th July. Dr Hunter had been specially invited to present a joint paper of which he, as well as the Director of SAWTRI, Dr D. W. F. Turpie and Mr E. Gee, SAWTRI's head of Statistics, were the authors.

Addressing the more than 400 delegates from eleven countries attending the Conference organised by the Australian Association of Stud Merino Breeders, Dr Hunter reviewed the work carried out at SAWTRI over the past ten years on the effect of blending different wools and the relevance of fibre properties and breed of sheep in the textile performance of wool.

Papers were presented also by speakers from Spain, Mexico, USSR, India, USA, Brazil, New Zealand and the host country, Australia.

The Republic of South Africa was well represented by some thirty delegates.

Dr Hunter delivering his paper at the first World Merino Conference in Melbourne, Australia.

CSIR President and Vice-President at SAWTRI

Dr C. F. Garbers, President of the CSIR, accompanied by Mr J. de Wit, Vice-President of the CSIR responsible for SAWTRI who had come to Port Elizabeth to be present at the opening of the Cotton Symposium, paid a visit of rather special importance to the Institute on July 26th. At a special tea hosted by the President and to which the entire SAWTRI staff had been invited, the President presented Mr Ken Schröder, Head of SAWTRI's Technical Services Department, with a gold watch in recognition of 25 years' service to the Institute. Addressing the Staff on this occasion the President said that the CSIR Executive had decided to present the traditional CSIR twenty-five years' Service Awards to all those staff members upon completing 25 years service to an Institute even though the particular Institute may have been a fully fledged Institute of the CSIR for a lesser period. SAWTRI became such an Institute in 1971. Mr Schröder, however, joined SAWTRI already in 1957 when it still operated from Grahamstown in conjunction with Rhodes University. Among Mr Schröder's many achievements was his supervision of the transport of the plant and machine installations when the Institute was transferred to Port Elizabeth in 1967, an experience which stood him in good stead during the recent installation of machinery in the new extensions to the complex, the entire operation having been supervised by Mr K. Schröder.

Mr Ken Schröder receiving his Gold Watch from the President of the CSIR, Dr C. F. Garbers.

Symposium on "New Technologies for Cotton"

The eagerly awaited Symposium "New Technologies for Cotton", organised by SAWTRI and the Eastern Cape Section of the Textile Institute, has come and gone bringing with it the opportunity of renewing old friendships and making many new ones in many different countries. It attracted more than 300 delegates from twelve countries in Europe and as far afield as the United States and Mauritius with a noteworthy strong contingent from the Zimbabwean cotton industry and representatives from Malawi and Swaziland.

The events of the pre-Symposium programme arranged for Monday, 26th July, will certainly be long remembered by most delegates.

During the morning a briefing session for Speakers and Session Chairmen was held at the Symposium venue, the University of Port Elizabeth. Speakers were able to familiarize themselves with the three Auditoria and equipment used for the Plenary and Parallel sessions of the Symposium programme. This was followed by a lunch given by the Organizing Committee at SAWTRI for the same group and to which invited guests and office bearers had been invited. The lunch achieved, as it was intended to do, the effect of creating among the presenters of the technical papers a feeling of friendship and team spirit. It also served the main purpose of thanking the Speakers and all office bearers.

During the morning, delegates arriving at their hotels were able to register for the Symposium and after lunch were brought by buses to SAWTRI for an Open Afternoon arranged for all those attending the Symposium.

The very strenuous work put in by the entire staff of the Institute to get all the departments functional, clean and tidy after the long disruptive building extension programme over the past twelve months was evident for all to see when the delegates arrived for the Open Afternoon.

The Third South African Convocation of the Textile Institute to which all delegates had been invited took place during the late afternoon and many attended this impressive ceremony held at the University of Port Elizabeth.

The same evening a Symposium Banquet and Cotton Fashion Show was staged for delegates and invited guests at the Elizabeth Hotel. The Fashion Show was sponsored by the South African Cotton Board and was undoubtedly a great success. The garments were styled by a young South African designer and made from pure cotton fabrics manufactured in South Africa from South African cotton and their presentation was received with much appreciation by the audience. This proved to be a fitting climax to a very eventful day on the eve of the Symposium itself.

The opening ceremony took place on Tuesday, 27th July in the Auditorium of the University of Port Elizabeth at a plenary gathering of the delegates and official guests who had been invited to attend.

Dr D. W. F. Turpie, SAWTRI's Director and Chairman of the Organizing Committee bade the guests welcome and this was followed by a welcoming speech by Dr C. F. Garbers, President of the CSIR after which, Dr H. Locher, President of the Textile Institute gave a short welcoming address on behalf of the Textile Institute.

The official opening was performed by the Hon. Deputy Minister for Agriculture & Fisheries, Mr Sarel Hayward. The business of the Symposium then commenced, with plenary sessions and parallel sessions being conducted in the three venues at the University.

In all, 46 papers were presented of which six were read by members of SAWTRI.

During the official closure inscribed silver trays were presented to SAWTRI and the Eastern Cape Section of the Textile Institute, by Mr A. Frame, representing the South African cotton industry, in appreciation of the rôles played by these organisations in the planning and organisation of the Symposium.

Mr G. A. Robinson of SAWTRI and Chairman of the Eastern Cape Section of the Textile Institute, left, and Dr D. W. F. Turpie, Director of SAWTRI with the salvers presented to them at the close of the Cotton Symposium.

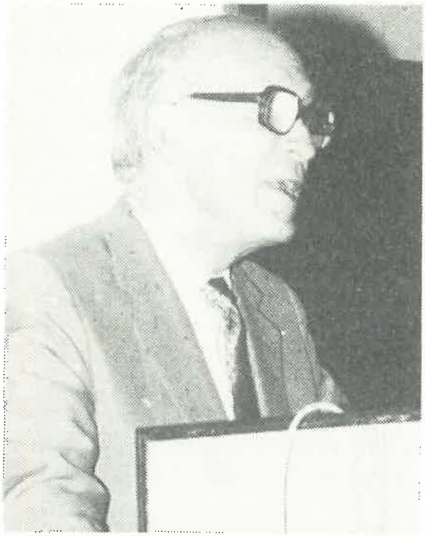
Mr A. Frame, (back to camera) presenting a salver to Mr G. A. Robinson, Chairman, Eastern Cape Section of the Textile Institute.

Mr A. Frame, (Back to Camera) presenting a salver to Dr D. W. F. Turpie, Director of SAWTRI

Symposium Photographs:

Dr D. W. F. Turpie welcoming delegates and dignitaries.

Dr C. F. Garbers welcoming delegates.



Dr H. Locher addressing delegates before the official opening.

The Symposium being officially opened by the Deputy Minister of Agriculture and Fisheries, the Hon. Mr Sarel Hayward.

Part of the audience during the official opening.

SAWTRI Staff Members Receive Awards at the Third S.A. Convocation of the Textile Institute

On July 26th the Third S.A. Convocation of the Textile Institute was held in the Auditorium of the University of Port Elizabeth. The President of the Textile Institute, Dr Hans Locher, was the guest of honour.

The Convocation is held every two years for the awards of the Textile Institute to be made in respect of South African resident members who are unable to attend the Convocation held in Manchester, England.

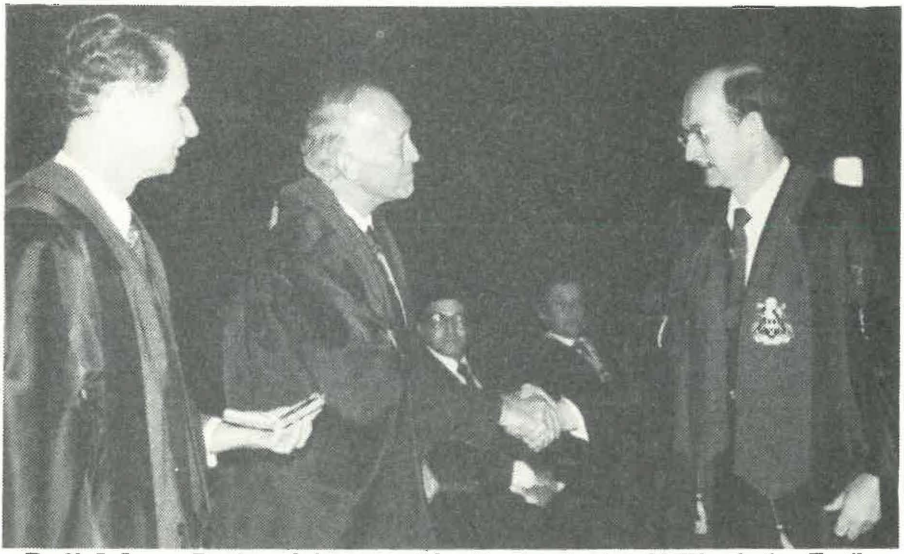
Among the 29 recipients of awards were four SAWTRI staff members:

Dr N. J. J. van Rensburg, Group Leader of Wet Processing and Textile Chemistry received the Fellowship of the Textile Institute (FTI) as well as the Service Medal of the Textile Institute;

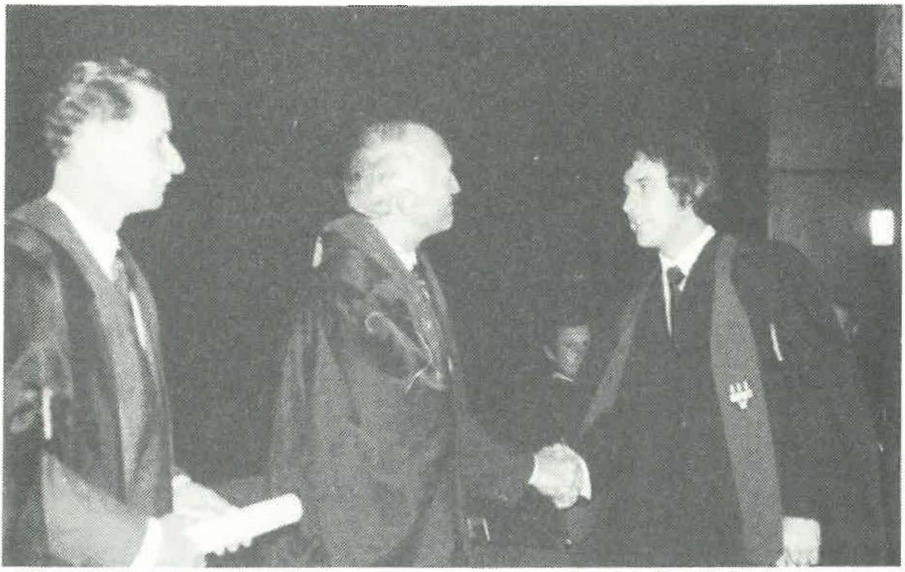
Dr F. A. Barkhuysen and Mr G. H. J. van der Walt, respectively Heads of Dyeing and Finishing were both awarded Associateship of the Textile Institute and Mr G. Ball of the Finishing Department received a Licentiateship of the Textile Institute.

The Awards were presented by Dr Hans Locher, International President of the Textile Institute.

Photographs of SAWTRI Recipients of Awards:

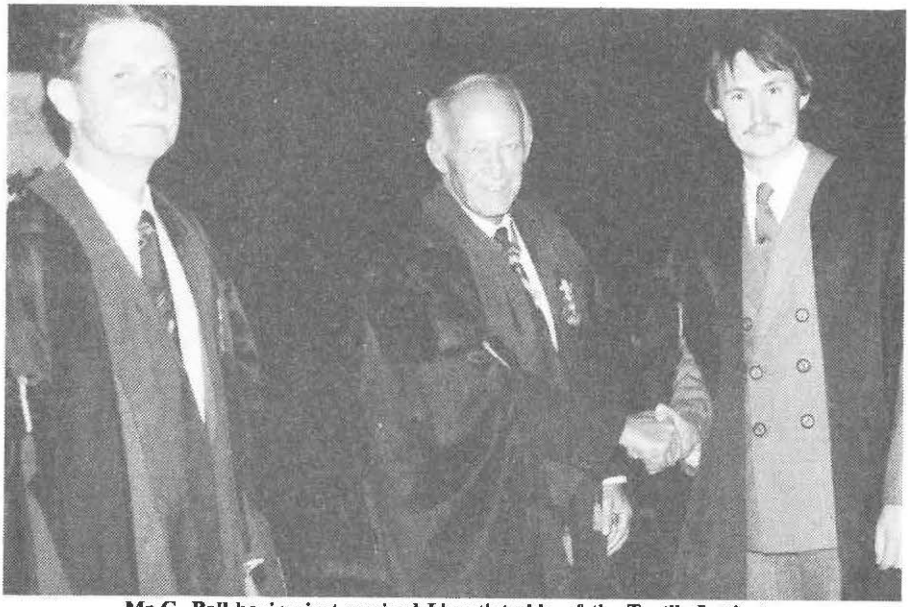


Dr N. J. J. van Rensburg being presented with the Service Medal of the Textile Institute.



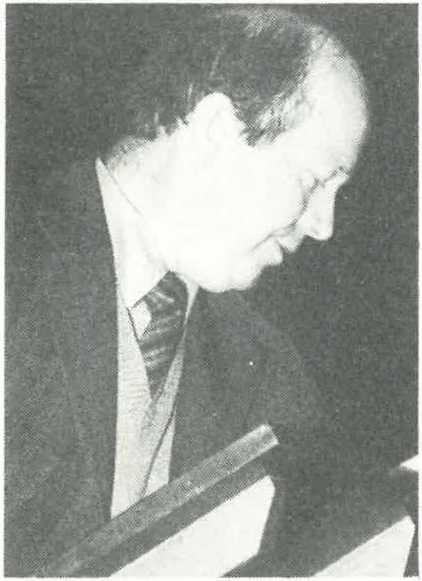
Dr F. A. Barkhuysen being awarded an Associateship of the Textile Institute.

Mr G. H. J. van der Walt receiving the Associateship of the Textile Institute.



Mr G. Ball having just received Licentiateship of the Textile Institute.

Photographs of SAWTRI STAFF presenting papers at Symposium



Dr L. Hunter

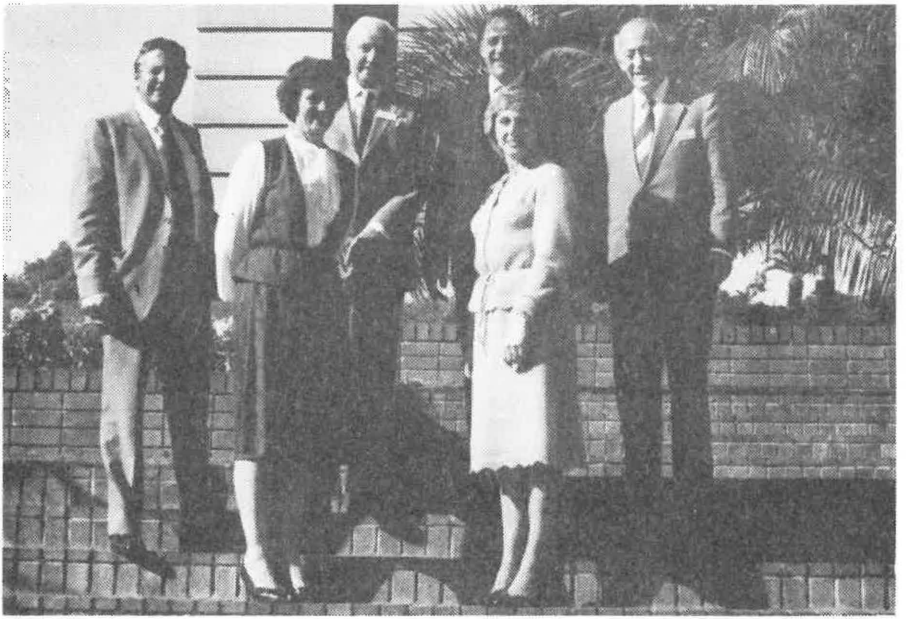
Dr N. J. J. van Rensburg

Mr G. A. Robinson

Mr M. A. Strydom

Mr G. H. J. van der Walt

Dr F. A. Barkhuysen



Key figures in the planning of the Symposium give a grateful smile for a job well done! L to R. Mr G. A. Robinson; Mrs M. Beer; Mr N. J. Vogt; Dr D. W. F. Turpie; Mrs M. de Klerk and Dr H. Locher.

SPEAKERS AT THE COTTON SYMPOSIUM

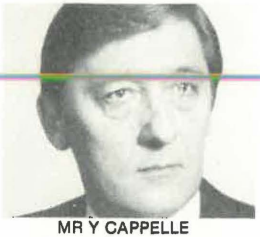
DR P ARTZT
Inst. für Textiltechnick,
Federal Republic of Germany

DR F A BARKHUYSEN
South African Wool & Textile Research Institute,
Republic of South Africa

MR J D BELCHER
South African Bureau of Standards, Republic of South Africa

DR H E BILLE
BASF AG, Federal Republic of Germany

MR C A BUCKLEY
University of Natal,
Republic of South Africa



MR Y CAPPELLE
Bevaloid S.A., France

MR G DANIELOWSKI
Trützschler GmbH & Co.,
Federal Republic of Germany

MR R K DIEHL
Benninger Engineering Co. Ltd.,
Switzerland

MR M C DIPPENAAR
Dept. Agriculture & Fisheries,
Republic of South Africa

MR A FRAME
Consolidated Frame Cotton Corporation Ltd.,
Republic of South Africa

MR G GEBALD
W Schlafhorst & Co.,
Federal Republic of Germany

MR N GREENBLAU
Woolworths (Pty) Ltd.,
Republic of South Africa

PROF G R GROVES
University of Natal,
Republic of South Africa

MR M GSTEU
Textilmaschinenfabrik Dr Ernst
Fehrer AG, Austria

MR J R HEARNS
Werner International, Belgium

MR G HESS
Zinser Textilmaschinen GmbH,
Federal Republic of Germany

DR L HUNTER
South African Wool & Textile
Research Institute,
Republic of South Africa

MR J KEUSCH
Sociétié Alsacienne de
Constructions Mécaniques,
France

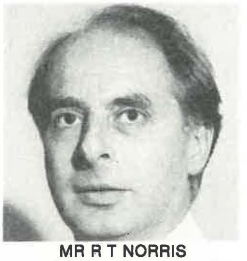
PROF H W KRAUSE
Swiss Federal Institute of
Technology, Switzerland

MR H W LUBBERS
Stork Brabant BV, Holland

MR W J MEYER
Benninger Engineering Co., Ltd.,
Switzerland

MR E P MOTTE
F. Laroche & Fils S.A.,
France

MR H MEULLER
Zellwedger-Uster Ltd.,
Switzerland



MR R T NORRIS
Imperial Chemical Industries
PLC, United Kingdom

DR J S PARKER
Texas Tech University,
United States of America

MR K G NICK
Consolidated Frame Cotton
Corporation Ltd.,
Republic of South Africa

MRS D REED
South African Bureau of Standards,
Republic of South Africa

DR M RIZZO
SAVIO,
Italy

DR B PEYER
Rieter Machine Works Ltd.,
Switzerland

DR M ROTONDO
Divisione Machine Filatura
Cognetex, Savio, Italy

MR K W SANDERSON
Agricair (Pvt) Ltd.,
Zimbabwe

MR J SCHÄPERS
Schubert & Salzer Machinen-
fabrik AG,
Federal Republic of Germany

DR H H SCHICHT
Luwa AG,
Switzerland

MR H B SEVENSTER
A H Marcuson Agricultural Machines (Pty) Ltd, Republic of South Africa

MR E TAUB
Leesona Corporation, United States of America

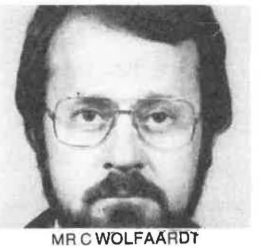
MR G W SMITH
Albright & Wilson Ltd., United Kingdom

MR M A STRYDOM
South African Wool & Textile Research Institute, Republic of South Africa

DR H G VAN HEERDEN
Dept. of Agriculture & Fisheries, Republic of South Africa

MR G D THEILIG
Texchem (Pty) Ltd., Republic of South Africa

MR G H J VAN DER WALT
South African Wool & Textile Research Institute, Republic of South Africa



MR C WOLFAARDT
David Whitehead & Sons (SA) Ltd., Republic of South Africa

DR N J J VAN RENSBURG
South African Wool & Textile Research Institute, Republic of South Africa

MR R S WAGNER
Automatic Material Handling Inc., United States of America

MR G WYNNE
Da Gama Textile Co. Ltd., Republic of South Africa

"QUO VADIS"

Closing address of the 1982 Cotton Symposium

by A. FRAME
(Chairman — SACTMA and
Managing Director — Consolidated Frame Cotton Corporation Ltd.)

To deal with all aspects of the future of the Industry will be impossible in the short time allocated. Thus I will deal briefly only with:

(a) How I see the Industry as a whole and the need to plan and co-ordinate the future on an International scale.

(b) What technical developments I think will guide the future, and

(c) In more detail the future of cotton as a fibre in our industry in view of the fact that our Symposium revolved around cotton.

Lets look at our Industry. It is one of the oldest known Industries — it began with Adam and Eve in the Garden of Eden — the day that they decided to make textiles out of fig leaves. Our Industry has undergone many changes in its long history, and is once again in a state of flux which already has had deep and far reaching consequences, not all of which are fortunate. Eventually we shall emerge from the current recession and imbalance, into a world of increasing populations, requiring evermore clothing. The corresponding increase in production has to be planned, and it should be our aim to see that this is done in a more efficient and co-ordinated fashion than in the past.

Analysing recent history one is led to the conclusion that errors and oversights in projection of the future led to the creation or expansion of manufacturing capacity, especially in the developing countries, with insufficient appreciation of the realities and prospects of the World market place. The necessity to improve the quality of our planning and the need this imposes for timely information of what is going on, are the matters that we will have to pay much more attention to in the future.

The Textile Industry has developed from a dispersed labour intensive "cottage" industry to become a fairly complex industry, capital intensive and adopted by evermore countries as they emerge from their Agrarian basis to industrialisation. These countries see textiles as ideally suited to their domestic and/or export needs. Countries new to the Industry have been able to avail themselves of new advanced machinery and technology, whereas where the Industry is established, it has not always been easy to replace older equipment. The current recession has aggravated the position by pushing the Industry in many countries to increase or initiate exports in endeavours to keep operational. The pressure of imports, especially at cheap prices, has damaged or forced many Textile Companies, especially the older ones, out of business.

In time to come it must be appreciated that the Textile Industry will no longer be a labour intensive industry. This will mean less machinery being required for a given production, and above all a reduction in the number of workers needed. Prices for new machinery, building and equipment will rise sharply. Comparisons are difficult, especially as the machinery going into a Mill today is not similar to that in a Mill a decade ago; and listening to some of our speakers these last few days I imagine that in the near future this will be even more different than what we know of today. With the rise in energy costs rivalling that of labour-with modern machinery demanding the services of skilled technicians and competent executives, export markets are becoming so fiercely competitive, that every exporter endeavours to unload merchandise so as to reduce pressure on their own domestic markets. These and other features are some of the factors which will require consideration when weighing up the respective advantages and disadvantages of location and expanding different sectors of the Industry in the future.

In the developed countries there has been much disruption of the Textile Industry to the point where in some it has virtually disappeared. Until quite recently there has been difficulty in finding labour in these countries, and with the offer of any amount of relatively cheap textiles from abroad, the opinion was formed that textiles were finished as an industry for developed countries. In fact this has not turned out to be wholely true — notably in the USA. The competition has been felt, but it has been a spur to the domestic industry to achieve ever greater efficiency and productivity, and I am sure will continue to do so in the future. These are, however, matters of the past and the present — they are a result of decisions made and measures taken in many cases long ago. Our concern as Managers is not with the past but the future. We can look to history to alert us to errors which should not be repeated, but the future we can help to shape. That cheap textiles are pouring out from countries where presently wages are low is very evident, but to me, especially in the light of history, there are vital questions which have been overlooked. Firstly I ask — for how long can the conditions which make these exports possible prevail? Will the standard of life in these countries not improve? Will domestic markets grow so that they can absorb all the production which is no longer exportable? Already there is a tremendous change in the pattern and not all the countries will be as successful as Japan in coping. They are fading as exporters and concentrating on their own markets. I believe that the classic premises that garment making is specially suited to the cheap labour countries will not be true in the future. A new science of clothing physics is developing and garment making is going to become as automated and capital intensive as the rest of the Industry. Already greige cloth is being produced in one country, dyed or printed in another, and garments made in a third, which in turn is then marketed in a fourth. In the future I visualise that there could thus be a reshuffling and

relocating of the Textile Industry to match special conditions and/or opportunities.

Key people throughout the worlds Textile Industry agree that the Industry today is more interdependent than ever before. Even countries and sectors which feel that they are in competition with each other, need each other in the long run, and are communicating more than ever before. This is the first prerequisite for good co-ordinated planning, and it is essential, if unnecessary counter-productive and ruinuous competition is to be avoided in the future. Already as a result of the various MFA agreements, competitors have had no option but to sit around the table and talk. Every effort is now being made at these levels to arrive at workable arrangements serving the best interests of all those in the business. This I am sure will be the pattern of the future.

We need not fear the future of the Industry because we are a wealth producing industry creating high added values as opposed to the services or wealth disposing industries such as mining, etc. Our Industry caters to a basic and enduring need everywhere. It affords opportunity for artists, artisans, engineers and chemists, accountants and physicists, experts in marketing, financing, and in many other fields. Above all it demands inspiration and enterprise from its leaders. Looking around at some of the young people in the Industry today I am quite confident that these very same leaders of our Industry in the future will find the means and the ways of how to plan and co-ordinate the Industry, on an International level.

I don't propose to elaborate, enlarge on, or analyse any of the fantastic technical developments visualised for the future of our Industry that you have heard about during the last few days. I do, however, want to mention one technical aspect of our future Industry which I feel has not been quite fully appreciated. That is the future role of electronics in textiles. Two speakers did elaborate on some facets yesterday afternoon and this surprisingly enough although many Industries may have employed the use of electronic computers before the Textile Industry, the original idea grew out of a textile procedure. Charles Babbage, an English Mathematician is credited with the most significant work with early digital computers in 1823. He had taken the punch card idea from Joseph Jacquard's 1805 invention that automatically made pattern weaving possible. Such words as bytes, megobytes, programmes, microchips, software and microprocessors may not replace the familiar language of picks, drafts, and dye affinity, but I am sure that we in the Textile Industry of the future will soon have to include these words in our everyday Lexicon, and our knowledge about them will have to increase. We have no alternative — electronics are moving out of the office and into the Factory floors. The prediction here is that electronics and Research will do more to improve the performance of textile operations than any other developing technology during the next decade. (Note that I have said Research. Although continuous research in our Industry has become an accepted part of our time, we must continually

stimulate this and not become blasé.) Electronics are also not new — not even to textiles. In terms of data base management, handling payrolls, personnel, shipments and inventories, electronics made its big move in the sixties, but with the continuing improvements in electronics technology and especially reduction in hardware cost, electronics' emphasis is shifting from accounting and financial management, to manufacturing management.

Consider this. In 1952 it cost about R1,26 to make 100 000 multiplications on a computer. By 1958 it cost 26 cents. Today you can perform the same task for a fraction of a cent. If the same decline in costs had occurred in other areas you could buy a steak for 10 cents a kg, and a four bedroomed house for R3 500.

In spite of inflation, the costs of monitoring to control operations in our factories is dropping every year. Paybacks I estimate at 2/3 years by reducing down-time in production alone, thus savings generated on yarn of cloth inventories, quality improvements, etc. become gravy. It is obvious that when we think of the costs of a new high speed shuttleless weaving machine from R80 000 upwards, adding R300 — R400 per loom proper controls isn't much. Production planning, production forecasting, yarn requirements, cloth requirements, picks per minute on weaving machines, RPM on knitting machines, these and other pieces of information that electronics can provide are endless. Electronics can stop and start our spinning and . . . winding machines as well as our looms and change patterns on knitting machines. Electronics in the future are going to replace all boring routine repetitive tasks. Moreover, once electronics take over these tasks such as reading picks, clocks, etc. they give more useful information than we as Management ever dreamed possible. Frequency checks for machine stops can be done on a sampling basis across entire weaving or winding departments, at costs considered lower than human endeavours.

In addition to process control the new generation of high speed machinery being developed for the Textile Industry are today loaded with electronic devices that improve performance in terms of efficiency and quality. Electronics will not only help to produce fabrics more efficiently, but will help us to control and monitor the quality as well.

There is also no doubt that the general trend of replacing mechanical control systems with solid state electronic systems will continue to grow in the whole of the Textile Industry of the future. We already have robots which knot and electronically clear our yarn. The USA and Japanese are now moving robots into their engineering and motor industries. Who knows — maybe this will be the trend for the Textile Industry as well.

If this becomes true then we will have another dictionary. We will have to worry about words such as Robotics, Robot Sensitivity and Rainbow Collar Workers. You may not know what a Rainbow collar worker is but that is the name given in Japan today to a worker who is not a blue collar and not a white

collar worker, but a technician who operates robots and is classified above a technician and just below an Engineer.

One thing, however, is certain — this technology is infiltrating our Industry at a very fast rate. Already we know that a dyer or colourist of a bygone era — say only a decade ago — would be astounded at the performance capabilities of today's colour control technology in plants which are controlled by computerised systems.

Total electronic control will become the name of the game — starting from fibre plant breeding right through to the final garments in our wardrobes.

What about the future for cotton fibre?

As the leading raw material in textiles cotton's current situation is closely intertwined with the supply and demand trend for textiles in the World. The many complex issues that must be understood in the highly competitive textile business are decisive, not only for the future of textile manufacturing, but also for cotton. Cotton's position in the textile market, has, however, changed. We know that it has been used as a textile fibre for 5 000 years. Fifty years ago cotton accounted for 85% of the world's consumption of major fibres. In the first two decades following the end of World War II, cotton's monopolistic position in the textile market was changed by the development and introduction of man-made fibres, particularly the synthetic fibres. In the mid-60's cotton's share in the worlds consumption of fibres had dropped rapidly to no more than 60%.

With the establishment of the International Institute for Cotton in 1966, a new approach was begun to re-establish cotton's market position. First the market was researched to determine cotton's image at consumer level. These surveys revealed that consumers were aware of, and appreciated, several positive fibre properties of cotton, such as its high degree of absorbency, non-irritability to the skin, its thorough laundrability, and its versatility. At the same time the market data also clearly showed that these positive considerations were not enough to make the consumer prefer and purchase cotton textiles. They compared cotton negatively with synthetic fibres. In several essential respects these were:

(a) Cotton needed ironing and a relatively long time to dry.

(b) It wrinkled in wear.

(c) Cotton products had poor lustre, and most important of all —

(d) They were not fashionable.

Consumers regarded cotton textile items as cheap, not only in money terms, but above all, in terms of something outdated, not fitting to their life-style.

Aggressive marketing techniques were used to re-establish cotton's image as a viable fibre on the textile market. By the beginning of the 1970's follow-up market surveys were already pointing to a positive change. Consumers increasingly described cotton as a comfortable, up-to-date material, suitable for modern life — in fact even good enough to lead fashion trends. (Our local Cotton Board proved this at the Fashion Show the other night.) The stage has now been reached where not only is cotton's image positive in the minds of the modern consumer, but the consumers appreciation of cotton products in many respects also exceeds their appreciation of the competing fibres, including polyester, which is cotton's most direct competitor. To illustrate this let me show you briefly some of the results of a recent market survey conducted in Sweden, which is one of the most sophisticated textile markets in Western Europe. Women of 18 to 26 years and then 27 to 35 years were asked to give a rating of their appreciation of cotton and polyester fibre with respect to a series of fibre properties and other relevant factors. Apart from ironing consideration, cotton received a very favourable score, as shown in Table I. Similar studies in other Western Countries confirm these results obtained in Sweden.

Cotton producers now know that they must continually defend and strengthen cotton's place in the textile market, as well as stimulate demand by marketing and product development.

It is, however, necessary to try and get a more accurate account of *cotton's percentage of the future textile market.*

K. Slater and F. Hoffmeyer[2] presented a detailed study in an extensive paper which they presented at the 63rd Annual Conference of the Textile Institute.

In order to produce a realistic estimate of future trends in cotton production, they made a very elaborate study of all relevant literature they could find. With all the factors gathered they were able to prepare a series of so-called data related indices and graphs. The next step was an attempted correlation between cotton's percentage share of world fibre production and all these factors. Direct correlation with each individual factor was generally poor, but it appeared that when factors were taken in pairs such as, the combination of crude oil and farm labour, the combined effect appeared to be closely correlated to cotton's market share. After all these factors were combined into a simple regression equation, the results obtained are as shown in Table II, which shows the co-efficient of each factor in the analyses. The actual data of cotton's percentage of the fibre market was tested against the equation for 1961 - 1975, and the same for cotton's production during these years. In both cases the high regression co-efficients — ($r = 0{,}991$) and ($r = 0{,}970$) were in-

dicative of high precision. (Fig. 7 and Fig. 8). From this the next step was the future.

TABLE I[1]

ATTITUDES TOWARDS CLOTING MADE OF COTTON AND POLYESTER FIBRE

	Women of 18-26 Years		Women of 27-35 Years	
	Cotton	Polyester Fibre	Cotton	Polyester Fibre
Breathes	6.8	4.0	7.0	2.3
My favourite material	6.6	4.0	6.8	2.5
Comfortable (in general)	7.0	3.0	6.9	2.6
Comfortable (when sweating)	5.8	3.8	6.3	2.6
Cool	6.9	4.1	6.8	2.8
Soft to the skin	6.8	4.0	6.7	2.9
Modern	6.8	3.3	6.4	3.6
Suits to-day's life style	6.6	4.0	6.6	3.9
Washes clean	5.8	5.5	6.8	4.3
Easy to wash	6.5	5.5	5.7	4.4
Easy to sew	6.8	4.1	6.6	4.5
For going to a party	5.4	4.8	6.0	4.5
Easy to iron	1.4	5.3	4.7	4.9

7 = Very positive
1 = Very negative

TABLE II[2]

MULTIPLE-REGRESSION COEFFICIENTS FOR PERCENTAGE COTTON SHARE OF WORLD FIBRE PRODUCTION

Factor	Coefficient
World Population Index	−0.52751
Index of Industrialization in developing nations ..	0.00977
Crude Oil Price Index	0.02553
Farm Land Value Index	−0.06054
Farm Labour Wage Index	0.01613
Constant	120.77

From the data obtained for each of the relevant quantifiable factors, a value for each index at intervals over the fifty years from 1976 - 2025 was obtained. Each of these values in turn was then substituted into the equations represented in Tables II and III respectively, so that the forecasts of cotton's share of the fibre market and the absolute production figure for the fibre were obtained. The graphs that they obtained in 1979 I have shown in Fig. 9 and Fig. 10. From these you can see that they predicted the production figures for cotton would increase steadily, but the fibres share of the market would, however, continue to decline. The rate of decline has, however, diminished, though the estimate for synthetic fibre production given for comparison appears to indicate accelerated production rates. This has not been done. The two diagrams contained inconsistences, particularly with reference to percentage share of the market, but these are to be expected in view of the many subjective assumptions made.

TABLE III[2]

MULTIPLE-REGRESSION COEFFICIENTS FOR WORLD PRODUCTION OF COTTON

Factor	Coefficient
World Population Index	648.53
Farm Land Value Index	−114.71
Crude Oil Price Index	23.57
Index of Industrialization in developing nations ..	52.23
Farm Labour Wage Index	−49.91
Constant	−33775.76

Since 1979 a lot more data has been available and these have definitely changed the trends because of a number of factors not catered for in the original data. Amongst others, these are:

(1) The unpredictable human element of likes and dislikes in fashion, e.g. in 1979/80 we had a World Denim Boom and a switch to a much higher percentage of casual wear and resultant increased usage of cotton.

(2) Open End and other advanced techniques have made the usage of cheap low grade cotton economical and the finishes on dyed and printed cotton fabrics have improved.

(3) Large scale introduction of mechanical harvesting has changed the labour factor in cotton production.

(4) Pollution problems have made competing viscose fibres and some other man-made fibres more expensive and less competitive.

(5) The decline of the Textile Industry in Europe plus the unpredicted fact that we have extensive inflation costs and a world economic recession.

Until now we can say that the battle between cotton and synthetic fibres was fought only on the grounds of appearance, durability and comfort related properties of the various fibres. New production processes, marketing factors and other influences will play no small part in helping to determine the percentage future share on the market that any given fibre will command. The cotton plant will presumably remain the basis for that fibre, and new sources will consist of improved varieties in terms of quality or quantity. Agricultural research will also increase the yield and open up new cheap and unused areas of the earth's surface capable of supporting new cotton plantations. Conversely, climatic changes may cause crop failures, while higher land prices may still force a change from cotton to other crops, and so reduce the availability of the fibre.

Synthetic fibre production may be enhanced by the discovery of new oil sources or methods of producing the fibre from other raw materials may be developed. Synthetic fibre production, however, may equally well decline as natural sources are depleted, or as oil prices climb to the point at which fibres depending on these sources are unable to compete economically with the natural or regenerated ones.

As I weigh all these factors together and gaze into my crystal ball, I have no option but to say that the trend interpretations given in 1979 are not valid today for the future. Cotton's share of the Textile Market may even increase and not decrease — at least during the next decade.

Let us look at another aspect of the future — with a few words for our farmer friends here. A major question is whether there will be sufficient cotton available in the near future at prices that are competitive in comparison with other fibres. Price is an important consideration in anticipating cottons potential in the decade ahead. It is a fact that cotton is no longer the cheap fibre of the 50's and 60's. Since the mid-70's and the beginning of this decade, the price of cotton has moved steadily upward with some sharp fluctuations for short periods. Inflationary trends are pushing the cost of producing cotton up very rapidly. On the other hand, currency unrest, high rates of interest, and the depressive economic cycle have combined to produce a cyclical low price for cotton on the International market at the moment. However, the renewed consumer interest in cotton which has once again made cotton a desirable textile raw material, must in the end produce for this material a fair price. We must also look at the competition. It is no secret that the man-made fibre producers have experienced huge losses in recent years. In Western Europe alone these amount to billions of dollars. They too will have to cut their losses and to operate again on a profitable level by increasing their prices on the fibres they sell on the market.

What about quantity?

Some representatives of the synthetic fibre section of the Industry have expressed the view that the supply of cotton in the future will not be sufficient to meet demand, because "they say the arable land in the world is needed for food crops". This claim should be refuted once and for all. Cotton is indeed grown for the lint, but in terms of weight, two-thirds of the cotton crop consists of seed, that is processed into high quality edible oil and protein rich cotton seed cake for animal nutrition. Cotton seed oil production has amounted to about 3 million tons annually in recent years. Production of cotton seed cake has also varied between 3.2 and 3.7 million tons annually. This huge volume of cotton by-products, ranking very high in the world supply of edible oil and vegetable oil cake, is produced, together with 13 million tons of cotton fibre, on no more than 2.2% of the world's arable land (excluding pasture lands) cultivated for crops.

Cotton also plays a social role.

Above all, consideration must be given to the fact that cotton is a high value cash crop, providing employment and income to at least 125 million people in the developing world. The social and economic need to expand not reduce cotton production is obvious. Fortunately there is sufficient potential to increase world cotton acreage and production in South and North America, Africa, and Australia, as well as the USSR and the Communist Countries who, if demand justifies, can allocate far larger tracts of land for growing more cotton. There are still great possibilities in meeting a rising demand by increasing and maximising cotton yield per hectare on the present cotton fields. It is interesting that 30.4 million bales of cotton were produced annually on some 82 million acres in the period 1934 to 1938. By the mid-70's i.e. between 1974 and 1975 season, the same acreage yielded a crop of 64.6 million bales.

In summarising I would therefore say that in the years to come I am sure that the Governments, as well as the cotton interests of the world, would reject the suggestion made by man-made fibre interest that the production of cotton should be abandoned or even curtailed. The cotton supply situation in terms of volume and price should be judged healthy in the future, therefore I am sure that the goal of the world cotton community will be not only to maintain, but to strengthen the market potential of cotton and its products. The future for cotton is good.

In one of the talks given to the Textile Section of the New York Board of Trade in February of this year, it was stated that — "The growth in the world's population and income will fuel a 20 billion lb. increase in Textile Fibre demand by 1990". Annual fibre consumption will increase by 88 billion lbs. and the world-wide average, per capita fibre consumption should increase to 17 lbs. in 1990. As a result of this growth a world-wide fibre shortage looms for the mid-80's. If this is true then cotton will have to play a vital role in meeting this demand. It also means that the Textile Manufacturing Industries

of the world must also take aim at this target — so must the Research Institute and machine manufacturers.

At Business School when we studied the economy cycles we were always told that it is important to make your investment decisions at the bottom of the trough in order to capitalise on the upward trends of the market. In reality this takes a lot of nerve and a lot of guts on the part of Management. One thing I am proud of in our Industry is that the Textile Industry does not lack guts.

We have no alternative — the Industry must plan and prepare today for this new and exciting world market of tomorrow.

I can tell you only one thing for sure about this market of tomorrow — and that is — it will be different from today!!

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1. Koedam, H. E., *63rd Annual Conference of the Textile Institute,* Delhi, India (1979).
2. Slater, K. and Hoffmeyer, E., Ibid.

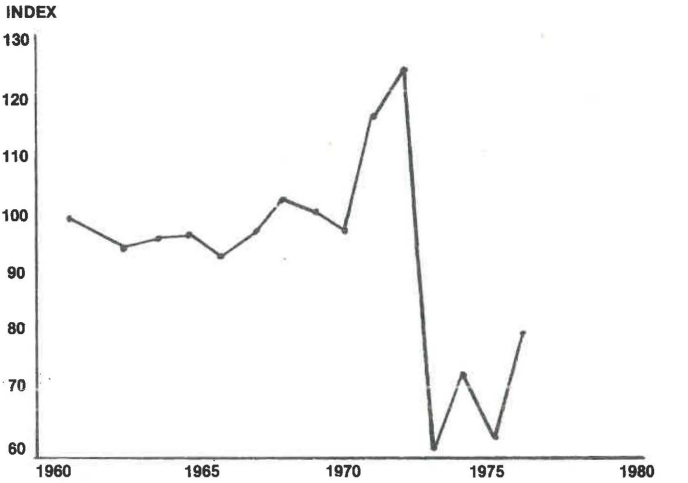

FIGURE 1[2] Cotton price index 1961-1976.

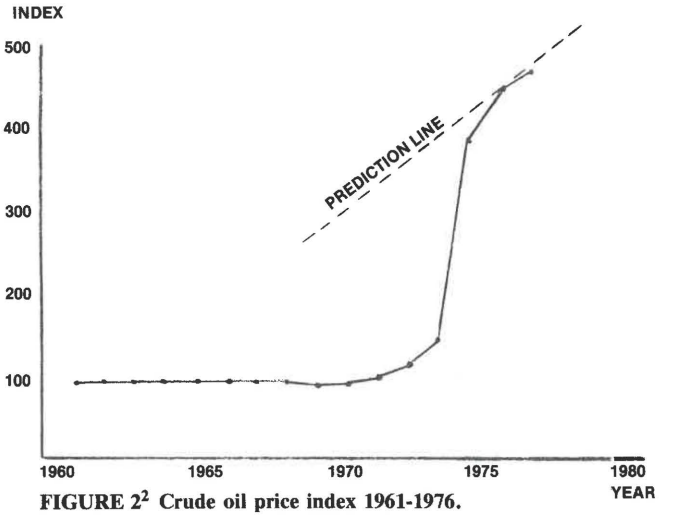

FIGURE 2[2] Crude oil price index 1961-1976.

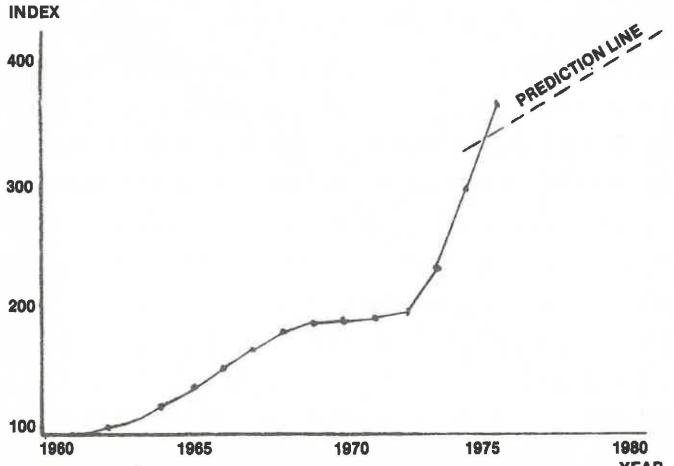

FIGURE 3[2] Farm land value index 1961-1975.

FIGURE 4[2] Farm labour wage index 1961-1976.

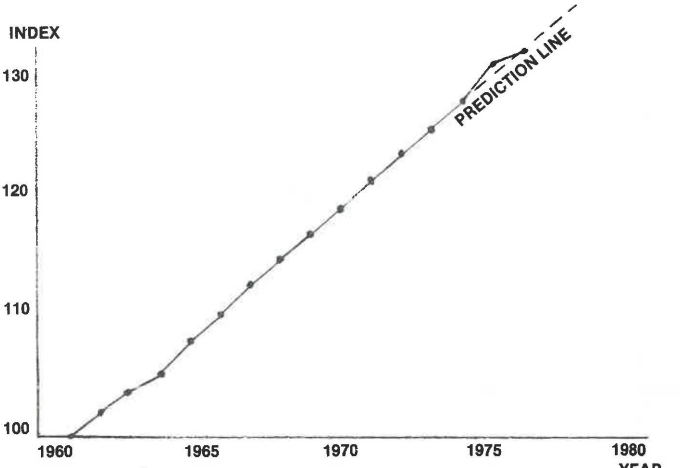

FIGURE 5[2] World population index 1961-1976.

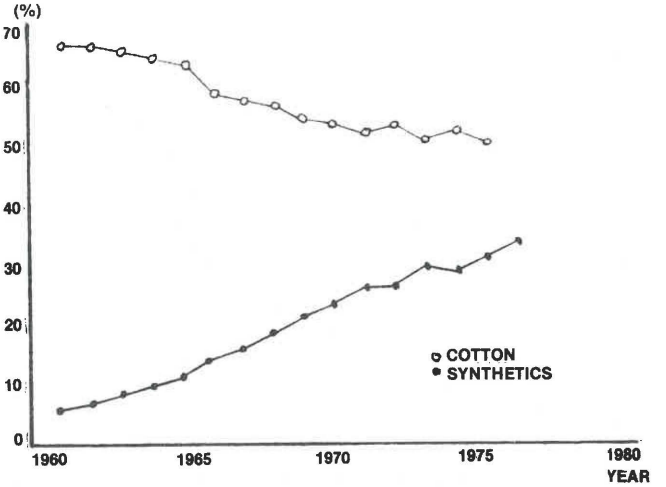

FIGURE 6[2] Cotton and synthetic fibre production as a percentage of world total.

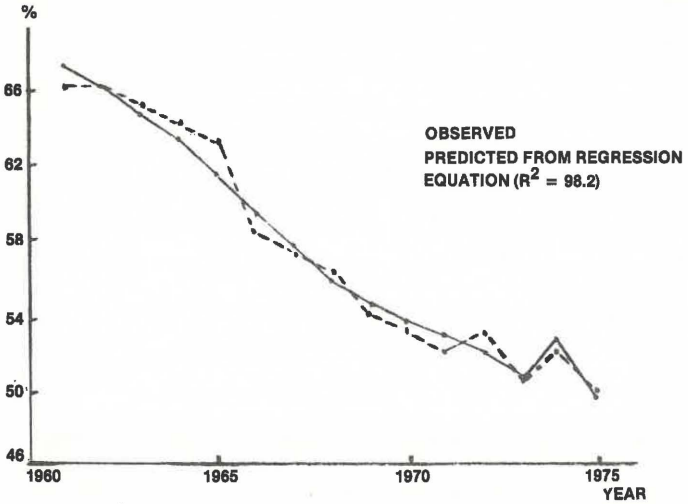

FIGURE 7[2] Prediction of cotton percentage of fibre market 1961-1975.

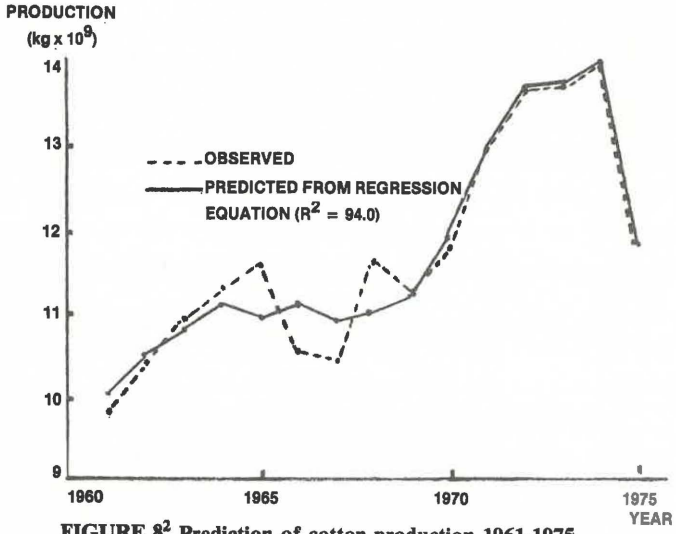

FIGURE 8[2] Prediction of cotton production 1961-1975.

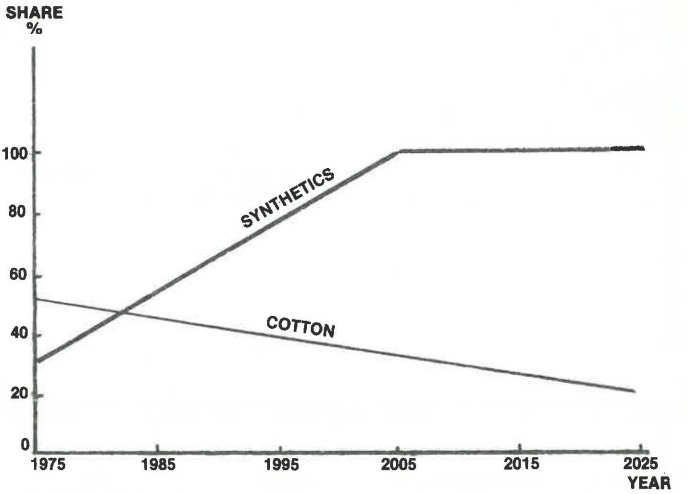

FIGURE 9[2] Prediction of fibre market percentage shares to 2025.

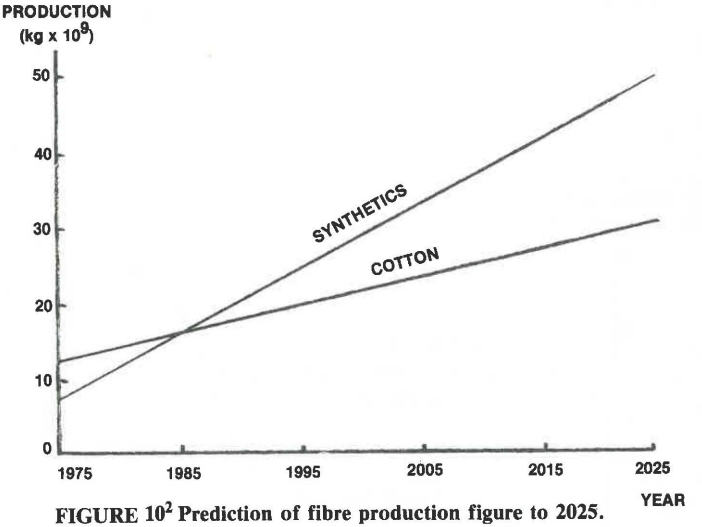

FIGURE 10[2] Prediction of fibre production figure to 2025.

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