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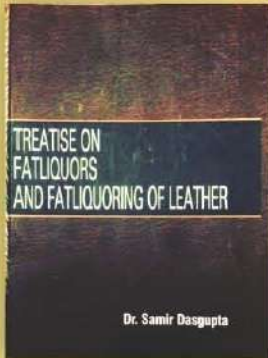
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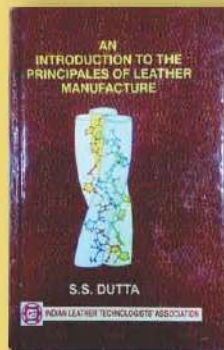
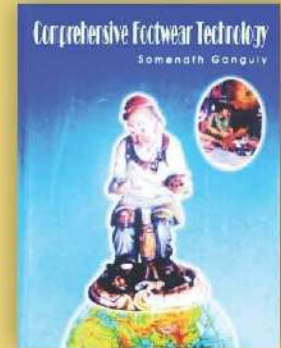
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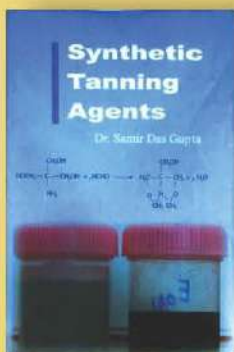
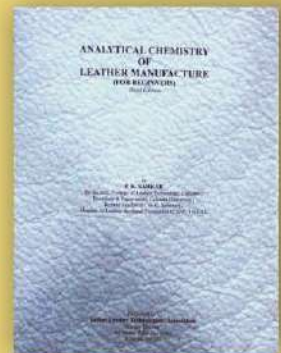
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[A Member Society of International Union of Leather Technologists' and Chemists Societies]

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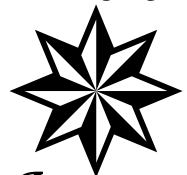
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*Wish You a
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**JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION
(JILTA)**

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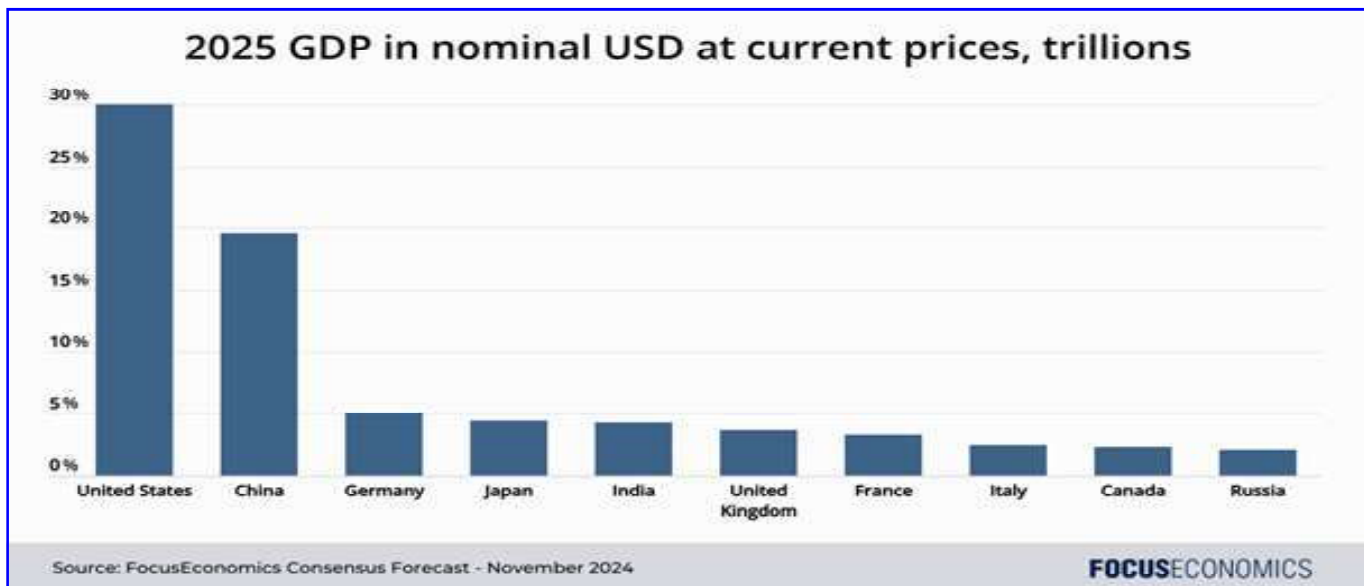
Overview of the Upcoming Biggest Global Economics



A nation's economy is the combination of its output per person multiplied by the population size. As such, countries with large populations (such as China and India) tend to have higher total GDP than those with smaller populations, even if they are less wealthy in per capita terms. Moreover, output per person is determined by myriad factors, such as the quality of health and education, physical infrastructure, ease of doing business, corruption, natural resource endowment, etc. The list of the top 10 largest economies in the world is likely to grow more diverse in the coming decades. The number of G7 economies featured will decline, while emerging markets such as Brazil, Indonesia and Mexico could join the top tier given their large populations and ample potential for catch-up growth with the West. Moreover, China and India will continue to gain relative economic clout. For instance, the long-term projections of

the economists that we poll show that by 2033, India will have become the world's third-largest economy, while China's GDP will be around USD 24 trillion larger than Germany's, compared to around USD 14 trillion bigger today.

Out of the top 10 largest economies next year, five will be in Europe, three in Asia and two in the Americas. Most of these economies—concretely the G7 members—are already wealthy in USD GDP per capita terms. However, there are also a few emerging markets on the list that are still poor in per-person terms and whose large economic size is linked instead to their huge domestic populations. Likewise, while most of the economies in the top 10 have potential growth rates below the global average due to already high physical and human capital stocks, two of the Asian economies listed buck that trend.



Top 10 Economies in the World

1. United States

2025 GDP: USD 30.4 trillion

The United States' GDP is the world's largest, being worth over a quarter of global output in nominal GDP terms. Moreover, it

has among the world's highest GDP per capita. The economy's structure is highly diversified. The tech industry, anchored by Silicon Valley, dominates globally, driving innovation in AI, biotech and software. The financial sector, centred in New York, boasts the world's deepest capital markets. Healthcare and pharmaceuticals are other strengths, while manufacturing—though reduced in scale compared to previous decades—remains competitive in areas such as aerospace, defence and motor vehicles.

Since the Covid-19 pandemic, the gap between the U.S. and other major advanced economies has widened due to a strong dollar and the U.S.' persistent economic outperformance. This outperformance is set to continue going forward. The economy faces challenges, including the highest income inequality in the G7, aging infrastructure, high healthcare costs and mounting national debt. Regarding the latter, the U.S. will likely continue to run a budget deficit far wider than other advanced economies, causing public debt to continue to rise as a share of total output in the coming years.

2. China

2025 GDP: USD 19.6 trillion

China's GDP is the world's second largest, being worth close to 20% of global GDP in nominal USD. It is powered by investment and export-led manufacturing; private consumption is still around 20 percentage points of GDP lower than in developed economies. Known as the "world's factory," China is the leading producer of electronics, machinery and textiles. The government has recently prioritized technological self-reliance and increased value-added activities, showering domestic industries with subsidies and state support and restricting the participation of foreign firms in sensitive areas of the economy. This has led to some impressive results, including the emergence of highly competitive local juggernauts such as Huawei and Tencent in the tech space and BYD in electric vehicles. In recent years, such firms have increasingly broken into overseas markets, causing alarm in the West. Government support has also helped make China's economy a leader in the green space: Chinese firms produce the majority of the world's solar panels for instance. Relative to the U.S. economy, China has lost pace since 2021 due to the depreciation of the yuan versus the dollar coupled with robust economic activity in the U.S. Our analysts' estimates are for convergence to resume over our forecast horizon, but at a slower pace than in the past as China's potential growth ebbs. China faces multiple challenges, i.e., dealing with the demands of a declining and aging population, a weak property market, and geopolitical tensions with the West—with the latter set to rise under President Trump's second term.

3. Germany

2025 GDP: USD 5.0 trillion

Germany is Europe's largest economy. Though services are the main economic sector, Germany also has a strong industrial base; the manufacturing sector is around twice as big as that of other G7 economies as a share of GDP. The *Mittelstand*—a dense web of medium-sized industrial enterprises—forms the backbone of this. The country benefits from a skilled workforce, prudent fiscal management and a favourable geographical position at the heart of Europe. That said, the country's export-oriented, manufacturing-heavy economic model has come under threat in recent years from rising global trade tensions, the country's struggle to adapt to new forms of technology, and the increasing competitiveness of Chinese firms—particularly in the automotive space. Volkswagen's announcement in 2024 that it intended to close several factories is indicative of the latter. An aging population, dependence on imported fossil fuels are additional challenges. Since 2018, Germany's GDP growth has lagged well below the G7 average, a trend which will likely continue in the coming years.

4. Japan

2025 GDP: USD 4.4 trillion

Japan's economy, while still being the fourth largest in the world, has waned in relevance since the 1990s, at which point it was the second-largest economy and closing in on the U.S. in top spot. Like Germany, Japan has a large manufacturing sector worth close to 20% of GDP, with strengths in electronics, motor vehicles and robotics; Japanese companies like Mitsubishi, Sony and Toyota play leading roles globally. Japan also has a significant banking and financial services sector. The economy is export-oriented, and has persistently registered trade and current account surpluses in recent years. However, Japan faces significant demographic challenges, including a rapidly aging population and low birth rates that drag on GDP despite persistent fiscal stimulus. Dependence on imported energy and raw materials is another weakness, as they make the economy vulnerable to global price shifts. Focus Economic panelists' forecast Japan's GDP growth to average below 1% for the remainder of this decade, and to record the joint-weakest performance in the G7 along with Italy.

5. India

2025 GDP: USD 4.3 trillion

India's GDP is growing fast, having more than doubled in size over the last decade. Unlike many other Asian economies, India

does not have a huge manufacturing sector, notwithstanding the government's recent Make In India initiative. Rather, services output drives GDP. India boasts particular strength in IT; collectively, the country's two IT giants, Infosys and TCS, employ around a million people. The pharmaceutical industry is another strong suit, especially in the field of generic drugs. However, the agricultural sector, which employs a large portion of the population and still accounts for around a fifth of the economy, remains less productive and vulnerable to climate risks. India's economy has a number of strengths, including a fast-growing and entrepreneurial population, a highly educated English-speaking workforce, a vast domestic market and political stability. That said, infrastructure gaps – particularly in rural areas – are a roadblock. Additionally, regulatory challenges and bureaucratic hurdles pose difficulties for businesses, and the country is still not able to guarantee quality universal education.

Focus Economic Consensus is for the economy to remain among Asia's fastest-growing in the coming years, but growth could be significantly faster with the right reforms; at below 7% per year, India's growth forecasts for the coming years are still significantly below the pace that China was growing at when it had a similar GDP per capita.

6. United Kingdom

2025 GDP: USD 3.7 trillion

The UK economy is predominantly service-oriented, with insurance, finance and real estate as key contributors—particularly through the City of London, a major global financial hub. Other key sectors include creative industries, defence, higher education, motor vehicles and pharmaceuticals. A flexible labour market and well-performing education system are key strengths. However, Brexit has introduced challenges, particularly for trade and labor mobility with the EU: This, in turn, has hampered exports and investment since the UK left the bloc. While the UK could strike some sector-by-sector deals with the EU in the coming years, economic ties with the bloc are unlikely to grow substantially closer. Additionally, the authorities face the difficulty of satisfying rising public spending demands in a low GDP growth environment, all without spooking markets by issuing lots of new debt. The Labour government that took office in 2024 has increased spending and taxes in a bid to tackle this situation.

Focus Economic analysts' forecasts for the coming years are for UK GDP growth to be around half a percentage point per

year lower than in the decade leading up to the Covid-19 pandemic, due to the lasting knock caused by Brexit.

7. France

2025 GDP: USD 3.3 trillion

France's economy is highly diversified. The country is a leading global exporter of luxury brands like Chanel, Hermès and LVMH. Aerospace, led by Airbus, is also a crucial sector. France's agricultural sector is the largest in the EU, and is known for dairy, grain and wine production. Moreover, since Brexit, Paris has increased its status as a financial center; the European Banking Authority relocated to Paris, and the capital has created thousands of new financial-service jobs. The state has a strong role in the economy. Government spending is close to 60% of GDP, much higher than in most European neighbours. Moreover, the state owns shares in many large companies, such as nuclear power producer EDF, airplane manufacturer Airbus, and car maker Renault. This sizable state footprint has in recent years translated into some of the widest fiscal deficits in the EU, in turn causing French borrowing costs to exceed those of Greece and Spain.

France's GDP growth in the coming years will be higher than that of Germany and Italy but merely average by EU standards. Political instability and the need to rein in the fiscal deficit will act as a drag, while frequent public protests will likely continue to pose a challenge to policymakers.

8. Italy

2025 GDP: USD 2.5 trillion

Italy's GDP is dominated by services, but also has manufacturing strengths in luxury goods, machinery and motor vehicles. Northern Italy, home to industrial hubs like Milan and brands like Fiat and Ferrari, drives much of this manufacturing activity. Italy is also Europe's third-largest agricultural producer, famous for wine and olive oil. In recent decades, political instability, a high public debt-to-GDP ratio, a sclerotic public sector, deteriorating demographics and large regional disparities between the industrialized north and underdeveloped south have posed challenges. Though the economy is currently receiving a sizable boost from the disbursement of EU recovery funds, annual GDP growth is unlikely to top 1% this year or in the years that follow. As such, Italy's economic cleft will continue to ebb going forward.

9. Canada

2025 GDP: USD 2.3 trillion

Canada's economy is resource-rich, with oil, forestry and mining making an important contribution to exports. That said, Canada's GDP as a whole is still dominated by the services sector, with financial and tech services particular strengths. In recent years economic activity has been buoyed by strong demand in key trading partner the U.S., as well as by a rapid rise in the population—from 2019 to 2024 the population rose around 10%, above the historical trend. That said, the government recently cut immigration quotas in the face of rising unemployment and public dissatisfaction over high housing costs. As a result, population growth in 2025 should almost grind to a halt from around 3% in 2024. Despite its large natural resources, skilled workforce and clean governance, Canada also faces vulnerabilities, including fluctuating prices for its commodity exports, high household debt and trade dependency on the U.S. The latter could be a particular risk due to President Donald Trump likely imposing higher tariffs on imports.

10. Russia

2025 GDP USD 2.1 trillion

Russia's economy depends on natural resources, with oil and natural gas making up over half of its export revenues and state-controlled giants like Gazprom and Rosneft dominating energy production. This energy reliance has spurred significant economic growth but also makes Russia vulnerable to global price fluctuations and energy sanctions. The manufacturing sector is centred on heavy industries, including arms, chemicals and steel; moreover, Russia is one of the world's largest grain exporters. Since the invasion of Ukraine in 2022, Russia's economy has become more dependent on the military sector and government spending, and more reliant on Asia at the expense of Europe.

The economy has been much more robust than more analysts expected since the Ukraine war broke out, with Russia's GDP growth above 3% in 2023 and 2024, thanks to higher military spending, social handouts and the government's ability to

circumvent sanctions. That said, growth will slow to around 1.5% going forward according to our panellists' estimates, amid a weak business environment and a declining population.

Analysts at the EIU said :

"EIU forecasts that the US economy will grow by an annual average of 2% in real terms between 2024 and 2050. This is significantly slower than the 3.4% achieved during the 1980s and 1990s, but is still a respectable rate of expansion for a mature OECD economy, particularly as population growth will slow compared with previous decades. The US benefits from several advantages that will support its long-term growth prospects. The regulatory burden is low, helping to create conditions in which firms are free to invest and innovate. Labour laws are unusually light, meaning that firms can hire and fire workers with ease as business conditions change. The US is a world leader in the development of information and communications technology (ICT), which it has used to reap significant efficiency gains. We expect further improvements in the use of ICT, particularly as the US-China rivalry adds further impetus to domestic technological innovation."

Analysts at DBS commented :

"China's economy is expected to grow around 5% in 2025 supported by policy stimulus. Exports will be a key pillar of growth as global demand holds up, though new US tariffs could shave up to 1ppt off GDP growth. Consumption will remain lacklustre due to wealth effects from falling property prices and rising unemployment. Infrastructure investment will drive a moderate fixed asset investment recovery, though private investment lags. Downside risks centre on the property market correction. Hopefully, strong stimulus measures on both demand and supply sides, including inventory destocking and developer financing support, can aid market stability. Central government's fiscal expansion will help local government to sail through its indebtedness."



Dr. Goutam Mukherjee
Hony. Editor, JILTA



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Stahl Leather solutions

Stahl is proud to launch the renewed Stahl Neo® range: a future-proof portfolio of low-impact solutions covering the entire wet-end and finishing stages of leather production.

With growing awareness of environmental and health and safety impacts, the Stahl Neo® portfolio has been extensively reviewed and tested to help customers meet today's fast-evolving certification and compliance landscape for leather chemicals. This includes the recently updated Zero Discharge of Hazardous Chemicals (ZDHC) Manufacturing Restricted Substance List (MRSL) 3.1.

Following a rigorous internal review and testing programme, all products in the Stahl Neo® portfolio are in compliance with the following three criteria:

1. ZDHC: All Stahl Neo® products are compliant with Version 3.1 of the ZDHC MRSL for leather manufacture.
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Scan the QR code to [download the Stahl Neo® brochures](#) and discover the specific benefits of each product in our portfolio.

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Stahl is a world leader in speciality coatings and treatments for flexible materials. Around the world, nearly 2,000 Stahl colleagues are driven by a clear purpose:

Touching lives, for a better world.

Our diverse teams work on creative and innovative surface solutions that enable our customers to make fantastic products. Our coatings are found on everyday materials in the automotive, luxury goods, packaging, apparel and home furniture market, among others. When consumers touch everyday products, we touch their lives.

Being a world leader means we are dedicated to contributing to a better world together with our value chain partners. At Stahl, we aim to impact the market through innovation and sharing knowledge and by reducing our own operational footprint. Our approach is underpinned by our robust ESG strategy and our strong sense of social responsibility, a characteristic shared by leading global companies.

We promote:

- Teamwork
- Initiative
- Personal development
- Innovation
- Creativity

Working at Stahl, means being part of a versatile, ambitious team that is committed to working on innovative, high-quality coating solutions for our customers while making the world a better place. You will also be joining a diverse global community: headquartered in Waalwijk, the Netherlands, Stahl operates a network of 16 production sites and 37 application laboratories, supported by sales offices in 22 countries.

stahl.com



WORLDWIDE PARTNERS MEETING 2024 : REUNITING FOR INNOVATION AND SUSTAINABILITY

Stahl and Weilburger Graphics by Stahl hosted the highly anticipated Worldwide Partners Meeting at the Gerhardshofen site.

The event was designed to discuss the company's future direction and to explore upcoming trends in the packaging industry. It was also a milestone: the first face-to-face meeting of global partners since 2017, welcoming 70 participants from 24 countries, including three distributors participating for the first time.



This year, the partners came from China, United Arab Emirates, Romania, Czech Republic, Iran, Austria, Italy, Switzerland, Argentina, Greece, Hungary, Finland, Latvia, Slovenia, Turkey, Poland, Azerbaijan, Spain, Mexico, Peru, Ecuador, Lithuania, Estonia as well as Slovakia.

Reconnecting with Partners

For the first time since the acquisition of Weilburger Graphics by Stahl partners gathered to shape the future direction of the company. This meeting offered a chance to reflect on the evolution of the printing and packaging sectors and discuss the company's strategic direction moving forward. Key themes of the event included a strong commitment to sustainability, regulatory compliance, recyclability, and UV LED solutions.

"We are excited to meet face-to-face after such a long time," said Günter Korbacher, Managing Director of Weilburger Graphics by Stahl. "This event not only reinforces our valued partnerships but also sets a clear path for driving forward Weilburger Graphics by Stahl as part of Stahl Packaging Coatings. Together, we will continue to innovate and lead the way in sustainable packaging solutions."

Integration and expansion

Raymond Bakker, Vice President, Head of Packaging Coatings Division EMEA of Stahl Holdings B.V., presented a strategic overview of the acquisition and the vision for expanding the joint distributor network. "The integration of Weilburger Graphics into Stahl Packaging Coatings creates unparalleled opportunities for growth," said Bakker. "This partnership will bring us closer to a sustainable future while strengthening our market presence globally."

Throughout the day, various presentations showcased advancements in the field, including :

- ❖ A joint lecture by Sonia Morselli and Martin Drasnin (BASF) on the critical role of strong partnerships in sustainable packaging.
- ❖ Markus Klopff's insights into LED technology, highlighting energy efficiency, safety, and regulatory updates.

- ❖ Innovative approaches to reducing plastic usage in packaging by Bastian Pinsenschaum.
- ❖ And a lecture by Bernd Schech 'On safe paths'.

Closing the day on an inspiring note, Thomas Lurz, Germany's most successful open-water swimmer and Olympic gold medallist, delivered a motivational talk on resilience, a champion's mentality, and handling pressure in challenging situations.

Shared ambition and goals

The event concluded with a networking dinner, offering participants the opportunity to forge deeper connections and discuss shared goals. "The enthusiasm and collaboration at this event are a testament to the strength of our partnerships," noted Arno Dürr, Sales Director of Weilburger Graphics by Stahl. "With the momentum we've built here, we're ready to shape the future of the packaging industry."

The Worldwide Partners Meeting 2024 underscored the collective strength and shared vision of Stahl Packaging Coatings and Weilburger Graphics by Stahl. With its focus on innovation and sustainability, the event set the stage for continued leadership in the packaging industry.

(Stahl News – 20/12/2024)

STAHL DIVESTS WET-END CHEMICALS BUSINESS AND COMPLETES ITS TRANSFORMATION INTO PURE PLAY SPECIALITY COATINGS COMPANY

Stahl, the global leader in speciality coatings for flexible materials, announces the divestment of its wet-end leather chemicals business to Syntagma Capital.

The proposed sale completes Stahl's transformation into a pure-play speciality coatings formulator for flexible materials. Following Stahl's recent acquisitions in packaging coatings in North America and Europe, Stahl is now better positioned to capture future growth in sustainable coating formulations. The announced divestment of the wet-end leather chemicals business will include 428 employees, the full wet-end portfolio and manufacturing facilities in Italy (headquarter) and India.



Strengthening focus and future growth

Founded in 1930 as the leather finishing company, Stahl has since successfully expanded its portfolio beyond leather, into coatings for a variety of flexible materials. The divestment of its wet-end leather activities allows Stahl to focus on its core know-how in speciality coatings for flexible materials. Leather finishing is Stahl's proud heritage and remains

core to Stahl's growth strategy. The Stahl Leather Finishing business will be led by Andrea Ceretta, appointed Stahl Group Director Leather Finishing, who has been working in the global leather industry for over 20 years.

Maarten Heijbroek, CEO of Stahl: "In recent years, Stahl has made a deliberate strategic shift towards premium coatings, establishing ourselves as the market leader in coatings for flexible materials. The divestment of our wet-end leather chemicals business completes this transformation. / Stahl is now a pure-play coatings formulator, which will allow us to accelerate innovation and sustainability to enhance consumer experiences and to live our purpose: 'Touching lives, for a better world'."

At the same time, we are accelerating investments in growth, with a new manufacturing plant in Singapore, doubling our capacity in China and investments in new Centers of Excellence in Asia, the US and Europe. I'd like to thank all Stahl wet-end employees for their considerable contribution to Stahl over the years and wish them every success under their new ownership", Heijbroek concludes.

Xavier Rafols, CEO of the new company: "Our newly independent company combines over a century of expertise with the dynamism of a start-up. We're building our business on the core values of integrity, excellence, agility and courage. Through innovation, sustainability and expertise, we will deliver solutions that help our clients face today's challenges and tomorrow's opportunities. In this way, we are not simply a solutions provider but an end-to-end partner nurturing bonds that last. We look forward to continued collaboration with stakeholders across the value chain to drive progress in the leather industry."

The proposed transaction, which is subject to customary closing conditions, including the information and consultation of works councils and other regulatory approvals, is expected to be completed in the first half of 2025.

(Stahl News – 18/11/2024)

STAHL OPENS NEW POLYURETHANE DISPERSIONS FACILITY IN SINGAPORE

Stahl, the world leader in speciality coatings for flexible materials, has announced the opening of a new state-of-the-art facility for the manufacturing of polyurethane dispersions (PUD) in Singapore. This strategic expansion is designed to better serve the growing demand in the Asian and South Pacific regions. The new facility underscores Stahl's commitment to sustainability and innovation, while also supporting the company's environmental, social, and governance (ESG) goals.



A strategic geographical shift

Historically, Stahl's PUD production has been centred in Europe, with products imported into Asia to meet market demand. With the establishment of the Singapore facility, Stahl can now streamline its supply chain, reducing delivery times and improve service for its customers across the region.

Therefore, the shift underscores Stahl's long-term commitment to investing in the region and supporting its customers with faster, more sustainable solutions tailored to the unique demands of the Asia-Pacific market.

Driving innovation with high-performance PUDs

The new facility will focus on producing high-performance polyurethane dispersions, which offer a range of beneficial properties critical for various industries. These advanced PUDs provide exceptional fastness, water resistance, print retention, and high flex durability, making them ideal for use in demanding applications.

PUD technology plays a key role in reducing solvent usage, making it an important component of Stahl's broader sustainability strategy. By producing more water-based coatings, Stahl reduces the environmental impact of its operations, supporting the transition to more sustainable materials across industries. The Singapore facility will further explore renewable energy and bio-based formulations, advancing the company's ESG goals and paving the way for future innovations.

Dennis Koh, Site and Operations Manager at Stahl Singapore, expressed the significance of this new development 0: "the new facility for PUD manufacturing in Stahl Singapore is designed to serve the Asian and South Pacific markets, spanning from China and Japan to New Zealand. This expansion supports our ESG goals by increasing the production of water-based coatings and decreasing solvent usage. With this new development, we can simplify our supply chain and shorten lead times for our customers. We are proud to include PUD in our service offerings, enhancing our technical capabilities to collaborate on challenging projects. I am extremely proud of my team who worked closely with the main contractor, essential engineering & construction, to successfully complete this project in 18 months."

(Stahl News – 15/10/2024)

CREATE UNIQUE APPEARANCES WITH STAHL EDGE PAINT



Stahl's Edge Paint portfolio gives manufacturers the ability to customize and protect the edges of accessories, unlocking the creativity of designers and providing a final touch of class. Alongside its aesthetic appeal, our Edge Paint offers outstanding performance and low environmental impact while opening up efficiencies in the production process. For any producer of accessories, our Edge Paint delivers the quality and responsible chemistry that today's customers expect.

From the desk of **General Secretary**



SANJOY SEN MEMORIAL LECTURE (23RD EDITION)

The 23rd Sanjoy Sen Memorial Lecture will be organized by our Association on Tuesday, the 14th January, 2025 at 03.00 PM IST (Registration from 02.15 PM) at the Seminar Hall-19A of the Science City, JBS Haldane Avenue, Kolkata.

Mr. Harsh Kumar Jha, former MD, Tata Metaliks Ltd. & former Chairman, Tata Metaliks Kubota Pipes Ltd., has kindly consented to deliver the memorial lecture titled ***“Competitiveness - An Enigma”***.

Formal invitation has been sent to all members & others through email and by post.

PROF. S. S. DUTTA MEMORIAL LECTURE (6TH EDITION)

The 6th Prof. S. S. Dutta Memorial Lecture will be organized by the Southern Regional Committee in association with CSIR-CLRI on 2nd February, 2025 at Chennai Trade Centre during 38th India International Leather Fair, 2025.

Details of the event will be shared in due course.

14TH ASIA INTERNATIONAL CONFERENCE ON LEATHER SCIENCE & TECHNOLOGY (AICLST)

ILTA is going to organize the 14th Asia International Conference on Leather Science & Technology (AICLST) in the year 2026 at Kolkata, India.

ILTA will also organize Platinum Jubilee Celebration of ILTA in 2025.

Planning and details of both the programs will be shared in due course.

HEALTH CARE BENEFIT FOR ILTA MEMBERS

ILTA Has taken an initiative to introduce Health Care Benefits for all the Members of the Association in collaboration with M/s Narayana Health, Kolkata. Initially the scheme is applicable for the members of Eastern Region only as the Pilot Project.

For benefits and other details about this project, you may kindly follow the HRD Corner.

DIGITALIZATION OF ILTA PUBLICATIONS

ILTA is going to launch a digital platform for availing all its publications including Text Books, JILTA and other publications online.

Work on this project is under process. The details of the same will be published very soon.



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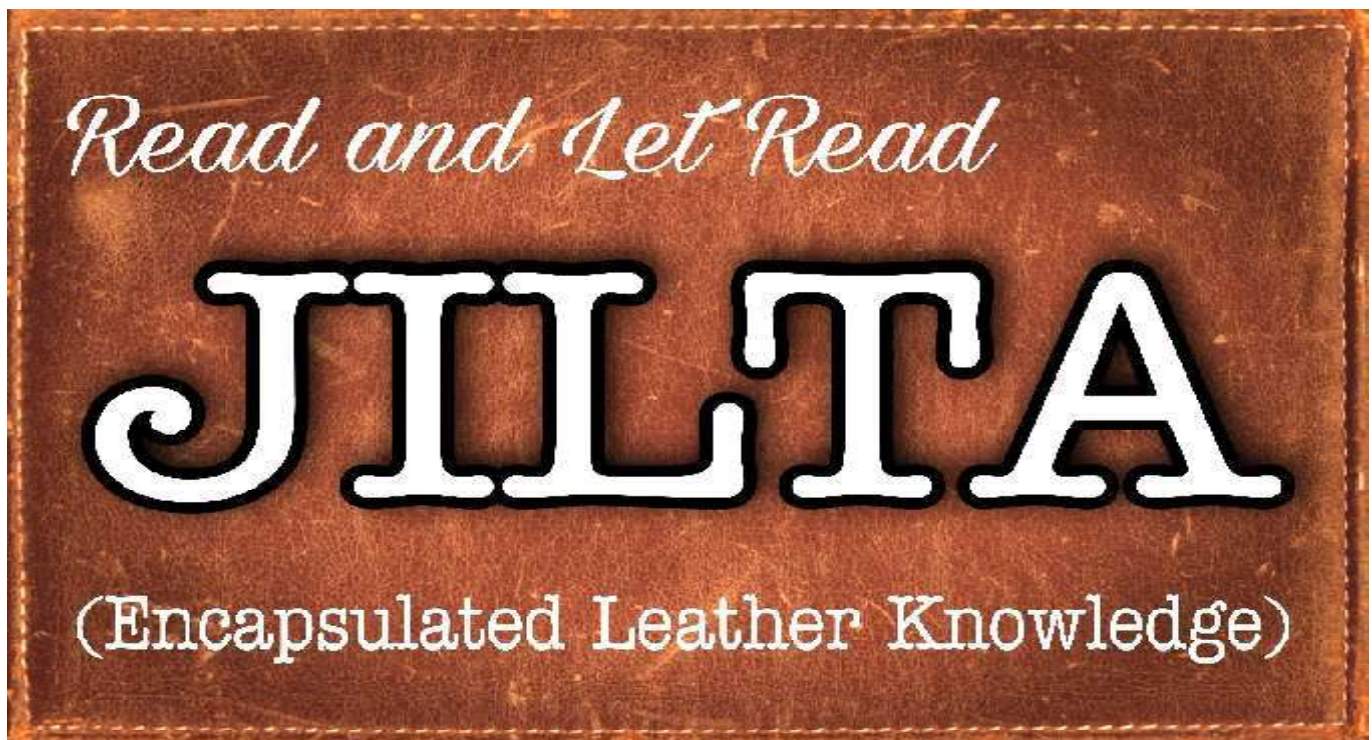
IDENTITY CARD FOR LIFE MEMBERS OF ILTA

The Executive Committee of ILTA has decided to issue a unique Plastic Identity Card to all the Life Member of ILTA against their Membership.

Hence, all the Life Members are advised to send the following information through official Email ID - admin@iltaonleather.org and/or WhatsApp No. - **9432553949** to ILTA office just as soon as possible.

- 1) Name of the Member (In capital letter)
- 2) Full Residential Address of the Member
- 3) AADHAR No. of the Member
- 4) Blood Group of the Member
- 5) A HD quality Photo of the Member
- 6) Copy of the AADHAR card of the Member
- 7) Email ID of the Member
- 8) Mobile No. of the Member

(*Susanta Mallick*)
General Secretary



YOUTUBE CHANNEL & FACEBOOK PAGE OF ILTA

An official **YouTube Channel** namely **ILTA Online** and a **Face Book Page** namely **Indian Leather Technologists' Association - ILTA** has been launched for sharing the activities of our Association since November' 2020 and July' 2021 respectively.

You may find all the Lives / Video recordings of different Seminar, Symposiums & Webinars on both of these social medias along with our website **www.iltaonleather.org** time to time.

You are requested to kindly do **Like & Subscribe** the YouTube Channel and **"Follow"** the FaceBook Page to get regular updates on the activities of our Association.

PUBLISH YOUR TECHNICAL ARTICLE

Faculties, Research Scholars and students of various Leather Institutes may wish to publish their Research / Project papers in an Article form in this monthly technical journal, JILTA.

Interested author may sent their paper (in MS Word format) along with a PP Photograph and Contact details like Email, Mobile etc. to our email IDs : admin@iltaonleather.org / jiltaeditor@gmail.com

Members are requested to :-

- a) Kindly inform us your **'E-Mail ID'**, **'Mobile No'**, **'Land Line No'**, through E-Mail ID: admin@iltaonleather.org or over Telephone Nos. : 24413429 / 3459. This will help us to communicate you directly without help of any outsiders like Postal Department / Courier etc.
- b) Kindly mention your **Membership No.** (If any) against your each and every communication, so that we can locate you easily in our record.

RECEIVING PRINTED COPY OF JILTA EVERY MONTH

We have started to post Printed copy of JILTA from April' 2022 to members and all concerned as it was before Covid period. Simultaneously we have been sending the e-copy of JILTA through email also to all the concerned receivers.

If you are not receiving JILTA by Post or through email, may please verify your Postal Address and/or Email Id with our office at the earliest.

General Secretary and the Members of the Executive Committee are available to interact with members at 18.30 hrs, at our Registered Office on every Thursday



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Indian Leather Technologists' Association

(A Member Society of IULTCS)

23rd Sanjoy Sen Memorial Lecture



The Executive Committee requests the pleasure of your company at **23rd Sanjoy Sen Memorial Lecture** at the Seminar Hall 19-A of Science City, Kolkata, on **Tuesday, the 14th January, 2025** at **15.00 Hrs.** (Registration from **14.15 Hrs.**)



Mr. Harsh Kumar Jha, Former MD, Tata Metaliks Ltd. & Former Chairman, Tata Metaliks Kubota Pipes Ltd., has kindly consented to deliver the **Sanjoy Sen Memorial Lecture** titled "**Competitiveness – An Enigma**".

Arnab Jha
President

Susanta Mallick
General Secretary

23rd Sanjoy Sen Memorial Lecture

Tuesday, 14th January, 2025, 15.00 Hrs.

P R O G R A M M E

■ Registration	: 14.15 Hrs
■ Welcome Address	: 15.00 Hrs
■ Announcement of the names of the Awardees	: 15.05 Hrs
■ Sanjoy Sen Memorial Medal from ILTA	
■ Sanjoy Sen Memorial Gold Medal from GCELT	
■ Announcement of the name of	
■ P. K. Basu Memorial Scholarship holders	
■ Presentation by award winner	: 15.15 Hrs
■ Sanjoy Sen Memorial Lecture	: 15.25 Hrs
■ Vote of Thanks	: 16.10 Hrs
■ High Tea	: 16.15 Hrs



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With over 50 years of experience in developing sustainable solutions to make communities more resilient. Solidaridad has been working on many different issues, from supporting marginalized communities for fostering a more sustainable supply chain.



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Fruits &
Vegetables



Gold



Soy



Cocoa



Coffee



Livestock



Medicinal Plant

PROJECT PARTNERS



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Solidaridad Regional Expertise Centre

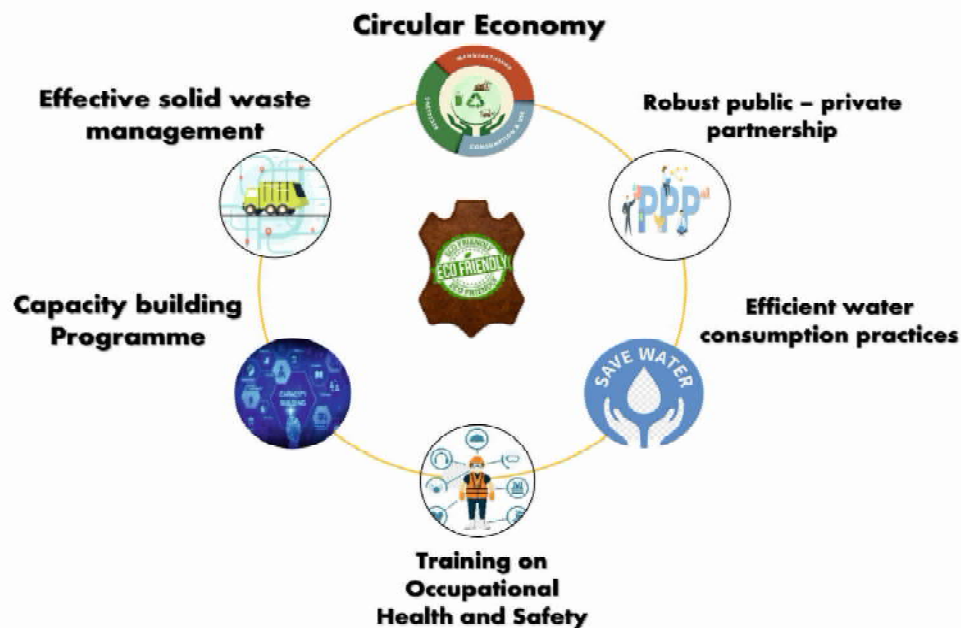
158/5, Prince Anwar Shah Road, Kolkata-700045 | Contact: 033-4060211, +91 98302798666

Solidaridad



EFFECTIVE WASTE MANAGEMENT AND SUSTAINABLE DEVELOPMENT OF MSME TANNING COMPANIES IN KOLKATA LEATHER CLUSTER (BANTALA)

2022-2023



PROJECT PARTNERS IN ASIA



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Classification of Footwear - Sports Shoes (Part - 2)

Debabrata Chakrabarty

Footwear Technologist & Consultant,
Hosur, Tamil Nadu



Table tennis Shoes are lighter amongst most other racket sports and are constructed for very good lateral movement support. The most important characteristic features of a table tennis shoe are grip, lightweight, a good snug fit and high breathability. Has thin sole and low heel height for the players to feel closer to floor and court. As ping pong floors (used in table tennis court) absorb shock well, a thick sole is not necessary. They maximize mobility for this sports' lateral movement with a very good floor grip.



Table Tennis Shoes



Table Tennis Shoe Sole Pattern

Lawn Tennis Shoes have specifically designed soles at heel and tread (forepart) to impart excellent traction on the court. This helps in quick movement and stops to the players.

These shoes have toe guard, outrigger (see illustration below), Lateral support and thick sole. Each of these features has a specific and necessary role to play.



Toe Guard

Due to fast forward movement, sideways movement and stops by the players, the toe area takes the most force; is prone to huge stress and thus faster wear and tear. Thus, a reinforced toe guard is used at the toe area of the upper (like toe cap) facilitating durability and protect the toe of the player from hurting / damaging.

Outrigger

An extra element towards the outer side of the shoe at the tread is provided (per sole construction) to facilitate optimizing side-to-side movements with much greater stability to the player's sudden lateral movements.

Lateral Support

Tennis shoe soles are specifically designed bottom tread pattern keep the foot movement stable in all directions with rubber components in different parts of the shoe. These shoes hold our heel as well as our ankle firmly.

Corresponding author E-mail : sumiinternational36@gmail.com

The construction/ design of these shoes pays attention on the mid-foot area or the tread area majorly. They facilitate lateral, side-to-side support preventing ankle, hip and knee rolling. Weight of these shoes is significant as the heavier and firmer a tennis shoe is (without disturbing the natural comfort), the more stability is gained.



Tennis Shoes



Tennis shoe Sole

Hard court Tennis sole



Clay court Tennis Sole

Grass court Tennis Sole

Outsole

Tennis outsoles are flat that facilitates greater energy transfer and ease of motion. They are constructed thicker for more durability. Outsole treads are specially designed for specific court surfaces as illustrated above, providing the best traction and durability for each court type. That is, for example, if you play on a hard-turf or a clay court, a tennis shoe with a full herringbone tread is the best fit.

Bottom Line :

Tennis shoes are not just footwear but an essential equipment for players that helps in lateral support, outriggers, toe guards and thicker outsoles. These special features ensure support, comfort, durability, as well as prevents injury to the foot.

Badminton Shoes - Badminton is one among the fast-paced sports that involves rapid direction change and sudden

movements and thus a specific shoe is essential. This not only improves the performance but also reduces chances of getting injured during playing.

These shoes have a thinner sole, anti-slip and wear resistance with low abrasion rubber, to reduce the center of gravity thereby reducing the vulnerability to injuries. The midsole provides excellent shock absorption as well as resilience. The below points must be noted for a Badminton shoe.

The sole rubber material must be non-marking that provides good grip and facilitates easy movement on the court with great flexibility.

Shoes with good cushion helps in safe landing of feet during jumps and reduces pressure from the knees while landing. The cushion in badminton shoes must be soft and thin with extended edges all around to facilitate proper movement of our feet while playing.

Correct fit must be assessed by the players as each individual has different shape and foot type.

Well, the badminton shoe must be highly flexible as the nature of the game keeps the player almost on the toe. They must be flexible vertically and laterally too to keep your toe and ankle safe from injuries.

They have to be lightweight to cope with getting exhausted fast. The standard weight of a pair of shoes should be between 500 – 650 grams.

Boxing Shoes - Boxing is a game that teaches self-defense, combat skills and techniques and improves self-discipline as well as mental strength with focus.



Badminton Shoes

Upper material preferably should be a combination of leather, suede or nylon with enough perforations for free breathability to avoid foot to heat up and sweat out causing slippage of the foot within the shoe. These shoes are to be chosen very carefully for correct fit, comfort, flexibility as it works as an important equipment for the game.



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Boxing is a sport of quick reflex to pull out of slips and act upon the defensive tactics and to do this one has to be as light as possible without compromise on foot to court (ring floor) grip/traction. Since mobility of boxers dictates the pace of the game and how closely the bout to be fought a proper lightweight shoe with proper foot and ankle support must be used. These shoes facilitate to move in and out of pockets quickly with ease and comfort. Thus, these shoes must be lightweight.

Boxing demands stability of foot and ankle. A cross and hook punches depend on how strongly our body is pivoted to generate enough power for a forceful strike. Excessive pivoting without adequate ankle support can cause serious ankle injuries specially while attempting to punch. Ankle boots with hook and loop fasteners (Velcro) are preferable over the shoes for better ankle support.

Lightweight Rubber sole is best for these shoes that features good traction, yet allowing fast foot movement. The soles must have a grooved bottom pattern to provide good enough traction and anti-slip property.

To sum up, these shoes help facilitate speed, stability, enhance power, improves agility, provides ankle support with comfort and an excellent floor grip.



Boxing shoe – low ankle

Boxing shoe – high ankle



Boxing shoe sole patterns

Shooting Shoes are heavier to withstand the recoil of pistol/ gun imparting stability to the whole body and can withstand

great amount of bends. Its pertinent to mention here that shooting equipment such as pistol/ riffle, the range of shooting (distance) and timing determines the game and thus a shoe must be judged by the nature of the game. These are normally boots made of leather per old school but in modern day lightweight sneakers with adequate characters are available. These shoes are robust shaped with often soles squared up at toe and heel with extended edge.



Pistol Shooting shoes

Rifle Shooting Shoes



Shooting shoe sole

Cricket Shoes like running shoes has metal spikes and metal/ rubber studs that are removable on the outsole that digs into the grass or mud on the pitch providing higher traction during running and quick movements that is an essential demand of the game. These shoes also provide great ankle support to prevent slips and injuries to the foot on wet and soft pitches/ ground. They are designed for a snug fit, great comfort, support and stability. The materials used in the upper are leather, PU/TPU or polyester mesh mainly for high degree of flexibility and breathability. We must choose a shoe that fits us well depending on our foot shape.

Rubber soles are best suited material as they are soft enough as required. Rubber studded soles are better as they do not damage as much as it may be caused by spikes in abnormalities, also the studs provide enough grip on grass and wet grass. Adult shoes and children shoes for the game of cricket is designed specifically respectively. While spikes are more suitable for soft and wet pitches, studs are better on hard pitches.



Cricket shoe

The following points are worth a mention :

Batting Cricket Shoes are specifically designed for the batsman for their extended standing periods and fast runs. They are lightweight and very flexible to augment the dexterity and sudden movements with ease, comfort and grip. They have a cushioned midsole for shock absorption and a rubber outsole with deep grooves to excel in grip and traction during running and rapid direction changes. Now a days they have done away with metal spikes and instead implemented heavy studs/cleats on the forepart only to reduce the weight and improve the comfort.



Batting Cricket Shoe

Bowling Cricket shoes facilitate support, stability and good grip during delivery run and are sturdier than batting shoes. These shoes have extra cushioning for added support around the ankle with reinforced toe cap to protect the toe from any impact and abrasion from frequent dragging. The toe cap is strong enough to protect the big toe that often slams into the ground. They essentially have a combination of spikes and studs that provide optimum traction on the ground/pitch.

Bowling shoes always have 4 spikes at the heel for maximum grip to the leading foot that lands at delivery while at the forepart the spikes are 7. These boots have very flat outsole that offers shocks and impacts to spread all around quickly offering better support to the foot.



Bowling Cricket Shoes

Wicket-keeping Cricket Shoes has to offer excellent grip and helps enhance quick movement, they also have spikes or studs for good traction. Ofcourse, comfort, flexibility and stability is an integral part enabling the wicketkeeper to move quickly at the stumps.



Wicket-keeping Cricket shoe

All-rounder Cricket Shoes has the versatility of batting and bowling cricket shoes to match the all-round player who perform multiple roles in the game. They are specifically designed with features such as a balanced traction, enough support and padding to suit multiple playing positions.

All-rounder shoes has 2-4 spikes on the heel and 5-7 at the forepart and are also called multi-function cricket shoes that has plastic studs replacing the metal spikes.



All-rounder Cricket Shoe



All-rounder Cricket Shoe Soles

Football Shoes are less of footwear and more of an equipment for the football players. They are designed to facilitate speed, high traction and excellent grip on the ground during quick runs and turns to protect from slipping and sliding. They are made with leather, rubber, nylon or polyurethane. These are available as shoes as well as ankle boots. It is very important that the shoe must match the surface type, positional demands



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(example striker or goal-keeper), amount of traction required and essentially matching the foot shape. It is to be noted that shoes for Firm ground and Soft ground are different in the category of grass ground while for Artificial ground it is again different. Points to consider for each of these are Surface, Grip, Weight to material and Fit for comfort.

Coming to the construction, the upper material is Kangaroo leather for enhanced durability as well as comfort (very few models available), PU leather or synthetic leather is used, as restrictions to use prevail with natural leather, and has water repellent capabilities. Now-a-days fully synthetic materials are used that is very comfortable, lightweight and flexible for the demand of the players in the game. The top mesh material is a combination of natural cotton and nylon material to absorb maximum sweat and enhance breathability and comfort.

Then is the insole that is made with aero technology that makes a feel of foot in air. These insoles are made from PU foam with a stringent percentage of water resistant material. Thus, reducing the shoe weight substantially to facilitate quick running as well as changing position while running.

Now, the most vital part – the sole. They are made of natural leather, natural rubber, PU and PVC. Note that the sole studs/cleats are distinctly heavier and much more supportive than any other type of sole cleats. These studs/cleats are specifically made of rubber or hard plastic. The metal spikes are never used to prevent injuries to other players.

Innovations in technology has helped to make these shoes with synthetic materials, firm cushion with silicon or rubber with artificial net for water resistance. Company like Nike uses Carbon fiber, specially innovated by them, that make the shoes extra light. These shoes are approximately 190 grams as compared to the other shoes that weighed 500 grams.



AG Football Shoe FG Football Shoe SG Football Shoe



AG = Artificial Ground

FG = Firm Ground (grass)

SG= Soft Ground (grass)



Football Shoe Sole Templates

.....to be continued in the next issue

ANNOUNCEMENT

ILTA LAUNCHED HEALTH CARE BENEFIT FOR ITS MEMBERS

Indian Leather Technologists' Association (ILTA), a member society of IULTCS and a pioneer organization in the field of leather industry, has now tied up itself with the hospital the Narayana group for Eastern India with a view to giving Indoor, Outdoor and Medical testing services to all of its registered (both life and ordinary) members at concessional rates.

Offer & Discount :

1. **OPD Service:** 10% discount on Doctor's Consultation, Prevailing Health Check-ups available at hospital, day care procedures, Investigations except outsourced tests.
2. **IPD:** 5% on total IPD billing as per prevailing hospital tariff excluding medicine / consumable / implant / outsource & blood bank services. (Not applicable on insurance cases/ Govt scheme / ESIC and any other schemes & promotional package or offers & discounts).
3. **Ambulance:** As per Availability & as per Narayana Health ambulance policy & charges.
4. **Payment Terms:** Payment should be only in Cash Mode, Debit Card, Credit Card, NEFT/RTGS/ IMPS. No cheques shall be accepted.

These facilities will be extended to its existing members (both Life & Ordinary) only. Six family members including spouse, two children (below 25 years) and dependent parents will be entitled to avail these facilities. The persons concerned may contact Mr. Bibhas Chandra Paul, OSD, ILTA (Mob. No. 9432553949) and / or Mr. Subha Paul, Assistant Manager - Payor Relation, Narayana Health (Mob. No. 8334847000) for further details.

ILTA will issue a Health Card in favour of each Member. Thus, Members are requested to collect the prescribed application format to avail this facility either from ILTA Office or through email.

ILTA IS NOW ON DIGITAL PLATFORM

Indian Leather Technologists' Association is now set for digitalization of its all publications. The members and non-members alike are eligible for this facility. The association has been publishing number of books on leather & footwear technology since inception. Also, the Association has a great collection of number of articles from renowned personalities & scientists of leather fraternity worldwide which has been publishing in our only technical journal namely "Journal of Indian Leather Technologists' Association (JILTA)".

All the above facilities will be available to all the interested peoples on digital platform through the official website of the Association very soon.



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Newsleather

Stay curious, informed and connected

Edition 3, 2024

Welcome

This is the third edition of our scientific newsletter, dedicated to providing the latest updates on research, regulatory developments, technology, and standard methods in the leather industry.

In this issue, we are starting a series of publications about the use of patents in the leather industry. We will review two old patents that shaped the leather industry.

Patents are a complex subject, involving the interplay of technology, science, art, and legal expertise. The process of obtaining a patent is intricate and often requires the expertise of a patent attorney for the submission, interaction with the patent examiner, and defense of the patent. The patent process varies across different countries, resulting in situations where patents may be granted in some regions but not in others.

Thank you for joining us on this journey. We look forward to your feedback and contributions in future editions.

Please share your comments and suggestions to secretary@iultcs.org

Wishing you all a Happy New Year! Keep Tanning!

Kind regards,

Dr. Luis A. Zugno, editor



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Traditionally, leather technology has been kept as a trade secret, with recipes and formulations guarded closely by the Master Tanner. Often, the chemicals were coded, and only handwritten formulations existed. Tanneries were tightly closed industries. However, with the advent of the industrial revolution, tanneries had to become more transparent, requiring the disclosure of chemicals and formulations. This shift created an opportunity to use patents to protect intellectual property. Today, both trade secrets and patents continue to play a crucial role in the leather industry.

A **patent** is a special legal protection for inventors. It gives them the exclusive right to use, make, and sell their invention for a set period, usually 20 years. This means no one else can use or copy their invention without permission.

Patents encourage inventors to create new things by ensuring they can benefit from their hard work. To get a patent, inventors must describe their invention in detail so others can understand how it works. This sharing of knowledge helps inspire more new ideas and inventions.

In simple terms, a **patent** is like a reward for inventors that also helps spread new knowledge and technology.

Patents play a crucial role in innovation by:

1. **Protection of Intellectual Property:** Patents safeguard inventors from unauthorized use of their inventions, ensuring they can control and monetize their innovations.
2. **Incentive for Innovation:** By granting exclusive rights to profit from inventions, patents provide a strong incentive for investing time and resources in research and development.



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3. **Promotion of Knowledge Sharing:** The requirement for public disclosure of patented inventions fosters knowledge dissemination, which can inspire further innovation and development in related fields.
4. **Economic Growth:** Patents drive economic growth by encouraging the commercialization of new technologies, leading to the creation of new products, services, and industries.

While patents provide significant advantages, they also come with certain challenges:

1. **Cost:** The process of obtaining and maintaining a patent can be expensive, including application fees, legal fees, and maintenance fees. In the United States the total cost for the life of the patent is estimated in 100,000 dollars.
2. **Time-Consuming:** The patent examination process can be lengthy, often taking several years to complete. In most countries patents are valid for 20 years.
3. **Enforcement:** Enforcing patent rights can be complex and costly, particularly in cases of international infringement.

In this newsletter we will review 2 important and historical United States patents on the leather industry:

1. The two-batch system for chrome tanning patented in the United States by Schultz on January 8, 1884, next month completing 141 years. The two patents "Tawing Hides and Skins" describe the use of bichromate of potash (potassium bichromate) being reduced by sodium sulfite or sodium thiosulfate. Patents: US291784A and US291785.

Schultz patents were challenged by Zahn citing prior art. The New Jersey court said that the process is not entirely new or original and that similar patents existed at the time of Schultz's patent. This video



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has a great representation of the patent dispute:

<https://bit.ly/409Q5w7>

2. Dr. Otto Rohm patented in 1908 the invention of a bating process using extract of the pancreas of animals and a mixture of salts of alkali and ammonia. This new bating method served as a replacement for the traditional use of dog dung in the bating process. The most known product of this patent (now expired) is called Oropon® and is still being used today. Patent US886,411. The German patent was issued on June 7, 1907: DE200519C <https://patents.google.com/patent/DE200519C/en>

The patent when issued became a public document and can be accessible easily. At the end of this newsletter, we have the complete text of these patents. The old patents are simple and very objective; today are more complex.

We will continue our discussion on patents and how to make searches in the future issues of Newsleathers.



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UNITED STATES PATENT OFFICE.

AUGUSTUS SCHULTZ, OF NEW YORK, N. Y.

TAWING HIDES AND SKINS.

SPECIFICATION forming part of Letters Patent No. 291,784, dated January 8, 1884.

Application filed May 21, 1883. (No specimens.)

To all whom it may concern:

Be it known that I, AUGUSTUS SCHULTZ, a citizen of the United States, residing at New York, in the county and State of New York, have invented a new Improved Process of Tawing Hides and Skins, of which the following is a specification.

This invention relates to a new process for tawing hides or skins, said process consisting in subjecting said hides or skins to the action of compounds of metallic salts—such as bichromate of potash—and then treating the same with hyposulphite of soda, by which term is understood that salt which is more recently sometimes called "thiosulphate of soda," (Na₂S₂O₄.)

In carrying out my process, I unhair the rawhides and prepare them in the same manner in which they are made "ready" for tanning. If the hides have not been pickled, I subject them to the action of a solution of bichromate of potash in the presence of an acid—such as hydrochloric acid—or, if the hides have been pickled, they may be treated in a solution of bichromate of potash in water without the addition of an acid. In this solution the hides are left for a shorter or longer time, according to their thickness and to the strength of the solution employed. A skiver or the face of a sheep-skin can be done in a strong solution, as above described, in about fifteen minutes, while a full skin "roan" would require in the same solution about one hour. I call the solution "weak" if it contains five per cent. or less of the weight of skins of bichromate of potash, and I call the solution "strong" if it contains more than five per cent. of bichromate of potash. It is not material, however, how strong the solution is.

The skins are completed if small pieces cut from the thickest parts of said skin show that the solution has entirely penetrated. The skins are then ready to be taken out, and after the adhering liquor has run off the skins are introduced into the second solution, which consists of hyposulphite of soda dissolved in water, and adding an acid, such as hydrochloric acid. The solution may be strong or weak of hyposulphite, and the quantity of acid used at first may be less than requisite to split up the entire quantity of hypsul-

phite, and more acid may be added if the skins show that more is required, which is indicated by the color of the skins. When they are done, they show a whitish, bluish, or greenish color, according to the time they are kept in the hyposulphite solution. A skiver which first has been exposed to the action of the bichromate for fifteen minutes will be ready by remaining in the hypsulphite solution about twenty minutes. For thicker skins a proportionately longer time is required. For some skins—such as calf or steers' skins—it is desirable that the same, after having been withdrawn from the second or hydrosulphite solution, shall be returned to the bichromate solution, which imparts to them a brownish color and leaves them in a favorable condition to be colored black. The coloring can be done after the skins leave the hypsulphite solution, and after they have been exposed for the second time to the bichromate solution. The leather coming from the hyposulphite solution is especially adapted for light or dark colors, and by proper dyeing methods better and brighter colors can be produced than on leather done by tanning. After the leather is treated in the manner above indicated, it may be colored, scraped, and gressed in the usual way. Leather can also be made by reversing the operation and first soaking the hides in a solution of hyposulphite of soda and then exposing them to the action of the bichromate solution. By using the solutions indicated at a heat of about 80° Fahrenheit, the process will be done in a shorter time than if the solutions are used cold. By my process the gelatine contained in the hides is rendered insoluble by means not injurious to the leather. If leather made by tannin is put in a strong soda solution, the tannin is extracted and a dark-brown liquor is formed. If leather made by my process is put in a strong soda solution, the liquor obtained shows only a little milky color.

Leather made by my process is very strong, soft, elastic, and my process is applicable to hides or skins of every description.

What I claim as new, and desire to secure by Letters Patent, is—

The within-described process for tawing hides and skins, said process consisting in sub-

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291,784

jecting the hides or skins to the action of compounds of metallic salts—such as a solution of bichromate of potash—and then treating the same with a compound containing hypsulphurous acid, (or as it is otherwise called "thiosulphuric" acid,) such as a solution of hypsulphite of soda or of potash in the presence of hydrochloric acid.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

AUGUSTUS SCHULTZ. [L. S.]

Witnesses:
W. HAUFF,
WILLIAM MILLER.



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INTERNATIONAL UNION OF LEATHER
TECHNOLOGISTS AND CHEMISTS SOCIETIES

(www.iultcs.org)

UNITED STATES PATENT OFFICE.

AUGUSTUS SCHULTZ, OF NEW YORK, N. Y.

TAWING HIDES AND SKINS.

SPECIFICATION forming part of Letters Patent No. 291,785, dated January 8, 1954.

Application filed July 18, 1952. (No specimens.)

To all whom it may concern:

Be it known that I, AUGUSTUS SCHULTZ, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Tawing Hides and Skins, of which the following is a specification.

This invention relates to a new process for treating hides or skins, said process consisting in subjecting said hides or skins to the action of a bath prepared from a metallic salt—such as bichromate of potash—and of then treating the same with a bath containing sulphurous acid.

In carrying out my process I unhair the raw hides and prepare them in the same manner in which they are made ready for tanning. If the hides have not been pickled, I subject them to the action of a bath of bichromate of potash in an acid, such as hydrochloric acid; or, if the hides have been pickled, they may be treated in a solution of bichromate of potash in water without the addition of an acid. In this solution the hides are left for a longer or shorter time, according to their thickness and to the strength of the solution employed. A skiver or the face of a sheep-skin can be done in a strong solution, as above described, in about fifteen minutes, while a full skin "roan" would require in the same solution about one hour. I call the solution weak if it contains five per cent. or less of the weight of the skins of bichromate of potash, and I call the solution strong if it contains more than five per cent. of bichromate of potash. The skins are done if small pieces cut from the thickest part thereof show that the solutions have entirely penetrated. The skins are then ready to be taken out of the solution, and, after the adhering liquor has run off, the skins are introduced into the second bath, which consists, by preference, of sulphite of soda dissolved in water, to which an acid—such as hydrochloric acid—should be added, in order to set free the sulphurous acid. The hydrochloric acid or its substitute may be added to the bath in a free state or through the medium of skins previously pickled, such skins being impregnated with the proper acid. The solution may be strong or weak of sulphite, and the quantity of acid used at first may be less than requisite to exhaust the bath of the sulphite, and more acid may be added if the skins show that more is required, which is indicated by the color of the skins. When the skins are

done, they show a whitish, bluish, or greenish color, according to the time they are kept in the sulphite bath. A skiver which first has been exposed to the action of the bichromate bath for fifteen minutes will be ready by remaining in the sulphite bath about twenty minutes. For thicker skins a proportionately longer time is required.

For some skins—such as calf or steer skins—it is desirable that the same, after having been withdrawn from the second or sulphite bath, shall be returned to the bichromate bath, which imparts to them a brownish color and leaves them in a favorable condition to be colored black. The leather coming from the sulphite bath is especially adapted for light and also for dark colors, and by proper dyeing methods better and brighter colors can be produced than on leather done by tannin. After the leather is done in the manner above described, it may be colored, soaped, and greased in the usual way.

Leather can also be made by reversing the operation and first soaking the hides in a sulphite bath, and then exposing them to the action of the bichromate bath. By using the baths described at a heat of about 80° Fahrenheit the process will be done in a shorter time than if the baths are used cold. Tawed leather made by my process is very strong, soft, and elastic, and my process is applicable to hides or skins of every description.

Instead of using sulphite of soda, I can use other sulphites or bisulphites in presence of an acid or an aqueous solution of sulphurous acid.

What I claim as new, and desire to secure by Letters Patent, is—

The within-described process for tawing hides and skins, said process consisting in subjecting the hides or skins to the action of a bath prepared from a metallic salt—such as bichromate of potash—and then to the action of a bath capable of evolving sulphurous acid—such as a solution of sulphite of soda—in presence of another acid—such as hydrochloric acid—substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

AUGUSTUS SCHULTZ. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.



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(www.iultcs.org)

UNITED STATES PATENT OFFICE.

OTTO RÖHM, OF ESSLINGEN, GERMANY.

PREPARATION OF HIDES FOR THE MANUFACTURE OF LEATHER.

No. 886,411.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed October 12, 1907. Serial No. 397,149.

To all whom it may concern:

Be it known that I, OTTO RÖHM, a subject of the German Emperor, residing at Esslingen, Germany, have invented a certain new and useful Improvement in the Preparation of Hides for the Manufacture of Leather, of which the following is a specification.

For bating hides, that is to say, for removing the lime and fatty matter from the hides after the liming process, dog manure has been used for a long time.

The present invention has for its object, to provide a simpler and more reliable method of removing the lime, together with the fatty matter and the remnant of the hairs. For this purpose I treat the hides with an aqueous extract from the pancreas of animals. The principal constituent of the said pancreatic extract is trypsin, the effect of which is materially assisted by the other enzyme of the pancreas, viz. steapsin, which has the property of splitting up fat and completing the saponification of the fat contained in the hides.

Aqueous pancreatic extracts alone have a very efficient bating action, but it is advantageous to add salts of ammonia or of alkalis or mixtures of such salts. The favorable effect of these salts on hides becomes apparent chiefly by the fact, that the hides shrink, become thinner and are less liable to become rough, on being placed in pure water after the bating process, which defect is liable to occur, when the hides have a strong alkaline reaction and the water contains a considerable quantity of calcium-bicarbonate.

The details of procedure will appear from the following example: A pancreas weighing about 250 grams is extracted with 1 liter of water, and 10 cubic centimeters of this extract are added to 990 cubic centimeters of a 0.1 per cent. aqueous solution of ammonium chlorid. The solution thus obtained is an excellent bate.

When the hides, which have been limed and have an alkaline reaction, are introduced into the bating liquid, the hides are liable to become rough, through the precipitation of calcium carbonate, in case the water employed contains much calcium-bicarbonate in solution. This defect may occur, whether the bating liquid contains trypsin alone, or together with salts of ammonia or alkali, and it may be avoided by subjecting the water intended for the preparation of the bate, to a preliminary treatment, which consists in precipitating the carbonic acid by means of a suitable quantity of lime water, or in adding to the bating liquid before the introduction of the hides starch-paste or other organic or inorganic materials adapted to envelop the calcium carbonate.

If desired, both remedies, viz. lime water and starch-paste, may be used at the same time.

What I claim is:—

1. The process for bating hides, which consists in treating the hides with an aqueous extract of the pancreas of animals, substantially as described.

2. The process for bating hides, which consists in treating the hides with an aqueous pancreatic extract containing an ammonia-salt, substantially as described.

3. The process for bating hides, which consists in treating the hides with an aqueous pancreatic extract containing a mixture of salts of alkali and ammonia, substantially as described.

In witness whereof I have set my hand hereunto in the presence of two subscribing witnesses.

OTTO RÖHM.

Witnesses:

H. STRÄHLE,
OTTO HAAS.

Valorisation of Invasive Species - For Leather, Fur, Bristle, Meat and By-Products (Part - 24)



Subrata Das, M.Tech (Leather Technology)
Freelance Leather Technologist & Consultant, Chennai

Monkeys



Rhesus Macaque



Corresponding author E-mail : katasraj@rediffmail.com



A total of 633 and more, nonhuman primate species and sub species, in a wide assortment of pelages, sizes, hefts, colours, behavioural and dietary disposition - langurs, tarsiers, lorises, lemurs, monkeys, gorillas, vervets, gibbons, babakotos, marmosets, capuchins, sakis, bushbabies, muriquis, titis, sifakas, talapoins, chimpanzees, uakaris and a host of other simians can be found in 90 countries worldwide, across Asia, Africa, Central and South America, including the tropical southern part of Mexico and the Caribbean. While eighty six nations, are home to 35% of the 505 anthropoids, just four – Democratic Republic of the Congo (DRC), Indonesia, Madagascar and Brazil are home to more than two –thirds of the arboreal mammals.

Agricultural and mining expansion, reckless deforestation, commercial bushmeat trade, unsustainable human activities, fossil fuel extraction, international and local trafficking for the exotic pet trade, military conflict and intractable market proclivity for “flavourful” and organic, hormone-, steroid- vaccine- and medication free, “jungle –fresh”, simian flesh, by erudite diners as well as a subsistence protein by poor and marginal segments of society, have pushed more than 60% of the “tree –dwellers” to critically endangered, endangered or threatened status, with at least twenty five to thirty species on the brink of extinction. Among them, the most calamitously affected are the northern sportive lemurs of Madagascar, with only fifty individuals, at last count, remaining in the wild.

Although no primate has been declared extinct so far in the first quarter of the 21st century, and not a single primate species was lost to extinction in the last century, the conservation scenario remains both dire and worrisome.

Ethnophoresy or human translocation of non-human primates has taken place, since the early 1900s .In many instances, the non-human primates have been introduced to bioregions antipodal to their native habitats, where some have thrived prodigiously to assume invasive alien status.

Some notable examples are :

Long tail macaque from Indonesia to Mauritius and Palau

Rhesus macaque from India to Puerto Rico (Cayo Santiago), from China to Japan and from Puerto Rico (La Parguera) to Morgan Island, South Carolina

Pig tailed macaque from Lao to Cuba (Cayo Cantiles)

Barbery macaque from Morocco and Algeria to Gibraltar

Formosan Rock macaque from Taiwan to Japan

Mona monkey from West Africa to Grenada

Patas monkey from Nigeria to Puerto Rico, from Western Africa to St Kitts, Nevis and Barbados, from mainland Africa to Cape Verde Islands and from St Kitts and Nevis to Sint Maarten, Saint Martin, Tortola in the British Virgin Islands and Cayo cantiles (Cuba).

Squirrel monkey from Brazil to Fort Lauderdale, Florida

USA

In the last century, 50,000 flora and fauna have been presumed to have entered the US, with fifteen percent becoming invasive, overwhelming and undermining 50% of the nation’s threatened and endangered native species, with annual control cost and damage management liability of US\$21 billion to the exchequer.

A staggering range of exogenous plants, fish, annelids, arthropods, amphibians, mollusks, reptiles, birds and mammals, have domiciled in Florida - the nucleus of the country’s pet trade since the mid 1960s. The Sunshine State, today, because of its burden of unwanted interlopers, is known by the ignoble moniker — “Australia of the United states”.

Living almost unobtrusively among other notorious and stereotypical intruders, publicized in literature and posters, are the often overlooked, obscure troops of monkeys, which though known locally, have received scant publicity elsewhere, nationally or internationally.

In the past, as many as four feral simian species were established across six known sites in Florida. These were crab eating macaques, common squirrel monkeys, vervet - also known as African green monkeys, and rhesus macaques. Smaller numbers of three more species - capuchin monkeys, spider monkeys and chimpanzees were occasionally reported.

Presently, the Florida Fish and Wildlife Conservation Commission, gazettes three species as non-existent in established manner (spider and common squirrel monkeys and crab eating macaques) and three as naturalized (capuchin and vervet monkeys and rhesus macaques). Although eyewitness reports

of non-human, chimpanzee like primates, have emanated from Florida, since the 1950s, no numbers have been found to confirm that the Sunshine state supports and sustains chimpanzees, except for occasional rouges and escapees of ape facilities or exotic pets, all of which have been intercepted and accounted for, till date.

A brief history of the Floridian simians is as follows :

Rhesus Macaques

1930s – Recreational river boat skipper, Colonel (christened name not rank) Tooley, released half a dozen rhesus macaques on an island on river Silver, to enrich tourist pastime and improve business for his now defunct - Colonel Tooley's Jungle Cruise. The monkeys swam across, to the mainland and established breeding numbers in what is presently the silver Springs State Park in north- central Florida. A decade later, Tooley released a further six rhesus, which likewise escaped into the woods.

1968 - The original macaque dozen multiple six and half fold to number 78.

1970s – Further diffusion of the primates to environs around River Ocklawaha

1970-73 – A second introduction to the area by a laboratory animal raising establishment – Charles Rivers Laboratories – 1383 rhesus macaques stocked on two islands. Some hardy and persistent simians made it to the mainland and naturalized themselves in the area.

1976 - Tropical Wonderland in Titusville, an amusement park which housed rhesus monkeys, closed in 1976, following which deliberately released or rogue numbers settled in the area.

1992 - Following landfall of Hurricane Andrew on August 24, 1992- an unspecified number of rhesus macaques escaped from the devastated Miami Metro zoo.

1984-2012 – Macaque management, by licensee trappers, successfully removed nearly 1130 animals, which were sold to labs countrywide for biomedical research. Some were sterilized. Some were killed. A few housed in zoos.

2015 – Estimated 175 rhesus monkeys remained in the park.

2018 – Six troops totalling 134 , were spread over an area of 20 km x 11 km around the two rivers – Silver and Ocklawaha.

2023 – Today, Floridian rhesus monkeys' number between 550-600. For the first time ever, some herpes carrying individuals have been sighted on Florida's First Coast - a presumed extension of the Central Florida troop to the northeast of the state.

Squirrel Monkeys

1960s – 70s – Squirrel monkeys, 12-15 in number, inhabited Silver Springs National Park but were subsequently pushed out by the aggressive rhesus. This population is considered extirpated.

1960s -90s – Masterpiece Gardens in Lake Wales, Florida had a non-captive population, following release by a private citizen – last sighted in 1989.

1960 -2010– Confirmed presence of squirrel monkeys around River Gordon in Naples, for half a century. Number, source and date of liberation are unknown. 1990-2000 saw some trapping activity for pet trade and scientific research. Numbers declined to three in 2009 and none have been seen, since the following year.

1970 – Sixty-five caged squirrel monkeys were uncaged by animal activists on the campus of Atlantic University, Florida. Last three individuals sighted in 1976.

Mid 1970s – Four animals set free from a local club, domiciled in the 35 acre Bartlett Estate in Ft. Lauderdale, Florida

1988 – Forty-three individuals. Numbers plummeted to 27-30 by 1988 and by 2021 only one was seen. Reason for decline is assumed to be bitter winters and trapping by private trappers.

Vervet Monkeys

1940 s - Captive vervet monkeys escaped a biomedical research station - Anthropoid Ape Research Foundation, a facility- which received them from Nigeria and domiciled them in and around Dania Beach, south of Ft. Lauderdale.

Early 1990s - estimated 36 vervet monkeys split between two groups, naturalized at the location.

2020 census - 40 vervet monkeys distributed among four groups. Identical numbers from the early 1990s and census data from 2014–2020 suggest negligible population growth.



2023

In the Sunshine State, monkeys are kept in semi-captive enclosures at two locations –

Homosassa Riverside Resort owned island on the Homosassa River – home to 4 spider monkeys, and

Monkey Jungle and its affiliate DuMond Conservancy - primate exclusive wildlife park and discovery centre in Miami-Dade County – home to over 300 primates, belonging to 9 species, most of them retirees of medical research laboratories. The establishment has grappled with periodic escapes of “mischief makers”.

A troop of wild vervet monkeys in the vicinity of the Fort Lauderdale-Hollywood International Airport, has been genetically tracked by Florida Atlantic University to the 1948 stocks of the Dania Chimpanzee Farm. The self-sustaining population has lived and flourished for 76 years in a tiny mangrove forest, though how they decamped from the farm has not been established.

Puerto Rico

In the late 1930s, a primatologist named Clarence Carpenter acquired 450 rhesus macaques from India, for simian social, behavioural and coital research. The arboreal quadrupeds were settled on a 38-acre, verdant island, Cayo Santiago, in the east of the territory, locally called “Monkey Island”. Soon thereafter, the Caribbean Primate Research Centre - education research facility of The University of Puerto Rico was founded on its grounds. As of mid-2022, an estimated 2000 caudate residents thrive on the island.

Southwest Puerto Rico is also home to introduced, free-ranging populations of patas monkeys and rhesus macaques. The numbers of the latter increased significantly, from a troop nurtured in 1961 on the islands of Cuevas and Guayacán by the La Parguera Primate Research Centre, affiliated to the Caribbean Primate Research Centre. The progeny of escapees from the facility has, since La Parguera shut down in 1984, established free-ranging numbers.

Throughout the next decade and a half, more rhesus macaques were included in the existing colony, while from 1971 to 1981 further numbers of patas monkeys, procured from Nigeria, and were introduced to the islands. Multiple escapes, emigration

and dispersal of both species, since then, have resulted in high population densities and mean group sizes across the unincorporated territory of the United States with official Commonwealth status.

The invasive patas numbers in Puerto Rico, are today as high as almost 3 monkeys per square kilometre, with mean troop sizes as high as 52 individuals. From 120 simians in 1993, the numbers spiralled to somewhere between 514-621 individuals in 2006 and today, they are anticipated to be in excess of 1500.

West of the Capital city, San Juan, Toa Baja, a small agricultural hamlet is the locus of invasive rhesus monkeys, some of whom are suspected to be carriers of herpes B, which can be fatal to humans if not treated immediately.

Sri Lanka, Nepal, India, Pakistan and Bangladesh

Although monkey populations in the subcontinent are not of extraneous origin and cannot be considered invasive in the true sense of the term, nevertheless, since the turn of the century, have assumed “almost invasive status”, with devastating consequences for biodiversity, agriculture, tourism, and households.

Sri Lanka

In February, 2023, permission was granted to farmers by the Sri Lankan Ministry of Agriculture to kill toque macaques (rilava) which were rampantly destroying crops and causing huge financial losses. The primates were among six crop destroying avifauna-others being - peacocks, wild boars, porcupines, giant grizzled squirrels and other species of monkeys-removed from the protected list, with tillers being at liberty to employ any deterrent measure they deemed suitable to counter the menace.

In April 2023, a Chinese company was reported to be negotiating a contract with the Sri Lankan government to import 100,000 toque macaques for zoos. China, which is faced with a scarcity of experimental monkeys, was however, assumed to be seeking the simians for medical research. The project was jettisoned following strident public protest.

Sri Lanka, an island – nation of 22 million, is also home to 3 million toque macaques and half this number of three other species – purple faced leaf monkeys, red slender loris and tufted grey langurs.

Nepal

Following Sri Lanka's precedence, Nepal, which has skyrocketing numbers of three species of monkeys, hanuman langurs, rhesus macaques and Assamese macaques, seriously mulled exporting simians for a twofold benefit-pest management and inflow of valuable foreign exchange.

In 2003, a policy enacted by the Government of Nepal stipulated that only captive raised monkeys could be used in biomedical research. However, with unabated monkey menace and scientists establishing that rhesus macaques from Nepal could provide a viable alternative to bridge the acute simian shortage to develop Covid -19 and HIV/AIDS vaccines, serious focus has been directed in recent times towards export of rhesus macaques from the Himalayan nation.

India

India is the third country in the sub-continent, faced with rising of human - macaque conflict. The twin hill-states of Himachal Pradesh and Uttarakhand, have permitted culling, as well as translocations of trapped primates from urban areas to rural hills. Rhesus population in Himachal Pradesh declined by 50 percent in the past decade from 3,50,000 in 2011 to 1,36,000 in 2022 following the implementation of aggressive birth control measures.

Between Abbottabad and Murree in Pakistan, lies Galiyat, approximately 65 km from the national capital, Islamabad. The area is home to 10-12000 rhesus macaques, multiplying exponentially and unchecked, with each female delivering two to three infants annually and raiding fields to gorge on vegetables such tomatoes, beans, ladyfingers, turnips and pumpkins, and assorted fruit from orchards - apples, apricots, walnuts, peaches, red and black persimmons, plums, pears and cherries.

In Pakistan, the intelligent and sentient quadrupeds are also found in the northern hill regions of Murree, Swat, Kaghan, Pakistan Administered Kashmir and Chitral. They also live in the Sakra mountains in Mardan, Margalla Hills near Islamabad and throughout the high hills of the Malkand and Hazara Divisions.

Bangladesh

In Bangladesh, three species - capped - and common langurs and rhesus macaques are involved in crop damage, leading

conflict with humans, primarily in the Chittagong Hill tracts, Narsinghdi and Haripur.

Mauritius

In the Indian Ocean island nation of Mauritius, live an estimated 25000-35000, invasive, non-captive, feral long tailed macaques, with thousands more raised in captivity. The country is one of the leading exporters of monkeys, with an annual export of 10,000 individuals.

The Dutch were responsible for introducing these monkeys, as pets, from the Dutch East Indies (present day Indonesia) to the African island nation between 1602-1606. Salubrious climate, plentiful food, absence of predatory threat and abundant availability of all the habitat types that these macaques were known to occupy- savannah grassland, riparian, coastal, discontinuous mountains, mangrove and wet evergreen forest and scrub were ideal for the macaques to multiply exponentially.

In 1985, a private company, Bioculture, involved in the manufacture of vaccines and drugs to combat hepatitis, AIDS, smallpox and influenza, started to breed the macaques for research. During the same period, initial exports of macaques from Mauritius for research commenced, with wild simians trapped from higher elevations, national parks, forests, nature reserves and from woods along the Black River and the Grand River South East.

Present day exports are comprised of both feral and captive numbers, with 10,287 exported to the USA in 2020.

The integrity of the captive gene pool is ensured by the annual ingress of at least a few thousand wild female long tail macaques. This safeguard circumvents genetic inbreeding, compromised immunity and accelerated ageing. Feral numbers are nurtured by rigorously moderating collections, solely according to research requirements.

Feral macaques in Mauritius are a formidably harmful invasive alien species. They chew on the soft core of orchids and succulent plants, leading to their death. Out of 91 species of flora in Mauritius, 20 have gone extinct due to macaque aggression, in the last 250 years. The arboreal dwellers are responsible for damaging the unripe fruits of many native plants, like those of the 'Dodo-tree', masticating unripe seeds, thereby reducing staple of native frugivores such as the endangered



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mascarene flying fox. While foraging, the generalist macaques have been seen to attack and kill nesting birds and devouring their eggs and fledglings.

In large part due to destructive macaque predation, the Botanical Gardens Conservation International has ranked Mauritius as the second worst country worldwide in terms of proportion of tree species threatened with extinction. The only silver lining is the levy of USD125 imposed on each macaque being exported, which contributes to funds for biodiversity conservation in Mauritius.

Sao Tome and Principe

At the beginning of the 15th Century, mona macaques were brought to the then-uninhabited Atlantic islands of Príncipe and São Tomé, off the by Portuguese sailors, in the days of the transatlantic slave trade. The generalist feeder has significantly increased in numbers and decimated native avifauna such as the Principe thrush.

Grenada

Mariners voyaging to distant lands often returned with exotic animals and birds, from their travels to keep as pets or to sell to colonists at tidy profits. Possibly a pregnant female mona monkey, from Ghana was first taken to São Tomé or Príncipe - major trans-shipping hubs during the Atlantic slave trade. The simian escaped captivity in Grenada and was responsible for the present population there. The present Grenadian population consists of an estimated 2000 individuals.

St Kitts and Nevis

Slave trade between the Caribbean and West Africa was the catalyst for arrival of the Vervet or African green monkeys into St. Kitts and Nevis, Dominica, Barbados, St Vincent, Antigua and Barbuda, St. Lucia and Grenada, as early as the 1560s. The primates appear to have been transported on slaving ships to the West Indies, and by late 1600s, were reported to be well naturalized on the three core countries of St. Kitts and Nevis, Barbados, and Antigua and Barbuda. In 1682, Barbados was the first to declare the hazel-eyed monkeys with olive- brown pelage, as pests.

Additional numbers were imported into the Caribbean by the French in the 1700s, as exotic pets, for entertainment and enhancement of social status.

Since the decline of the sugar industry in 2005, monkey numbers have increased exponentially, and presently number in excess of 60,000, Coaxed by feeding on bagasse and sugar cane stalk on the hillside plantations, the simians are increasing raiding residential areas, ravaging gardens, bingeing their way indiscriminately, through every crop from watermelons and mangoes to cucumber and squash. Unsparing towards native flora, such as bromeliads, heliconias, cacti, and tree ferns, the long tail macaques, are known to periodically kill and devour smaller mammals and eat tree and ground dwelling nesting birds, fledglings and eggs.

Non-native vervet monkeys are also found on Anguilla. They are assumed to be the descendants of pets, which fled confinement, in 1995, in the aftermath of Hurricane Luis.

Sint Maarten

Sint Maarten, spread over 34 square kilometres, with a population of 41,486 as per January 2019 census, is a constituent country of the Kingdom of the Netherlands in the Caribbean.

An estimated 450 invasive vervet monkeys are naturalized on the Dutch side of the island, according a survey conducted by the Nature Foundation Sint Maarten, who will follow through with a government approved plan to euthanize the entire population by end 2026.

The vast majority of the vervets inhabit the east of the country – Almond Grove, St. Peters, South reward, Indigo Bay, Pelican, Dawn Beach, Pointe Blanche, Guana Bay.

The strategy to do away with the monkeys was finalized after serial complaints by farmers that their livelihood was being adversely affected by crop raiding vermin. Endless nuisance – destruction of gardens and garden furniture, random defecation in residential property, toppling garbage bins and intimidating residents and companion animals - exacerbated the decision to cull the vermin.

Despite expert primatologist advice to sterilize females and vasectomize the males, an annual grant of \$55000 has been made available for the eradication project, initiated by the Sint Maarten's ministry of tourism, economic affairs, transportation and telecommunication.

Palau

The island of Ngeaur, also known as Angaur, the fourth largest in the Republic of Palau has the only non-human primate population in Oceania, descended from six Javan long tail macaques, also known as crab-eating macaques, introduced by German colonialists in 1909. Since then, in the intervening 114 years (1909 -2023), the half a dozen furry denizens have multiplied into a thousand, with a ratio of eight macaques for every human inhabitant of the island.

Some of the monkeys have been trapped, transported and released in other islands of the archipelago, such as - Babeldoab, Peleliu, Rock Islands, Airai and Koror, to lessen the burden on Ngeaur - the residents of which regard the simians as an agricultural menace to be hunted. No study however has been conducted as yet if the interlopers have succeeded in domiciling and naturalizing in their new habitats.

Hong Kong

Although rhesus macaques had been periodically reported from Hong Kong since 1819, it was only a century later that their numbers ascended to high levels. To offset the toxic effect of alkaloid rich fruits of the strychnos plant, growing abundantly around the newly constructed Kowloon Reservoir and contaminating the water, British water Supply authorities for the peninsula, in 1910, released an unspecified number of rhesus macaques in the area, because strychnos fruit and seed, although fatal for humans had no effect on monkeys. In the presence of abundant water, particularly after the commissioning of three other reservoirs - Shek Lei Pui Reservoir, Kowloon Byewash Reservoir and Kowloon Reception Reservoir, registered a dramatic increase in numbers.

For the next 40 years, the area was dominated by these rhesus troops, until 1950, when a retiring mariner, who had kept five long tail macaques as pets, released them into the wild. The newly liberated simians sought out the existing rhesus troops, mingled and cohabited with them to beget hybrids.

Gradually, three distinct primate species emerged in Hong Kong -long-tailed macaques, rhesus macaques and their mixed breed progeny. Much later, towards the 1990s-2000s other species— such as Tibetan, pig tailed and Japanese macaques - began to be sighted and reported from Kowloon hills - possibly the result of runaway or rogue pets or accidental or intentional releases.

Today the population of invasive feral monkeys in Hong Kong number approximately 2200, A staggering 85% of this number live in Kam Shan Country Park, affectionately called “Monkey Hill”. With scattered numbers inhabiting Tai Po Kau Nature Reserve, Shing Mun and Lin Rock.

Malaysia

In 2008, Malaysia when Malaysia was grappling with its simian population, spread over ten species, with predominant numbers comprised of long tailed macaques and dusky leaf monkeys, a controversial plan was mooted to round up the urban simians totalling 250,000 and export them for medical research and exotic meat. The proposal was jettisoned upon discovering that most of the monkeys were phthisic, malarial, besides being afflicted with hepatitis and AIDS. Only 20% of the primates were healthy and among them a mere 10,000 were export worthy.

In 2011-12, more than 200,000 long tailed macaques were culled in Malaysia, upon the order of The Department of Wildlife and National Parks. Simian corpses were mass interred.

Commercial Exploitation of Monkeys

Monkeys have been hunted, trapped, traded, imported and exported for their flesh (as food), body parts (for use in traditional medicines) or freighted live (for medical and scientific research), as pets and for as performing animals.

Human kind has a long history of consuming monkey flesh, organs and body parts, predominantly in Africa and Asia, and occasionally in Europe and the Americas

Africa

In Liberia, Cameroon, Congo – Kinshasa, Congo – Brazzaville, Central African Republic, Equatorial Guinea, South Sudan and Cote d'Ivoire, gorillas, guenons, mangabeys, macaques, colobus, Diana, mona, spot nosed- and other species of monkeys, drills, and baboons, among others are hunted, butchered and eaten as subsistence protein, not only by the disadvantaged and marginal sections of society but also by the privileged and tourists as gourmet cuisine – fried, boiled, grilled, sautéed or wok-tossed. Continued demand in spite of critical depletion of simian numbers in these countries has led to poaching hunting and trading of the tree dwellers in neighbouring countries such as Ghana, Benin and Sierra Leone.



Americas and Caribbean

A one-off account from Brazil reported the preparation and consumption of monkey soup.

Before 2010, "Carne de Mona" – spider monkey meat, lime marinated, followed by smoke curing was a renowned delicacy in Vera Cruz, Mexico. The meat was served as strips and consumed with handmade tortillas. Occasionally, it is presented on a plate with modest garnishes such as a salad, rice, beans or fried plantains.

In Ecuador squirrel, white machin chorongo and spider monkeys have been poached, for their meat for many years from the Yasuni National Park area. Since the last two obligate frugivorous species are larger, with an average yield of 8kg per animal, the flesh is considered more delectable than that of herbivorous howler monkeys.

The smaller machin and squirrel monkeys, each provide less than 2.5 kg of flesh, whereby they are periodically consumed but preferred for the pet trade.

Although commercial hunting is banned in Ecuador and is punishable by law, with Only non-commercial subsistence hunting permitted for indigenous populations to obtain subsistence protein. Unceasing demand from urbanized members of the indigenous community, such as Kichwas and Waoranis from Coca, Tena and Lago Agrio to maintain ancient traditions and pre-requisite of baptism, first communion or wedding offering, as a status symbol, serve to inflate prices to US\$ 5 per pound. As per available statistics, between 2005-11, the average annual sale of monkey meat in Ecuador was thirteen tons.

Each year several instances of monkey meat being secretly imported into the United States under the guise of other meats, comes to light particularly by African-Americans, in spite of penalties of up to US\$250,000 being imposed on offenders.

As many as 28,000 primates are hunted annually in Loreto Department of Peru and while indigenous to Lowland Bolivia, the Tsimane regularly hunt and consume capuchins and howlers.

In St . Kitts and Nevis, vervet monkeys are hunted periodically and their flesh consumed as "treemutton". Monkey stew is a famous delicacy.

Asia/Pacific

The Proboscis monkey, an endangered species endemic to Borneo and found in Brunei, Indonesia (Kalimantan) and Malaysia (Sabah and Sarawak) is poached for the illegal pet trade and bush meat, and is also hunted for bezoar stones, an intestinal secretion, used in traditional medicine. There are documented cases of slow loris being trapped and killed for human consumption.

Northern pig tailed macaque and rhesus macaque meat can be consumed fried, boiled, smoked or simmered in a delicious curry sauce," at Kyaiktiyo Pagoda (Golden Rock Pagoda) Mon state in Myanmar.

Mro Tribal Community in Chittagong Hill tracts in Bangladesh and Raute people of Western Nepal consume monkey meat.

Although sales and consumption of monkey brains and flesh has been banned in China, the practice is said to continue. Monkey paws are also considered a delicacy.

The Minahasan, a non-Muslim minority group, in Sulawesi, Indonesia, are known monkey eaters, and consider the crested black macaque a delicacy.

From Chattisgarh, India, monkey corpses for consumption were reported in April 2014. Monkeys are also consumed by some communities of NE India.

In Sulawesi, Indonesia, the Minahasan, a non-Muslim minority group, are known monkey eaters, and consider the crested black macaque a delicacy. In Hongu and Nagano Japan, monkey meat, a traditional delicacy is rarely consumed now.

Regaining vigour are said to be derived from the consumption of monkey meat, and, for instance, Japanese women allegedly consume monkey meat after childbirth to regain their vigour.

In Vietnam, the white handed gibbon and doucs are the two species of monkeys eaten.

Leading exporting countries of monkeys for research

Indonesia, Malaysia, Kenya, Thailand, Philippines, Mauritius, Amazonian regions across South America, and China (80% of its exports destined for the US)

Leading importing countries of monkeys for research

The United States (33%), United Kingdom, Japan, Russia, The Netherlands, France, and Taiwan.

LEATHER AND FUR

Leather made from monkey skin, is limited and irregular in supply, mainly due to religious beliefs, sentiments and taboos in Asia, and hence is neither well known nor commercially important today, being no longer sought after, for use in western fashionable dress, any more, although it enjoyed runaway popularity from the mid nineteenth century to the mid-1940s.

Rome-born, Paris-based, “Queen of Fashion”, Elsa Schiaparelli (1890-1973) was an iconic innovator of dress design in the first half of the 20th century, renowned for extensively using Colobus monkey fur in her surrealist designs, to accentuate the wide padded shoulders of dresses, jackets and coats with the 5-6 inch luxuriance of simian fur. The attire, when donned made an emphatic but unsettling statement, combining the “rough” with the refined.

When the 1927 fad for monkey fur petered out, and furriers were faced with crippling losses due to their non-moving and dead surplus inventories, due to masterful creations of vogue virtuoso, Schiaparelli, cables began to be rushed out, once more, to Africa, as the demand for lush, silken monkey fur peaked once more. All slow-moving stock was liquidated at healthy profits and boom times returned, in right earnest by April 1933.

The fashion maven blitzed monkey fur into limelight during the 1930s. In 1933, She donned the “shoulder tray coat,” a long woollen outer garment, with ornamentation of lush black monkey fur trim on the garment at shoulder height. In the later years of the decade, the creative designer introduced a number of attires featuring monkey fur - a sweater covered front and back with monkey fur and a pair of short boots with monkey fur cascading over the throat of the ankle boot.

Arguably the greatest ever fashionable advocate of monkey fur, Elsa Schiaparelli, incorporated it in a number of her collections, for accessories as well as garments, such as the much lauded and replicated monkey fur boots.

Made for the “circus” collection of 1938, monkey fur, five – six inches long is featured over the top of the boots, draping

gracefully with balletic fluidity, covering the feet and reaching the ground. Schiaparelli revisited monkey fur in the 1940s, for garments such as sweaters, which used fur that had been dyed blonde or tortoiseshell.

Monkey fur like human hair is relatively easy to dye - from startlingly bright emerald green and black monkey fur, muff and tippet made in France in 1935. Interestingly monkey fur was at its most fashionable, during both world wars when inhumanity was in the ascendant.

A wide assortment of monkey fur garments was on view during its apogee, which included Colobus monkey coats, Colobus monkey trim on coats, baboon jackets, baboon fur trims, monkey fur gloves and boots, tafetta tea dress trimmed with monkey fur and nude coloured silk dresses with monkey fur fringe, to mention a few.

The transformative properties of monkey fur transposed African primordialism on to European haute couture transforming bestial to virginal, conformant and classic.

After Schiaparelli incorporated monkey smooth, black and silky, monkey pelage, reminiscent of human hair, into her haute couture creations, it was featured on ready-made garments. In fashion coverage and photo features, satiny and lustrous monkey fur was often serenaded as innovative, contemporary, daring, modern and sophisticated. Unexpectedly monkey fur acquired prestige and standing. Gradually the cachet and desire for monkey fur travelled to the other side of the Atlantic from Schiaparelli’s Paris salon.

Soon, monkey fur began to be incorporated into stage costumes and for re-purposing fur garments made from pelage of other exotic animals. Boleros, stoles, shawls cloaks, capes, mantles, wraps and scarves of monkey fur were periodically seen and a few were prominently presented, for dramatic effect, in Hollywood movies of the 1930s, all the more, because the fleece was highly photogenic and registered impressively on the silver screen.

It was from Schiaparelli’s haute couture shows that monkey fur diffused into prêt-a – porter collections of European and North American designers, into the wardrobe of singers and entertainers, and studios of Hollywood.

1936- Irene Dunne in a full-length monkey coat and matching hat in “Theodora goes wild”



ILTA
Since 1950

1937 – Ginger Rogers in “Shall we dance” looked scintillating in white monkey fur

1944 - fledgeling actress, Marilyn Monroe, known still as Norma Jeane Baker, wrote about wanting a Gold Coast monkey coat in 1944

1948 - Marilyn Monroe wore her own Colubus coat in 1948 to the premier of the film The Emperor Waltz

1960s-70s - Mick and Bianca Jagger, and Loulou de la Falaise wore monkey fur

2006 - Supermodel-muse Kate moss wore the fur

2006 - Pete Burns, a contestant on the show Celebrity Big Brother, had his monkey coat confiscated by the authorities

2013 - designer Michele Lamy sported monkey pelage

2014 - Jessica Lange enacting the role of Elsa Mars in American Horror Story: Freakshow, 2014 was featured in a monkey skin coat.

Monkey fur clothing was loaded with cultural and carnal symbolism of “primitivism which pervaded popular culture of the time, initiated by the success of films such as Tarzan series and King Kong, which dominated the screens.

Primarily due to cinema’s influence on style and fashion, among others, monkey fur became widely available and relatively affordable. One could purchase a monkey fur coat in 1927 for \$57.50 (\$850 at today’s exchange rates), as compared to a prohibitively price raccoon coat (\$300-\$450 in 1927 equal to \$4200-\$6300 in 2023).

Monkey fur garments were also popularized by the Bencha label with their “Gold Coast Monkey” collection – coats, jackets and capes. Tracing their origins to Bencha, are some of the most beautiful, stunning and unique looking garments, which have survived into the 21st century as family heirlooms.

Embellished ceremonial elbow and shin guards of monkey leather are commonly used tribes in Kenya and Uganda for ceremonial dances while medicine pouches made of monkey skin have been used to traditional shamans, healers (sangomas) and witch doctors of many tribal societies to express their exalted status in society.

Most monkey skin healing pouches were decorated with geometric patterns incised onto the leather, with a carrying strap of multiple strands of plaited leather. The receptacle had a drawstring top, made using a skin thong, knotted together at the ends. Some medicine men wore cloaks and mantles made of monkey skins sewn together and trimmed with a strip of leather decorated with glass beads and cowrie shells.

In January 2021, Metropolitan Police, working closely with Wildlife Crime Unit, seized a monkey skin jacket, advertised for sale, from Tooting, South London.

Other obscure items made from monkey parts include monkey paw back scratchers, monkey fang amulets and necklace, langur and macaque monkey heads for sale as “Gothic art”, monkey skin as headdress and ceremonial clothing by the Aguaruna indigenous communities in Peru and skulls, heads, limbs, bones and internal body parts, used for a wide variety of native medicines.

Monkey Performance and Entertainment

In Pakistan, rhesus macaques are trapped from feral populations and made to perform bandar tamashas by monkey charmers to make a living.

In Bangladesh, mall, close-knit, semi-sedentary nomadic ethnic communities known variously as ‘Qalandar’, ‘Bandarwala’ and ‘Bedey’ trap and train rhesus macaques to perform for rural audiences. According to a 2016 study, as many as 5,000 macaques were used as performing simians, throughout Bangladesh and more than 500,000 people were directly dependent on performing monkey traditions for their livelihood.

Rhesus monkeys, dressed in sparkly clothes, doing tricks and entralling people are a valuable source of income in immove-riched Pakistan. On an average each monkey charmer earns USD 5 daily, sufficient to feed themselves and put food on their owner’s table.

Although the use of performing monkeys is banned in India, since 2011, occasionally “madaris” are seen conducting performances with rhesus monkeys caught from the wild, and in most cases defanged. The shows were accompanied by witty tales and running commentaries by the “madaris” on the courtship between a male and a female monkey, culminating in their “marriage” be solemnized.

Long tail macaques called Topeng Monyet in Indonesia, were found until recently in the popular road side masked monkey shows conducted by bebarang (monkey handlers). Taman Mini Indonesia Indah, the nationalist theme park constructed by Ibu Tien Suharto, in Jakarta, often regular performances by long tail macaques.

Itinerant buskers can be seen in cities like Hangzhou and Guangzhou, in China, doing street shows with monkeys. Monkey circuses are a traditional art form in Xinye county and were listed as an intangible cultural heritage by Henan province in 2009. Their origin dates back over 2,000 years to the Eastern Han Dynasty (AD 25-220).

In Japan, occasional monkey performance is the traditional domain of burakumin, an ethnic population. Based on a religious belief of Chinese origin, that is, monkeys can cure the diseases of horses, a performance to have monkeys dance in front of stables had prevailed throughout Japan from the 12th to 18th century, "Saru-mawashi" meaning a street performance to show a monkey that can do tricks, can be occasionally found in the grounds of Shinto Shrines and sometimes at the Tokyo Tower.

In Chiang Mai Monkey School, Thailand, monkeys demonstrate their coconut-picking, bike-riding, basketball and arithmetic skills to tourists and visitors. Similar performances take place in Lanta Monkey School, Krabi.

Kittitians, citizens of St Kitts, frequent Port Zante to solicit USD 5-10 from tourists to pet their monkeys and take selfies. Baby monkeys are occasionally seen tied up at city bars to lure clients and patrons.

In Marrakech, Morocco, tourists can have a Barbary macaque, caught from the Atlas mountains, placed on their shoulders or see it do somersaults for a fee, at the Jemma El Fna market.

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INDIA'S LEATHER EXPORTS LIKELY TO GROW BY OVER 12% TO \$5.3 BILLION THIS FISCAL, SAYS CLE



Several global companies, including from the US, are showing keen interest in setting up manufacturing bases in India, CLE also said.

The country's leather and footwear exports are expected to grow by over 12 per cent to \$5.3 billion in the current financial year on account of healthy demand in key global markets, CLE Chairman Rajendra Kumar Jalan has said.

He also said several global companies, including from the US, are showing keen interest in setting up manufacturing bases in India. Our exports were \$4.69 billion in 2023-24, and this fiscal, we are expecting it to increase to \$5.3 billion. Order books are good for the coming months," Jalan said, adding that "huge demand is coming from the US and UK". Indian exporters are exploring business opportunities in Africa as well, he added.

He informed that the industry is labour intensive, providing employment to about 42 lakh people. The sector has a total turnover of about \$19 billion, which includes exports of \$5 billion. "The sector has the potential to reach a total turnover of \$47 billion by 2030, which includes the domestic production of \$25 billion and export turnover of \$13.7 billion," Jalan said.

He also requested the government that the Production-Linked Incentive Scheme (PLI) be extended to the sector as it will help achieve the \$47 billion export target and create additional jobs for about 7-8 lakh people. When asked about Budget expectations, he said the council has urged the finance ministry to consider removing export duty on wet blue and crust from 20 per cent at present. "We have also requested to remove import duty on finished leather," Jalan said.

Talking about the sector, Kanpur-based Growmore International Ltd MD Yadendra Singh Sachan said that for Indian exports, the US and EU markets are recording healthy growth rates. "I request the domestic industry to work on increasing scale as it will help further boost shipments," he said.

Sachan suggested that there is a need to brand Indian leather goods in the global and domestic markets. On challenges, he said the industry has to work on adequate skilled labour and design development.

(thehindubusinessline.com – 22/12/2024)

LEATHER WALLET MARKET SIZE, GROWTH OPPORTUNITIES 2031 BY KEY MANUFACTURER BURBERRY, FENDI, BALLY, DUNHILL, GUCCI, HUGO BOSS, MIUMIU, BOTTEGA VENETA, PRADA



According to Verified Market Reports analysis, the global Leather Wallet Market size was valued at USD 40.18 Billion in 2023 and is projected to reach USD 59.70 Billion by 2030, growing at a CAGR of 4.6% during the forecasted period 2024 to 2031.

What is the current outlook for the Leather Wallet Market ?

The Leather Wallet Market is experiencing consistent growth, driven by the rising demand for premium and stylish accessories. With urbanization and increasing disposable incomes, consumers are leaning toward high-quality leather products that offer durability and luxury appeal. The market is witnessing innovation with RFID-blocking technology and sustainable leather alternatives to cater to eco-conscious buyers. Asia-Pacific dominates due to a large consumer base, while Europe and North America emphasize luxury brands. E-



commerce expansion and personalization options are also fuelling growth. However, challenges like fluctuating raw material prices and ethical concerns over leather sourcing could impact growth rates.

What factors make the Leather Wallet Market an attractive investment ?

Investors are drawn to the market’s robust growth potential, valued at over USD 5 billion in 2023, with a forecasted CAGR of 6-7% through 2030. Key drivers include rising global fashion consciousness and technological integration, such as smart wallets. Opportunities in niche segments, including gender-neutral and vegan wallets, are lucrative. Major players like Louis Vuitton, Coach, and Samsonite dominate, but emerging local brands are gaining traction. Digital marketing and direct-to-consumer sales strategies are opening avenues for high returns on investment.

What are the risks and strategic considerations for investors in this market ?

Risks include reliance on raw leather supplies, which are subject to price volatility and ethical scrutiny. Market fragmentation intensifies competition, and counterfeit products can dilute brand equity. Investors should focus on sustainable practices, aligning with consumer demand for eco-friendly options. Diversification across regions and product lines, coupled with investments in innovative designs and technology, ensures resilience. Monitoring regulatory frameworks and consumer trends will be pivotal for long-term success.

Major companies

BURBERRY, FENDI, Bally, Dunhill, GUCCI, HUGO BOSS, MiuMiu, BOTTEGA VENETA, PRADA, FOSSIL, BOSCA, Saddleback Leather.

Trends

Global Market Expansion : As markets continue to globalize, numerous enterprises in the Leather Wallet sector are actively exploring opportunities in emerging markets. Leveraging their expertise and resources, these companies are strategically expanding their footprint and reaching out to new customer segments, thereby capitalizing on evolving market dynamics.

Sustainable Practices : There’s a noticeable surge in prioritizing sustainability within the market, spurred by both

consumer preferences and regulatory mandates. This shift is manifesting in heightened adoption of eco-friendly materials, implementation of energy-efficient processes, and proactive initiatives aimed at waste reduction.

Digital Transformation : The Leather Wallet market is swiftly embracing digital transformation, incorporating cutting-edge technologies like AI, IoT, and blockchain. This transition is significantly enhancing operational efficiency, fostering product innovation, and elevating customer experiences through personalization.

Health and Wellness : Consumers are placing a growing emphasis on health and wellness, catalysing the introduction of functional and nutritious products in the Leather Wallet market. Additionally, there’s a notable trend towards integrating health-focused attributes into existing offerings to meet evolving consumer expectations.

For details may follow : <https://www.openpr.com/news/3797133/leather-wallet-market-size-growth-opportunities-2031-by-key>

(openpr.com/news – 24/12/2024)

COMMERCE AND INDUSTRY MINISTER URGES LEATHER INDUSTRY TO FOCUS ON SUSTAINABILITY, EXPORTS



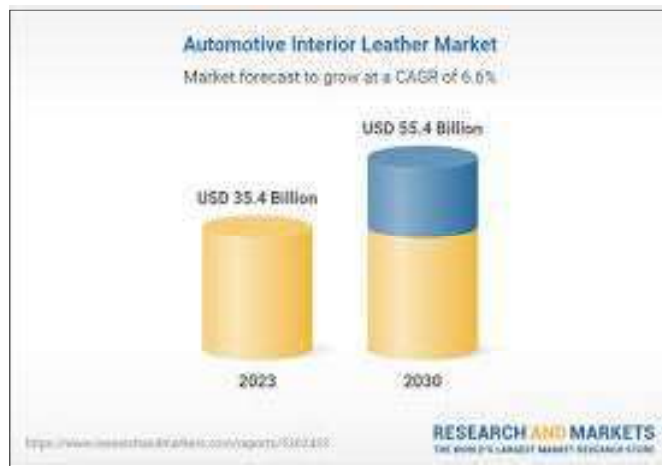
Commerce and Industry Minister **Piyush Goyal** has encouraged the leather industry to enhance production with a strong focus on sustainability and boosting exports. Speaking at the National Export Excellence Awards 2023-24, organised by the Council for Leather Exports (CLE) on Wednesday, Goyal stressed achieving zero pollution in production through proper treatment plants.

“India’s economies of scale can make it more competitive globally. The domestic demand itself will drive the industry toward achieving these scales,” he remarked.

CLE Chairman **Rajendra K Jalan** highlighted the growing demand for leather products in developed markets as a significant opportunity to enhance exports. The Minister emphasised that sustainable practices and scaling production are essential for leveraging India’s potential and meeting the global market’s expectations. The event underscored the industry’s role in advancing environmentally responsible and globally competitive manufacturing practices.

(cargoinsights.co – 20/12/2024)

AUTOMOTIVE INTERIOR LEATHER INDUSTRY RESEARCH 2014-2030: GROWING POPULARITY OF CUSTOMIZABLE INTERIORS EXPANDS MARKET FOR DIVERSE LEATHER OPTIONS



The “Automotive Interior Leather - Global Strategic Business Report” report has been added to Research & Markets.com’s offering.

The global market for Automotive Interior Leather was valued at US\$35.4 billion in 2023 and is projected to reach US\$55.4 billion by 2030, growing at a CAGR of 6.6% from 2023 to 2030. This comprehensive report provides an in-depth analysis of market trends, drivers, and forecasts, helping you make informed business decisions.

The report analyses the Automotive Interior Leather market, presented in terms of market value (US\$ Million). The analysis covers the key segments and geographic regions outlined below.

Segments

Material (Genuine, Synthetic); Application (Upholstery, Headliners, Carpet, Seat Belt, Other Applications); End-Use (Passenger Cars, Light Commercial Vehicles, Heavy Commercial Vehicles).

Geographic Regions/Countries

World; United States; Canada; Japan; China; Europe (France; Germany; Italy; United Kingdom; Spain; Russia; and Rest of Europe); Asia-Pacific (Australia; India; South Korea; and Rest of Asia-Pacific); Latin America (Argentina; Brazil; Mexico; and Rest of Latin America); Middle East (Iran; Israel; Saudi Arabia; United Arab Emirates; and Rest of Middle East); and Africa.

What is Driving Growth in the Automotive Interior Leather Market?

The growth in the automotive interior leather market is driven by several factors, each amplifying the demand for leather and widening its applications in the automotive sector. Firstly, the increasing consumer interest in luxury vehicles and premium materials has cemented leather interiors as a desirable feature, regarded as a symbol of quality and prestige.

Technological advancements have further fuelled growth, with innovations in leather processing allowing manufacturers to produce durable, easy-to-maintain, and eco-friendly leather varieties that appeal to a broad and discerning consumer base.

Furthermore, a significant shift in consumer behaviour has seen a larger proportion of car buyers valuing comfort, elegance, and aesthetics in their vehicle interiors, driving demand for high-quality leather that embodies these qualities.

The rise of electric vehicles (EVs) has also contributed to leather’s appeal, as these vehicles often emphasize high-end, modern interiors where leather is a natural fit due to its premium look and feel.

Finally, regulatory support for sustainable automotive components has promoted eco-conscious leather, encouraging brands to adopt environmentally responsible practices in their leather offerings. Together, these growth drivers underscore the broad expansion of the automotive leather market, underscored by evolving consumer preferences and significant advancements in leather technology and production methods.



Key Insights :

- **Market Growth :** Understand the significant growth trajectory of the Genuine Leather segment, which is expected to reach US\$31.6 Billion by 2030 with a CAGR of a 6.4%. The Synthetic Leather segment is also set to grow at 6.9% CAGR over the analysis period.
- **Regional Analysis :** Gain insights into the U.S. market, valued at \$9.4 Billion in 2023, and China, forecasted to grow at an impressive 9.6% CAGR to reach \$12.6 Billion by 2030. Discover growth trends in other key regions, including Japan, Canada, Germany, and the Asia-Pacific.

Key Questions Answered :

- How is the Global Automotive Interior Leather Market expected to evolve by 2030?
- What are the main drivers and restraints affecting the market?
- Which market segments will grow the most over the forecast period?
- How will market shares for different regions and segments change by 2030?
- Who are the leading players in the market, and what are their prospects?

Report Features:

- **Comprehensive Market Data :** Independent analysis of annual sales and market forecasts in US\$ Million from 2023 to 2030.
- **In-Depth Regional Analysis :** Detailed insights into key markets, including the U.S., China, Japan, Canada, Europe, Asia-Pacific, Latin America, Middle East, and Africa.
- **Company Profiles :** Coverage of major players in the Global Automotive Interior Leather Market such as Alfatex Italia Srl, Alphaline Auto, Classic Soft Trim, CTL Leather Inc., DK Leather Corporation Berhad and more.
- **Complimentary Updates :** Receive free report updates for one year to keep you informed of the latest market developments.

Some of the 41 companies featured in this Global Automotive Interior Leather Market report include:

- Alfatex Italia Srl
- Alphaline Auto
- Classic Soft Trim
- CTL Leather Inc.
- DK Leather Corporation Berhad
- Eagle Ottawa, LLC
- Gst Autoleather, Inc.
- Katzkin Leather Inc.
- Kuraray Co.. Ltd.
- Mayur Uniquoters Limited

For details please follow: <https://www.researchandmarkets.com/reports/5302433/>

(globenewswire.com - 20/12/2024)

INDIAN LEATHER EXPORTERS NEED TO TAKE ADVANTAGE OF INDIA-UAE TRADE PACT TO PUSH EXPORTS



Indian leather products and footwear exporters need to take advantage of the trade pact between India and UAE to push exports in the Middle East markets, a top official said on Tuesday. Speaking at a press conference at the opening day of the region's largest leather products and footwear show, DIFLEX 2024, Council of Leather Exports (CLE) Executive Director R Selvam said the GCC markets, particularly the UAE and Saudi Arabia, are key markets for India's export growth push.

"The exports of Indian leather and footwear products are on a positive growth trajectory in the 2024-2025 scale with the first half touching USD 2.45 billion, and we are confident of a faster growth in the second half to clock an anticipated growth of over USD 5 billion by the end of the year," said Selvam.

The export of footwear, leather and leather products from India was to the tune of USD 4.69 billion during 2023-24.

In the context of increasing free trade agreements (FTAs) like the Comprehensive Economic Partnership Agreement (CEPA) between India and the UAE, the growth potential GCC markets offer for Indian leather and footwear products is immense, Jeen Joshua, Managing Director, Verifair, organisers of DIFLEX 2024, said.

GCC now accounts for 15 per cent of India's total trade, with bilateral trade touching USD 162 billion last year. The key markets of the UAE and Saudi Arabia account for a lion's share of this trade at USD 84.84 billion in FY23 and USD 10.72 billion, respectively. It is expected that the India-UAE non-oil trade will increase to USD 100 billion over the next five years. "With GCC's retail industry projected to reach over an estimated USD 350 billion in the next four years, the concomitant growth dividend for the leather and footwear segment will be exponential. Coupled with this is a nearly two per cent anticipated population growth that will further fuel growth prospects for the industry," Joshua said.

Over 50 top Indian footwear and leather goods manufacturers are taking part in DIFLEX 2024, joining more than 250 brands showcasing over 10,000 world-class product lines and 300 hosted buyers worldwide.

(indiaseatradenews.com – 12/12/2024)

VIETNAM FOOTWEAR-LEATHER SECTOR TO EARN \$26-27 BN FROM EXPORTS IN 2024



The leather and footwear industry in Vietnam is projected to earn \$26-27 billion in export revenues this year, marking a \$3-billion increase year on year (YoY), according to the Vietnam Leather, Footwear and Handbag Association (LEFASO).

Vietnam is the world's third largest footwear producer, behind China and India, and the second biggest exporter, LEFASO vice chairwoman and general secretary Phan Thi Thanh Xuan said. North America led the export destinations, accounting for 41.4 per cent of footwear and 47 per cent of handbag exports,

followed by the European Union (EU), with 29.5 per cent and 25.4 per cent respectively, Xuan was cited as saying by a domestic news agency. Sixteen markets—the United States, China, Japan, Belgium, the Netherlands, the United Kingdom, South Korea, Canada, France, Spain, Italy and Australia—represent over 88.4 per cent of the total export turnover.

The industry has showed a strong recovery since late 2023, with major firms securing contracts through mid-2025, Xuan added. LEFASO also called for setting up specialised green industrial zones that are focussed on leather tanning, production of technical fabric and mould components.

(fibre2fashion.com – 31/12/2024)

FIRE BREAKS OUT IN LEATHER FACTORY IN JAJMAU



A major fire broke out in a leather factory in Jajmau police station area on Thursday. Some employees noticed smoke rising and informed the seniors. Two fire tenders arrived at the scene and managed to control the fire after an hour of effort.

Anwar Ali's shoe upper manufacturing factory is located in the Lari Compound in Ashrafabad, Jajmau. On Thursday morning, a severe fire broke out in the factory due to a short circuit. Seeing smoke rising from the factory, people informed the fire department and local police. It took around half an hour for police and two fire tenders to extinguish the fire. According to firefighters, it was suspected that the fire was caused by short circuit. Fortunately there was no casualty reported.

Chief fire officer (CFO) Deepak Sharma said on being informed, a team entered the factory and found a chamber broken. Another team climbed onto the roof and sprayed water from two sides, controlling the fire in about an hour. The matter will be investigated further, he said.

(timesofindia.indiatimes.com – 27/12/2024)



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Cationic Finish - Expectation & Limitation, Control Point



Pulok Mazumder

Vice President, ILTA - Northern Region

Cationic finish is relevant to polish finish or taken shape from Cationic toppings cum fat liquoring on certain or specific tannages and re-tannages or specific purpose used with specific types of leather. **The concept of ionic charge** on the leather is extremely important in the selection of fat liquor for a specific purpose to be used with specific types of leather practiced by tanners since long.

History of Polish finish leathers is very old. In 1650, people produced Russian upper leather with very high amount of fat, After the Napoleon war, there was a huge production of leather, because everyone needed shoes. Polish finish was developed in 1920, after the invention of stone polishing machine and a brushing machine.

In **1930**, a **cationic polishing system** was in the market. Individual cationic auxiliaries are being used in leather finishing since then, cationic oils, feel modifier, waxes, basic dye, cationic dye solution etc.

Why cationic ?

Due to the decline in the selection in the selection of a raw material day by day, there is general need to improve the selection of the finished leather. The cationic grounds seemed to be more prevalent in 19th century to 21st century over the time.

These cationic products are constitutionally like anionic ones but stand from those, only owing to the cationic charge and to the acid Ph, like the Ph of the crust. Because of the charge and the Ph, the impact of the cationic finishes on the crust surface is less and produces soft and supple leather, with better anchorage, improved covering and upgrading.

Like anionic system, cationic finishes auxiliaries play effective role determining softness and aesthetic feels, most of waxes and fillers influence the acrylics /proteins films by modifying their covering, heat resistance, tackiness properties.

Cationic finishes bond well with both chrome and vegetable re-tanned leather.

Cationic finish on leather involves the use of positively charged (Cationic) compounds to enhance the leather's surface properties. Here are some key points about **chemistry and benefits of cationic finishes** :

- 1. Ph Compatibility** : *The Ph of cationic finishes is around 4.0, which is close to the natural iso-electric point of leather.* This allows for gentle absorption of the finish without the need for wetting agents or solvents, leading to better penetration and adhesion.
- 2. Particles size and softness** : Cationic Products typically have fine particle size and Shore hardness of 10 or less, making them softer than many anionic counterparts. The result is improved penetration, good adhesion within the leather structure, and a softer finish.
- 3. Aesthetic and functional benefits** : Cationic finishes provide natural, well filled look to the leather while offering excellent coverage to mask defects such as pin hole, scars, and mange. They used to upgrade various types of leather, including full grain shoe upper leather and sheep Nappa clothing leathers.
- 4. Applications** : Initially, cationic products were used as a seal coat to regulate the absorption of subsequent finishing coats. Modern advancement has improved their performance, resulting in better inter coat adhesion and physical properties.

Which are the products used in cationic finishing?

Full cationic system of finishing is of recent origin, cationic system includes Pigments, Protein Binder, Waxes, Fillers, Oils, Polyurethane, Acrylic Binders etc.

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Beginning of the development of cationic system was based on binders with cationic functionality linked with polymer and cationic dispersion of Pigments, Waxes, Silicones, Duller, Fillers. Now a days newer Compound have already been developed.

Thermoplastic and non-thermoplastic binders

- Protein Binder
- Acrylic Binder
- Polyurethane Binder

Pigment/ Dye:

- Pigment
- Dye

Auxiliary Products:

- Waxes, oils, and Fillers.
- Feel Modifiers
- Special Auxiliaries
- Surface tension regulating agents.

These mainly Waxes and silicones with polymerized ionomer groups ever since some imidazole derivatives have been used as waxy products with certain cationic character, the first silicones developed in 1930.

The main and common features for all the products used in cationic finishing is their common ionic character: they are all **CATIONIC**,

The ionic character in the products may be: **Intrinsic or Extrinsic to the filmogen product (INTRINSEC** means -A filmogen Product is a substance or formulation with ability create continuous, uniform layer or film when applied to a surface. This film can serve various functions such as protection, aesthetic enhancement, or providing specific properties like water resistance or durability)

EXTRINSEC means external or non-inherent to the product itself but that can influence its **ability** to form a film. This could be **Environmental conditions** (e.g., humidity, temperature, drying conditions) **or Application method** (e.g., spraying, rolling, brushing) or Surface preparation (e.g., cleanliness, texture of the substrate) **or Additives or external chemicals** that enhance or alter the film-forming process).

The **INTRINSEC** ionic character is found in developed polymers, such as THERMOPLASTIC BINDERS. The ionic character of the polymer used in the finishing of leather, basically acrylic polymers, and polyurethane, is given through the mixed polymerization of functional monomers, these are usually monomers with carboxylic function. In the developed cationic acrylic polymers, These contain monomers within their polymeric chain with cationic groups or functional groups sensitive to protonization (loss of electrons), thus giving them a positive character. The cationic group is linked to the polymer, it is part of the chain, it's not **Extrinsic**.

The emulsifying system used in these polymers deal with the products of a cationic, amphoteric, or non-ionic character, to avoid ionic incompatibilities.

The Non-Thermoplastic binder used in the cationic finishing are based on protein, mainly modified caseins. Casein is amphoteric phosphoprotein formed by the condensation of eighteen amino acids. Casein contains s cationic, anionic, non-ionic, and non-polar groups. By taking advantage of the amphoteric character and the dissociation of amino groups in a controlled acid medium, the cationic character can be obtained; this is the contrary to the case of caseinates, which are caseins solubilized in an alkali medium, so used in conventional systems.

A main example of **EXTRINSEC** -type cationic character in finishing products for leather can be found in **Pigment**. The pigments used in conventional systems, inorganic pigments, and organic pigments. As defined, Pigments are substances in the form of fine particles insoluble in the medium of application. In leather finishing pigments are dispersed within aqueous medium, with or without binders. The dispersion obtained through physical-chemical processes with the help of wetting and dispersing agents.

An important role in cationic system is also played by the emulsifying agents with an **Amphoteric** character. Emulsifiers are compounds in which the molecule has two differentiated parts; one of the parts is a long chain-based hydrocarbon (hydrophobic Character) and other one is polar (hydrophilic character) when cationic emulsifier are ionized in solution, the hydrophobic element is cation, while in anionic emulsifier the hydrophobic element is anion.

The Amphoteric compound capable of giving away or capturing electron (a phenomenon which grants the ionic character) within



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the same molecule, depending on PH, this being able to act in cationic or in anionic manner.

In other words, cation could be formed in "Acid" Solutions with Ph below Iso electric Point and anions would form in alkaline "solutions with PH above iso electric point".

With the above-mentioned emulsifying agents, aqueous system can be developed with cationic character compatible with finishing system, thus granting intrinsic ionicity to the inert compounds used in finishing.

Advantage of using cationic Finishing system :

- Even Penetration on leather.
- Surface Smoothness and Uniformity - create smoother and more uniform finishes, enhancing aesthetic quality of leather minimizing surface imperfections surfaces touch and appearance natural.
- The thickness of the film is remarkably thin and hence produces a very fine
- Improve adhesion., no grain overloading.
- Low grain defects are covered without affecting the natural handle of the leather.
- Because of the leather performance cost of finishing per sq.ft. is less compared to the conventional system.
- Enhanced Water Resistance -cationic system can improve the water repellency of leather by forming protective film that limits water absorption.

Unlike conventional system cationic finish forms a thin film, and hence does not give Dopy look and overload the grain.

Dis-advantages of cationic Finish:

- Less filling
- No suitable where high physicals are required.
- Limited Chemical Resistance
- Compatibility Issues -cationic system may not be compatible with all types of leather finishes or treatments, particularly anionic system, leading to reduced effectiveness or uneven finishes.
- Cationic Dye Solution marketed by a few suppliers not all is having disadvantages. over advantages of outstanding

tinctorial value, brilliancy, easy shade correction on suede and nubuck, instant aesthetic appeal but many disadvantages - low light fastness, inadequate dry and wet rub fastness, insufficient fastness to migration and accentuation of existing grain defects, excessive use led to bronzing.

The market leader of Cationic finish System never advise incorporating cationic dye solution in system rather they are satisfied with Cationic Pigment with higher fastness values compare to cationic dye solutions.

Important Application procedure for Cationic System :

- First coat to be applied abundantly.
- Leave 3-4 hrs. or overnight for good penetration.
- Plain plate or sandblast at 70-80°C with good pressure so that to reach the base of the defects to be eliminated by leveling them.
- Select the skin (after dry milling 2-4 hrs. for garment Nappa), if the defects are visible, give one more normal spray.
- Spray 2 or 3 coat of anionic season.
- Sandblast or hair cell at 70-80°C 100 kg pressure grain for very bad selection.
- For every bad selection use cationic or nonionic acrylic binder in the cationic system followed by good anionic compound in anionic system.
- Intermediate sandblast / hair cell is in necessary between cationic and anionic spray coats.

Points to remember :

- Cationic and anionic products on mixing will precipitate. So that containers, mugs etc. must be kept separately and cleaned well before use.
- The auto spray lines, guns etc. must be cleaned well when we change from anionic or cationic or cationic to anionic system of finishing.
- Shelf lives of the cationic products are short, so must not be stored for long time.
- Fastness properties of cationic are less than anionic finishes, combination of both cationic and anionic and use of special cross linkers will improve the fastness properties.

- Cationic pigments are fine particle size and consist of no film forming substances. So small quantity of pigment is enough to get good covering and leveling. If we use more pigments, more binders must be used, which will harden the leather.
- For brilliant and high gloss finishes cationic system cannot be used. Anionic system must be used.
- Trials on CG impregnated leathers have not given desired results. This may be overcome by using non-ionic impregnation followed by cationic system.
- Trials of cationic finishing by application through roller coaster are successful. But we are yet to know the impact of the acidity of the cationic products on the roller and the stability of the thick Cationic season.

The Country pioneer in launching, promoting, contributing to Cationic Finishing System is ITALY.

Italy is the pioneer in launching and exporting **Cationic Finishes**. Italy indeed recognized for its contributions to the development and promotion of advanced textile and leather finishing technologies, including cationic finishes. Italian companies and research institution have been at the forefront of innovations in surface treatments, especially in industries like leather, textiles, and coatings, which are significant in Italian economy.

Italian leather finishing has gained reputation for high quality products. Cationic finishes, known for improving the performances of leather and textiles by enhancing softness, water resistance, dye fixation, and durability, have been wide

adopted in Italy. **Italian manufacturer has been instrumental in promoting these advanced surface technologies through global trade fairs, collaborations, and research.**

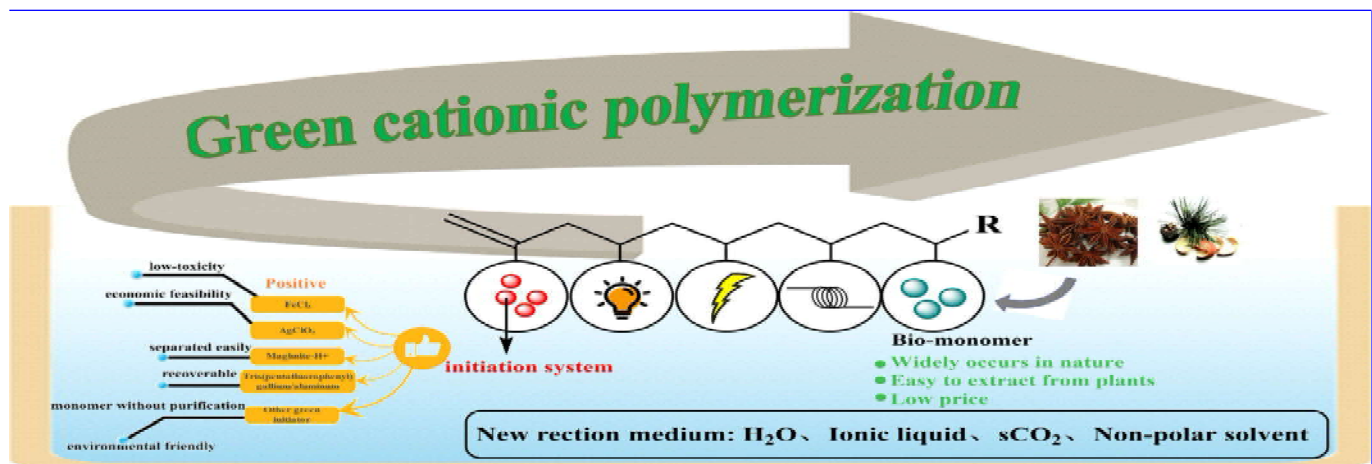
Italy's expertise in machinery, chemical formulation, and fashion has further contributed to its pioneering role in these areas.

Gemata an Italian company primarily known for machinery, they also contribute to the application of cationic finishes in the leather industry through specialized rollers and equipment. One of their key contributions is the development of a **special rubber roller** designed specifically for applying cationic finishes, The rubber roller technology allows for uniform applications of cationic finishes, improving efficiency and precision in the leather finishing process. Their system is widely used in the global leather Industry for high-end finishes. **Gemata** innovation in **roller technology** have helped improve the overall performance of cationic finishes in the leather industry, contributing to enhanced durability, color retention .and texture of treated leather products.

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- 1) Polymeric materials in Leather Finishing by W.E Wallace
- 2) Ionomers: Synthesis, Structure, Properties and Applications by S. Schlick
- 3) Gemata: Working with rubber roller and visit at their unit in Italy.
- 4) Practical Experiences of Author (developing Cationic finish articles in India and abroad with Overseas Italian Technician.)

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TWENTY-FIRST PROCTER MEMORIAL LECTURE*

PROCTER'S TEXT-BOOK OF TANNING—1885 ; A RETROSPECTIVE
REVIEW IN THE CENTENNIAL YEAR

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Introduction

Henry Richardson Procter, FRS, came from a tanning family and was self-educated in the best traditions of the Victorian age, so much so that colleagues at the Yorkshire College, forerunner of the University of Leeds, considered that he could have held a Chair in any of half-a-dozen Departments : the Royal Society elected him a Fellow and the Leather-sellers' Company made him an Honorary Liveryman.

Having had the privilege of studying in the Leather Department at Leeds University with teachers such as McCandlish and Atkin, who had themselves worked with Procter, it is a great honour to be giving this, the twenty-first Procter Memorial Lecture and repay some of the debt which I owe to them and to the Society, particularly as the

tradition of Procter Memorial Lectures is to invite an eminent scientist from outside the industry.

The leather industry was fortunate in having such a person to establish formal higher education in leather studies in the UK, for not only did he make a successful transition from industry to academic life, but he was also instrumental in establishing the International Association of Leather Trades' Chemists. This progenitor of the IULTCS was formed during an inaugural meeting held in London (28-30 September 1897) with corresponding secretaries in Austria, France, Germany, Scandinavian countries and the USA. Procter and Dr J. Gordon Parker of Herold's Institute (subsequently the National Leather-sellers' College) were the joint secretaries.

It is interesting that the inaugural meeting, at which discussions centred around

the need for consistent analytical methods for vegetable tanning materials, included representatives from leather research stations in Berlin, Copenhagen, Freiberg (Saxony, DDR) and Vienna : three of which are still functioning today, the Copenhagen centre celebrating its centenary this year. It took British tanners another 35 years before they established a research centre.

The theme I wish to pursue in this Memorial Lecture is a retrospective review of Procter's Text-Book of Tanning, published 100 years ago 1885 with a look to the future. Procter's book did not confine itself to the science and technologies of leather manufacture. But included chapters on engineering matters as well as commerce, economics and statistics. This latter point will serve as a useful base for this discourse.

Economic Background

The Text-Book of Tanning concluded with a chapter en-

*Presented at the IULTCS North European Group Conference, Harrogate, October 1985.

titled: "Commerce, Statistics & Bibliography". This highlights the paucity of textbooks published in Britain and gives a valuable insight on our trade at that time which was, as now, very international.

Some 60 countries or territories are shown as supplying rawhides and skins to the UK of almost every conceivable species: unfortunately no data are given on export trade. A few figures, drawn where reasonable comparisons with the present time can be made, may be of interest. It must however, be remembered that between 1880 and 1885, the years for which Procter's data are taken, the purchasing value of the pound rose by

23%; whereas in the last five years, despite a stringent anti-inflationary policy, the purchasing value has fallen by 34%. Overall, the average purchasing power of the pound today is about 2.8p in relation to the period when Procter's book was being written. Even so, wages at 13-16 shillings

per week were, in today's money, only worth £23-29 per week.

The range of hide prices for particular origins in 1885 (Table I) was much greater than today. Average import prices of rawstock and undressed leather were, in real terms, also higher in 1885 (Table II). Tanning materials

TABLE I
Comparative Cattle Hide Prices

	Price in 1885	c. 1885	
		Equivalent price in 1985 (£)	Prevailing price 1985
Cattle hides: (p/kg)			
Argentinian—dry	6.6-9.6	235-340	—
USA—salted	3.2-6.0	114-214	72-100
Australian—salted	2.5-5.5	89-196	82-125
South African—wet-salted	2.3-7.5	81-268	125
Domestic	2.5-6.4	89-228	66-96 (green) 74-103 (salted)

TABLE II
Imports to UK of Rawstock and Leather

Commodity	Volume (1000)	Imports c. 1885			Prevailing price 1984
		Value (£1000) (p)	Average Equivalent price c. 1885 (p)	Average Equivalent price in 1985 (£) (p)	
Sheepskins	8,145	1,003	12.3	440	284
Goat and kid skins	4,750	453	9.5	340	140
Wet (salted) hides, (kg)	28,137	1,552	5.5	200	115
Dry hides, (kg)	31,706	2,251	7.1	250	153
Undressed leather, (kg)	25,366	3,312	12.8	460	251
Dressed leather (kg)	7,798	2,038	26	940	935
Patent leather (kg)	196	117	59	2,120	1,126

too would appear to have fallen from the equivalent of £1300/ton in 1884.

The benefits of innovation or making something novel, particularly by specialised finishing, are well demonstrated by comparative import values of dressed leather and patent leather (recorded in Table III) for the larger supplying countries. Dressed leather was comparable in price to today's average but the speciality patent leather was much more expensive.

When we turn to leather products (Table IV), the average prices of imported footwear today are lower in real terms than in 1885, whilst dress glove prices are comparable. Then, as now, the prices of imports appeared to be below those prevailing for UK production.

Amalgamating the above changes in prices with a certain amount of conjecture on the costs, we see that the percentage labour cost of leather production has risen five to six-fold, whereas hides have fallen from about 80% to 50% of the cost of producing leather.

Although in 1885 Britain was still an imperial power, signs of technological malaise and competition from outside were of sufficient impact as

to excite comment. For example, we find references to factors which a century later are still being repeated.

Grudging acceptance of quicker processes (USA) (p. 178)*

Lower prices (India) (p. 190)

Imports having better quality (pp. 196, 204)

Criticisms of machinery as being less satisfactory than handwork (p. 152)

Impact of environmental legislation (p. 152)

This may be the point to comment on machinery. Careful reading of the book shows that the concepts of all today's tanning machines had been introduced.

TABLE III

Comparative Import Prices of Dressed and Patent Leather, 1880s (as p/kg)

Country of origin	Dressed leather	Patent leather
USA	15	51
France	31	83
Holland	36	59
Germany	58	47
All imports	26	59.5

1. Multi-roller machines with spiral spreader blades on cylinder and rubber bolsters (pp. 153, 154)

*These references are to page numbers in the original book by Procter.

2. Band-knife splitting machine (p. 190)
3. Drums (p. 194)
4. Embossing (p. 207)

Particular processes such as spray finishing had not arrived and drying was with free-hung leather. Nevertheless, the idea of controlling drying by wet-bulb depression (Humphreys, Litton, Tomlinson)^{1,2} was put forward by Procter (p. 248), whilst mention was made of the potential for drying at low temperatures using de-humidified air (p. 248) only now being developed. The observation that if wet-leather was frozen it dried with an open and porous structure (p. 183) pre-empted the concept of freeze-drying.⁴

A century later some of these developments have still to enter industrial practice but the concepts were known in 1885.

Pre-tanning

Procter cautions his readers to consider the anatomical structure of hide (pp. 8, 9), a feature still so true today when too few tanners select their hides according to thickness and then find that the mechanical properties are excessively variable and lead to rejection or failure occurring in shoe manufacture.^{5,6}

By using a microscope the concept of opening-up being

due to fibre splitting (p. 18) had been established, as had the concept that a cementing substance of undefined composition called "coriin" was removed during liming (p. 14). Today we know that for adequate opening-up it is necessary to remove the proteoglycans, hyaluronic acid and dermatan sulphate during the pre-tanning process,^{7,8} and without this happening the result is a firm leather arising from inadequate fibre splitting.

Chemical understanding was limited by the analytical techniques available, total nitrogen was reported at 51.43% (p. 108) although this may be an uncorrected printer's error for 5.14%, whereas today's analytical data for native collagen is 18.6% and the conversion factor for Kjeldahl nitrogen to hide substance used in lea-

ther analysis is 5.62%, implying a nitrogen content of 17.8%.

We have already seen that over-liming was linked with protein solubilisation but the relationship between gelatin and hide fibre or collagen has not been elucidated (p. 17). Today we know that high-quality gelatin comes from uncoiling of the collagen triple helix without main chain scission.

How then was this information being used? Hides in Procter's day were, as we have seen, imported in the dried or salted condition. In view of the recent collapse of the hide auctions in the UK,⁹ it is interesting to note that these had just been established in the 1880s and that tanners were buying fresh or lightly salted hides (p. 132) from the

auction markets.

With this variety of conservation procedure being applied to his raw material, the tanner had to soak and here we have mention that River Pollution Acts (p. 133) were preventing the use of running water previously used here and on the Continent, where the French term "Atelier de Riviere" is still applied to the beamhouse.

Now we find that the wheel has turned full circle for the potential advantages of today's enzyme soaking systems had already been established through the use of putrid coaks (p. 135) although the difficulty of control had been observed.

Moving on to the unhairing process itself, national differences are indicated, lime being used in England because

TABLE IV
Imports of Leather Products, Early 1880s

	Thousand pairs	Value £1000	Average price/pair (p)	Equiv. price 1985 (£)	Prevailin prices 1984 (£)
Footwear					
All	1,477	421	28.5	10.2	6.59*
From France	621	233	36.0	12.9	8.65
UK production					
Men's	—	—	37.5-150	13.5-53.5	11.75
Women's	—	—	30-125	10.5-44.5	8.83
Gloves—all	20,020	1939	9.7	3.4	3.49†
UK non-industrial gloves	—	—	—	—	4.69

* Leather uppered.

† Excludes industrial gloves.



"it is not easy to get the ordinary workman to pay attention to detail" (p. 139). Procter was, I think, being unfair—lack of attention to detail still seems to be virtually a national characteristic (cf. the earlier comment on selection according to thickness, p. 145).

Sweating, a process still used to a very limited extent—and effectively an enzyme process—was being replaced by the use (on the Continent) of alkaline sulphides (p. 147). The different mode of action between lime which stabilises keratin effectively but eventually destroys the basement membrane and sulphides which destroy the keratin had been observed (p. 21). The influence of liming duration on subsequent leather properties had also been observed (p. 184), as had the importance of the various ions found in natural water (p. 86) by means of a reference to work by Eitner at the Vienna Tanning School, which has been adapted to form Table V.

TABLE V

Effect of Various Ions on the Plumping of Sweated Hide (adapted from Eitner c. 1880)

Anion	Cation		
	None	Na	Ca Mg
None	0		
Cl		0	0
SO ₄			** ***
HCO ₃	**		* **

Scored 0, no plumping, to ***. best plumped.

APRIL, 1996

Deliming and bating completed the pre-tanning process in Procter's days and, even then, we find the need to bate being questioned and the offensive nature of natural excrement deplored, although it seems to be accepted tacitly that reducing alkalinity alone was not enough. The concept that a bacterial product was involved is deduced although the concepts of enzyme action and technology had not begun to be understood (pp. 184, 185, 190). Well before the development of pancreatic bates by Rohm¹⁰ and Wood,¹¹ the concept of using a nutrient broth, for bacterial and hence enzyme production, to serve as a deliming agent was in use (pp. 185, 190): the presence of glucose would no doubt expedite removal of excess calcium ions.

When we come to analyse the changes which have taken place in the past century we find:

1. As enzyme action became more understood, bating was revolutionised in the first decade of the twentieth century, enzyme soaking became common 20 years ago but enzyme unhairing—the basis of the sweating process—is essentially not in industrial use, except perhaps in Japan.

2. Sulphide unhairing, just being introduced 100 years ago, became the norm as, in conjunction with drum processing, it reduced labour intensiveness, albeit at the expense of increasing water pollution and, in the UK, treatment costs for trade effluents.

In spite of a burst of enthusiasm for oxidase unhairing in the mid-1960s,¹² lime/sulphide is still the work-horse of the industry. Over the past five years, the British Leather Manufacturers' Research Association (BLMRA) has shown that, by more effective selection of proteolytic enzymes, it is possible to reduce sulphide levels substantially and to eliminate the separate bating process^{8, 13, 14} with its calls for strict temperature control if the action is to be reproducible.

During the past decade, considerable expenditures have gone into developing advanced, mechanised suspension unhairing, which appears to have three principal objectives:

1. Increased productivity
2. Reduced pollution
3. Reduced process times

Both investigations have been undertaken in high labour cost countries, West Germany and the USA. Most

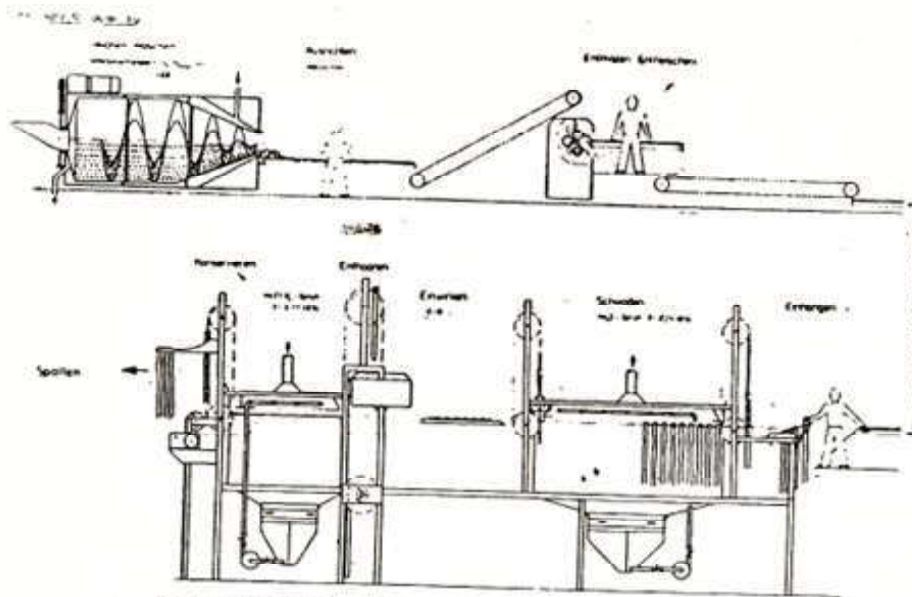


Figure 1. Schematic of Darmstadt "straight-through" process from reference 15

progress has been made by Professor Heidemann's group at Darmstadt¹⁵⁻¹⁶ who saw the need to separate depilation from opening-up. A diagram of his system is shown in Fig. 1. A full-scale prototype was constructed some five years ago and is still operating in an Austrian tannery, but no further units have been built. Our own analysis of the system showed no economic advantage in the UK¹⁷. A more ambitious project at the USDA's Eastern Regional Research Centre in Philadelphia also envisaged the incorporation of an in-line splitting machine¹⁸ into a straight-through unhairing system (Fig. 2). This project was

aborted two years ago without going into commercial use.

Are we therefore to conclude that there is no room for further progress? Before dealing with that rhetorical question it is necessary to establish the requirements of the beamhouse process. These are:

1. To purify the collagen matrix by removing non-collagenous proteins
2. To open up the structure of the collagen matrix
3. To be a non-polluting or clean technology

The latter feature implies a hair-recovery process, not a hair-dissolving process: 1 implies some form of extractive process. Recent research by

Alexander and Walker¹⁹ suggests that 2 may, under alkaline conditions, follow 1. To link these three aspects together, I will call on three quite separate developments which could form the basis of a clean beamhouse technology.

First, three years ago Dr Pauckner¹⁹ at WDGS, Reutlingen, described the use of an ultra-rapid tanning system using injection of chemicals from the flesh side; interestingly, the concept had been tried at BLMRA in the 1960s but abandoned because of inadequate penetration²⁰. Current joint work between BLMRA and WDGS has shown that the hair on both

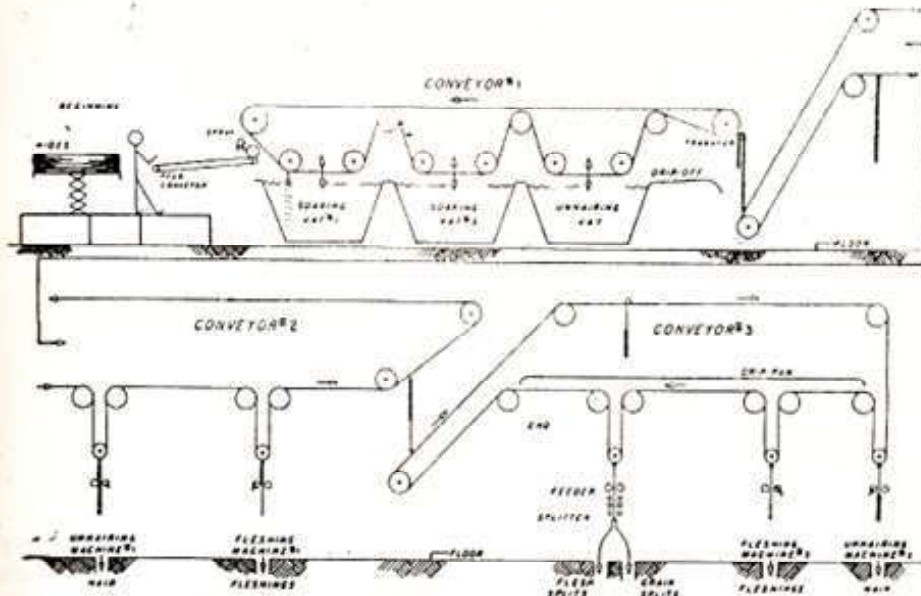


Figure 1. Schematic of 6SDA "straight-through" process from reference 18

hides and skins can be loosened sufficiently for its removal 30 min after an application of enzymes from the flesh side²¹. If this is linked to the double serial table unhairing machine used in Heideemann's straight-through process we have a means of recovering intact hair (or wool) with a virtually pollution-free process.

The opening-up stage is more difficult because existing drum processes are of a batch type whereas the unhairing is continuous. It is, therefore, necessary to revive the concept of a straight-through drum. Never to my knowledge used in the West, there were numerous reports

on such drums in East European literature during the 1960s²²⁻²⁷ when 50% of the Ukraine's leather production was said to involve screw drums.²⁶ Figure 3, taken from a Russian text book published in 1979,²⁸ illustrates the concept.

But need we go to East Europe? Much nearer home, the laundry industry abandoned straight-through flat work processing for screw drums. Several companies are supplying process vessels of this type to the UK laundry industry at the present time.²⁹ Although modifications would be necessary for use in a tannery, one can envisage a system of production

which is rapid, probably complete in 2-6 h, perhaps less, and is not labour intensive.

Figure 4 illustrates the conceptual approach. Obviously, variations are possible and potential problems will need resolving. The ideal would be to use green fleshed hides or skins processed immediately after slaughter. Splitting could be carried out after unhairing after pH adjustment or after tanning. Splitting before tanning has the advantage of an increased yield of generally smoother leather and opening-up would be accelerated. The question of whether a depilatory would have to be incorporated

ted in the first stage of the screw drum is perhaps the most important. On current evidence this is likely, unless segmented hides are used, and thioglycollate derivatives appear worth most consideration. The phrase "pH adjustment" is used intentionally as recent work by Covington³¹ suggests that even conventional chrome tanning can be accelerated and made more efficient by abandoning pickling to pH values of 2 or less.

Tanning—vegetable

Perhaps because of Procter's connection with the Lowlights Tannery he was unaware of the extent to which chrome tannage had been investigated. Thomson's review in the 1984 Atkin Memorial Lecture³² indicates how inertia deferred the introduction of chrome tanning, although once the inertia was over-come its introduction was very rapid.

We must therefore consider how vegetable tanning has developed before reviewing mineral tannage. Nearly 40% of the Text-Book of Tanning was devoted to vegetable tannins, their origin, composition, analysis and application. At that time vegetable tanning materials had two functions, not only were they a source of tannin but fermentation of

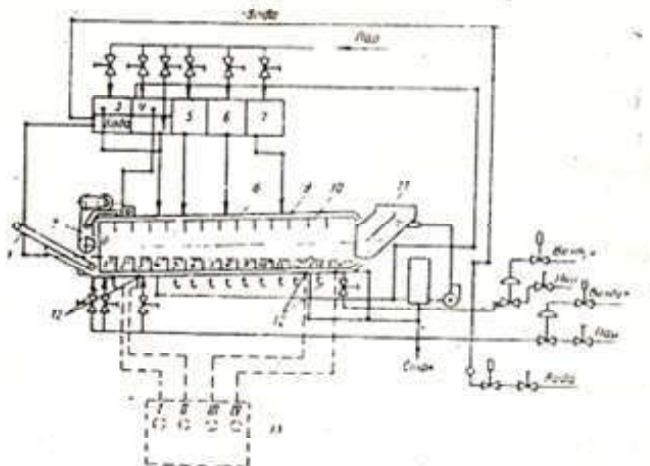


Figure 3. Schematic of "straight-through" hide processor from reference 28.

non-tannins produced the sour liquors used for acidification of the pelt (p. 17). It was this process which produced butyric acid, a major cause of the smell associated with tanneries.

Even now, with sophisticated separation procedures, the composition of commercial tannins is not completely understood (pp. 58, 178), although we have a working hypothesis which is adequate for most purposes. Indeed, it is probably not unfair to say that, in commercial terms, the contribution of the physical chemists' approach of applying the concepts of acid—salt balance, enshriend in the Procter—Wilson³³ theory of swelling, to vegetable tanning systems by Atkin, Burton, Cheshire and their co-

workers,^{34,35} so effectively developed by Shuttleworth and his co-workers in South Africa,³⁶ has been much greater than that of the organic chemists' elucidation of the molecular structure of vegetable tannins.

When we consider that 100 years ago three to six months was the norm for hide tannage and that today, using the same type of pit, higher levels of tan fixation can be achieved in five to seven days, progress has indeed been made. With drum processing, vegetable sole leather tannage can be completed within one to three days.³⁷

One of the major changes has been the increased use of extracts, particularly mimosa, then only available commercially from Australia.

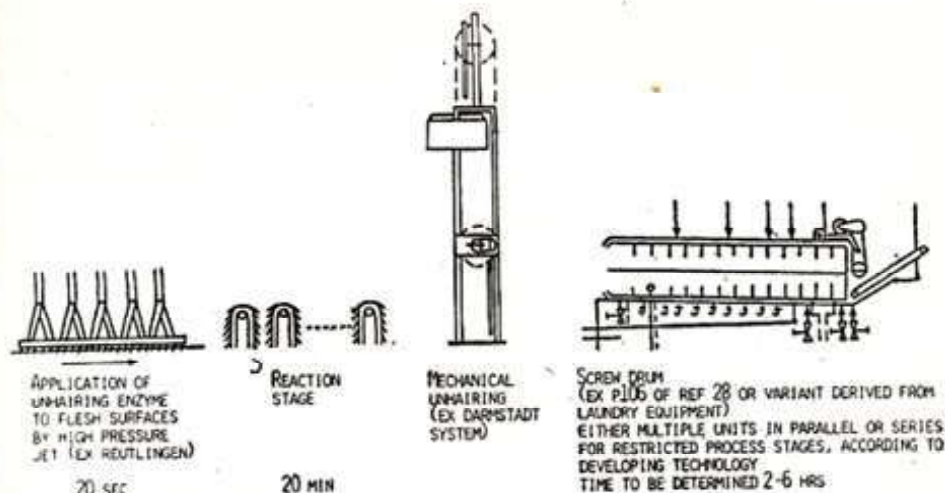


Figure 4. Schematic for straight-through beanhouse work (120 hides/h).

Selective plant breeding, such as that undertaken by the Wattle Research Institute in Pietermaritzburg and the move to extract the green rather than dried bark of Procter's day had been responsible for the removal of criticism of mimosa's dark red colour.

It is interesting to note how nearly Procter came to preempting his successor at Leeds, Stiasny, in developing syntans—then unknown—for he reports that pyrogallol (a non-tan) reacts with formaldehyde to produce a body which reacts like a tannin and precipitates gelatin (p. 67). Indeed, this same reaction with a cheaper phenolic than pyrogallol formed the basis of Baekeland's process for the

first truly synthetic thermo-setting plastic, "Bakelite".

Before leaving the subject of vegetable tanning, it is illuminating to consider the effort which went into analysing vegetable tanning materials, then, as now, a major cost in heavy leather production. Although preference was given to Lowenthal's titrimetric procedure with permanganate, the basis of the present Official Method, for all practical purposes defined at the first IALTC meeting in 1897, was already apparent (pp. 115, 125).

Tanning—Mineral

The Text-Book of Tanning was written just before the advent of chrome tanning and a bare five pages are de-

voted to this subject. Aluminium is correctly defined as a tawing agent in that it is reversible (p. 218) and the softness is associated with retained salt which we now know prevents fibre adhesions developing during drying. Stability is assessed by the ease with which the "leather" is dissolved in boiling water to yield gelatin; the concept of shrinkage temperature had not been developed.

Reference is made to the substitution of iron or chrome alums for common alum and even of the increased durability conferred by after-treatment with alkali (p. 219). So near and yet so far, the leathers were classed as hard and brittle unless an excess of salt was present and he speculates (p. 220) that, if



eggs and flour were added, products similar to alum-tanned calf-kid might be attained (p. 219). One gets the impression that he considered iron tannage was likely to have more potential than chromium even though subsequent history has shown it to be of very limited use³⁸ although an iron phthalate was produced by IG during World War II. The conservatism of the English tanner is implied by a reference to the fact that the Eglinton Chemical Company had failed "in spite of the most determined and persevering efforts" to introduce a process involving bichromates (p. 221). Within a few years of this being written, the one-bath chrome tanning process had started to displace all other tanning systems for the production of light leathers.

Now, after nearly a century of ascendancy, chrome tanning is being questioned, not because of technical deficiencies but because of environmental impact or strategic uncertainty—factors which never entered the Victorian's perception of technology.

In spite of this cursory approach to mineral tanning, it is interesting to note that the hydrothermal stability of semi-alum leathers was men-

tioned (p. 203), particularly as this approach is currently being advocated as a viable alternative to chromium tanning.³⁹

In considering industrial development, it has to be appreciated that there is often a synergistic effect. To become an established process, chrome tanning needed the advent of stabilised oil emulsions and the concept of fatliquors. Stuffing was the only lubricating procedure mentioned by Procter and, with many of his descriptions of light leather production based on continental processes, the whole subject of lubrication is ignored—you can only speculate that cracky grain must have been quite a problem.

As we seek replacements for chromium as a tanning material, it is essential that the interactions with auxiliaries, secondary tanning agents and lubricants are not ignored. Not only can these interactions enhance the stability of the leather produced, but the physical properties may change from the unacceptable to the acceptable, as happened with chromium.

In spite of the advances of the past 100 years, development of commercially acceptable leathers is still largely empirical. The criterion of

shrinkage temperature as a measure of tannage has gained ground but high shrinkage temperature does not, necessarily, mean acceptable leather. Fibre separation in the broadest sense has to be retained as in the use of salt in alum tawing, or the introduction of retans and oils, or even precipitated sulphur in certain mechanical leathers. Mineral lubricants in the form of talc soften leather in a little understood manner. Indeed, one of the most fruitful areas of current research may well turn out to be investigations related to the mechanism by which fibre separation is maintained on drying. It really is ridiculous that we sell apparel leathers containing 10-20% of solvent soluble material which makes maintenance so costly and traumatic for the consumer.

Haines,⁴⁰ in the most recent Procter Lecture, showed how the concept of fibres could be developed from the molecular scale to that of the fibre bundle teased out from leather. There is evidence from early X-ray studies⁴¹ that mineral tanning probably takes place at the intra or interhelical level, a concept which tends to be confirmed by later work involving measuring the effective molecular weight between cross-links



using the theory of rubber-like elasticity.⁴²⁻⁴⁴ But we now interpret Procter's comments (p. 219) to mean that the products obtained by basifying chrome alum impregnated pelts were not commercially acceptable leather unless inter-fibre adhesion during drying was prevented, either by solvent dehydration or freeze drying.⁴ As these processes are normally reversed by wetting, "more" is required if evaporative drying is to be considered. It is the nature of this "more" which is one of the exciting challenges facing leather chemists today.

Empirical observation teaches that the many retanning agents, minerals, syntans, polymers, plant phenolics, let alone lubricants all modify the drying characteristics and handle of leather. Some years ago Marriott⁴⁵ postulated that by depositing spherules of polymer from cracked emulsions within the fine structure he might get a combined retanning and fatliquoring effect from immobile material. A much more comprehensive study by the US Department of Agriculture into the use of graft polymerisation formed the basis of many papers in *J. Am. Leather Chem. Ass.* during the 1970s. Although they eventually concluded that grafting

may not have taken place, the performance of the chrome leather was enhanced by the deposition of polymer within the fibrillar structure of the leather. Recent work by BLMRA using high resolution electron microscopy has indicated that the location of fatliquor deposition within the fine structure of collagen may be identifiable.

Bearing Procter's dictum (p. 8) in mind, it would seem that a fruitful direction for research workers is to establish which level, or levels, of molecular/fibre organisation are most important for the deposition of material to prevent resticking of fibres during drying and to provide for controlled handle and softness. It may well be that studies of molecular size, shape and flexibility will be as important as reactivity in this connection. More speculative is a further review of freeze-drying coupled with the use of vapour phase reactions for chemical stabilisation and providing a means of conferring permanent, pre-determined handle to leather. Indeed, that may be a more preferable route for graft polymerisation than the emulsion techniques pioneered by USDA.

Post-tanning Operations

The commercial integration of tanning and finishing

operations, only legalised in the nineteenth century, was predicted by Procter as "likely to become universal" (p. 191); indeed it is probable that the virtual revolution in the industrial structure, coupled with the introduction of chrome tanning, provided the basis for the very significant changes in post-tanning operations which subsequently took place. This shift of industrial structure was accelerated by the increasing interest which the chemical industry began to take in developments through the provision of technical service, something which, with a few exceptions, the leather industry has not emulated.

Nevertheless, history has a habit of repeating itself and today's dresser or finisher is the lineal descendant of the medieval currier. Currying, at that time, referred to the dressing of all types of leather, whether for footwear, saddles, machine belting or leather goods.⁴⁶ Similarly, today's producer of wet blue is the lineal descendant of the medieval tanner who generally sold a crust leather.

The economies of scale and avoidance of non-productive costs, which in the USA are the driving force for production of wet blue at the abat-

toir, are inevitably fostering a return to the mediaeval concept of tanning and currying as two distinct industries. Indeed, as the writer suggested in a previous lecture,⁴⁷ there may be positive benefits in this move as the artistic, innovative flair required to develop novelty in presentation is not always compatible with the production orientated mentality and objective of a commodity producer.

Introduction of new approaches for presentation has, apparently, never been easy. For Procter records (p. 229) that the initial use of aniline dyestuffs, discovered by Perkins only 30 years earlier, remained in fashion for only a short period. Perhaps, even then, fastness was not living up to consumer expectations. More commonly, colours were developed through a reaction between a dyewood and a metal cation, forerunners of today's metal complex dyes! Amongst the more common were logwood, Brazil-wood and the fustics, from which a range of colours could be developed by reaction with iron, copper, tin and zinc salts, all of which are mentioned. For alum tawed leathers, whether calf destined for shoe uppers or glove kid, the goods were mordanted prior to

colouring with dichromate solutions. Indeed, it is probable that the leathers were, to all intents and purposes, being given a superficial two-bath chrome tannage as excel-

Mordant $\frac{1}{4}$ lb potash bichromate in 4 gal stale urine

Dye Infusion of logwood in stale urine to which 1 lb soda/25 lb dyewood has been added

Fix 1 pt iron protosulphate in 75 pt cold water

Figure 5. Three-stage dyeing process for alum tawed light leather.

lent lining leathers can be made by *in situ* reduction of dichromate using either sulphite cellulose or mimosa.⁴⁸ Providing care is taken to ensure that no Cr(VI) remains, this approach to dyeing would almost certainly enhance the chemical stability of the leather. An example of the process formulations is given in

Grain oiling (whale, cod, olive, castor)

Raw oil alone or emulsified with neutral soda water

Flesh oiling

Mixture of Degras* and Tallow

*Not sod oil obtained by the alkaline scouring of chamois

Figure 6

Fig. 5. Colour fastness must have been poor because it is recommended that application

should be by padding or drawing skins, folded flesh in, through a bath.

Lubrication was by hand, using processes similar to those still in operation today in the Madras area of India for producing EI crust. One perceptive element was to use different oil formulations to be applied from the grain and flesh surfaces (Fig. 6). Whilst, in part, this may have been related to the effects on appearance, or attempts to impart water-resistance, one is tempted to speculate whether this was a forerunner of today's impregnation procedures.

Throughout the twentieth century we have been conditioned to drum application of process chemicals without necessarily, appreciating that differential deposition of filler and lubricants, for example, may have real advantages. It is understood that, on mainland Europe, a number of tanners are today using straight-through dyeing machines,⁴⁹ although, to the writer's knowledge, none is in use in the UK. An advantage of straight-through dyeing of dry leather, particularly if the leather is to be finished, is that there is better penetration of dye into the grain layer, with a consequential reduction in

the obvious surface damage during wear. Landmann⁶⁰ has, repeatedly, drawn attention to the reduction in consumer dissatisfaction with the performance of leather which would be achieved if dyestuff penetration was improved.

It is when we come to finishing that we begin to appreciate just how primitive processing was in Procter's day (Fig. 7), yet the basic concepts of finish formulation were already there—pigment, binder, extender. Similarly, hand ironing is mentioned in the text as a physical process to improve smoothness and gloss—functionally no different from the heated plate or cylinder on today's finishing machinery which promotes plastic flow and the formation of cohesive films from dried-out polymer emulsions. By today's standards, the finishes are likely to have been brittle and to fail even the most modest specification for rub-fastness.

Patent leather was, as we saw in Table II, a high value-added product with, unfortunately, imports being of superior quality (p. 204). Two formulations are given in Fig. 8. The incorporation of white lead and litharge although, no doubt, added primarily as pigments, makes it interesting

FINISH FOR WAXED CALF

Pigment coat

Rub 5 } pt lampblack
together 4 } pt linseed oil
Add 35 pt fish oil
Add as a
hot melt 15 pt tallow

Cool

Add 3 pt treacle

Brush on, leave three days to dry

Top coat

Glue size

Glossy season

(for calf kid)

1 lb gum arabic
½ lb yellow wax
½ lb beef tallow
¼ lb Marseilles soap
2 lb strong logwood infusion

1 gal water

Figure 7. Components of leather finishes c. 1885

to speculate whether shrewd observers had noted that the lead salts promoted "drying" by a method akin to the catalytic accelerators based on lead octanate which were used subsequently in the synthetic resin and paint industry.

US process	UK process
Ground coat	Ground coat
Linseed oil	Linseed oil
White lead	Lampblack
Litharge	Prussian blue
Chalk	
Ochre	

Top coat (prepared two weeks before use)

20 pt turpentine Oil varnish
20 pt linseed oil
10 pt thick copal vanish
1 pt asphaltum

Figure 8. Finish Formulations Used for Enamelled Patent or Japanned Leather, c. 1885. Note: Each coat was stoved and possibly rubbed down. More than one coat may have been used.

It is also perceptive that mention is made of patent finishes on splits. A sealing coat of jellified boiled linseed oil diluted with turpentine or naphtha was applied to damp leather so that it would not penetrate and so formed a "sort of artificial grain".

In 1985, technologists are still trying to isolate the science from the art of finishing and even Procter was forced to admit:

The exact degrees of dryness and flexibility, the composition of the paint, and the thickness and number of coats, are nice points, difficult to describe in writing.

Human tactile and visual sensitivities are still needed to complement scientific formulations and I suspect that many finish suppliers and finishers in tanneries would,

even today, concur with Procter's comment. Yet it is precisely because of the lack of a thorough scientific understanding of the processes of film formulation in leather finishing systems that rogue packs are produced, that customers complain of inadequate adhesion or extensibility and consumers experience flex failure and loss of aesthetic appearance. This subject, in spite of the developments which have taken place in the past century, is one where much remains to be achieved.

Quality Control

I would like to return, briefly, to the subject of quality control, particularly relevant at a time when the UK government is giving substantial encouragement to the development of accredited quality assurance schemes. The **Text-Book of Tanning** devotes some 42 pages (15% of the book) to the chemical methods of examining the materials used in beam-house and tanning processes. More attention is given to examination of lime and tanyard liquors than is common today. The rudiments of our current empirical methods of analysing leather had also been developed. No mention is made of either physical or

fastness testing which dominate quality control today.

In the future, one might anticipate that semi or fully automated assembly systems for leather products will require less variability in the response of leather to mechanical forces. The reductions in quality inevitably associated with re-processing will mean that more attention must be given to getting the product right first time and every time.

If re-processing can be eliminated, average through-put times will be reduced and made more predictable. Already some suggestions have been made of approaches hold promise of substantially reducing process times. Increased use of computers and the extension of the straight-through concept will be essential in the next generation of tanneries to accelerate the whole production cycle and increase the frequency of a return on capital employed. Inevitably this will mean further restructuring of the industry. Our customers, particularly in the fashion-orientated industries, are looking increasingly for a reduction in their production cycle with the corollary that our response time must improve significantly. If we fail, our customers may embark on

leather processing as happened a few years ago in Brazil.

Considerable progress has been made since Procter's day in reducing process times but they must be, at least, reduced to less than five working days by the year 2000. Indeed, two of my colleagues are currently looking at this subject and the actual processing times with current technology, if we use today's enzyme assisted unhairing, need not exceed 24 h from hair to finish. To do this we shall have to review, radically, our whole approach to the training of our workforce. A wheelwright can no longer service modern tanning machines and tomorrow's operatives and supervisors will have to pay much more attention to detail to meet the disciplines imposed by having less work in progress and getting it right first time—and on time. They will have to be computerate to survive.

Conclusion

The **Text-Book of Tanning** contains a great deal of practical information still capable of being used to correct process of deficiencies which occur in tanneries a century later.

The author is seen to be extremely perceptive even of some of the explanations

are, with benefit of hindsight, plausible working hypotheses rather than scientifically correct. Irving, in the seventeenth Procter Memorial Lecture,²¹ made the same comment about the deductions relating to the mechanism of the chrome tanning process which have been made by twentieth-century investigators.

The two weaknesses in the book are the failure to appreciate the potential for mineral tannage and the relatively scant attention given to post-tanning and finishing operations. Interestingly, this latter failing is still apparent in Bienkiewicz's **Physical Chemistry of Leathermaking** published in 1983.

Whilst the need for a good text book on post-tanning processes is still evident, Procter, whether in this book or his later **Principles of Leather Manufacture** published in 1902, is still worth perusal. The Victorians were great observers and innovators, not constrained by the weight of legislation which exists in 1985.

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Natural Solution to Climatic Change through Extensive Use of Bamboo

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Abstract :

As the effects of climate change intensify, innovative solutions are urgently needed to mitigate its impacts and adapt to a rapidly changing environment. One of the most promising natural solutions lies in the humble bamboo plant. This remarkable grass not only thrives in various climates but also offers a range of ecological and economic benefits that can contribute significantly to combating climate change.

Introduction :

Bamboo is a sustainable super plant. In addition to its growth advantages, bamboo absorbs five times more carbon dioxide and releases 35 per cent more oxygen than other trees, establishing it as an important asset in efforts to mitigate climate change. As a rapid and efficient absorber of CO₂, bamboo plays a pivotal role in carbon sequestration, helping to offset greenhouse gas emissions. This makes bamboo forests effective carbon sinks, thereby contributing to the global efforts to combat climate change and its adverse effects.

Bamboo is a renewable resource that can help fight climate change in many ways e.g.

- Carbon sequestration : Bamboo absorbs large amounts of carbon dioxide during photosynthesis and stores it in its biomass.
- Rapid growth : Bamboo can be harvested in three to five years, which is much faster than conventional timber. This reduces pressure on forests and helps preserve biodiversity.
- Oxygen production : Bamboo releases 35% more oxygen than other trees.

- Soil erosion prevention : Bamboo's complex root system prevents soil erosion, especially in areas that are prone to heavy rainfall and landslides especially, Himalayan, sub-Himalayan regions, catchment areas, .
- Low water needs : Bamboo can thrive with minimal water and no pesticides.
- Renewable energy : Bamboo can be a sustainable source of bio-energy for cooking and power generation.
- Carbon-negative products : Bamboo products can be carbon-negative because they act as carbon sinks.
- Livelihoods : Bamboo production can provide a source of income for rural communities.
- Adaptation : Bamboo's rapid growth allows farmers to adapt their harvesting practices to new growing conditions.
- Restoration : Bamboo is an important part of many natural and agricultural ecosystems.

Discussion

Bamboo trees are synonymous with the giant panda and a ubiquitous part of life and culture across much of the south China. China's bamboo forests – all 6.8 million hectares of them – play an outsized role in the country's plans to check climate change. Fast-growing, versatile and able to thrive on sloping, degraded soils, giant bamboos have long been considered a valuable source of income – sometimes called “poor man's timber” – as well as an important tool for stabilising slopes and preventing soil erosion. More recently, bamboo has gained attention alongside tree-planting for its potential role in removing large amounts of carbon dioxide from the atmosphere, which would contribute to keeping global warming below 1.5°C.

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China is trying to curb greenhouse gas emissions in two ways by use of bamboo forestation: through its forests, which act as giant carbon sinks, and its durable products, which store carbon and can serve as a replacement for timber, concrete and steel. Decades of persistent efforts against desertification in and around Kekeya have paid off, generating economic and ecological benefits for this once-arid land in Aksu Prefecture, northwest China's Xinjiang Uygur Autonomous Region. Nestled on the northern edge of the formidable Taklimakan Desert, Kekeya was once notorious for its tumultuous weather and ceaseless sandstorms. Covering a staggering expanse of 337,000 square kilometers, the Taklimakan is China's largest desert and is infamously known as the "Sea of Death." To combat desertification and alleviate the adverse effects of shifting sands and dust storms on nearby residents, an ambitious afforestation project was launched in Kekeya in 1986. Consequently, what is now known as the "Green Great Wall" has gradually emerged. Faced with water shortages, high soil salinity, and a lack of heavy machinery, the pioneers who first engaged in the project in Aksu rose to the challenge. They toiled with simple tools to soften the hardened soil, level the ground, and adjust soil alkalinity to create a suitable environment for the growth of trees. One year later, the barren land of Kekeya showed its first signs of greenery. Local people saw hope for better living conditions, free from sand finding its way into their rice bowls. "We were planting trees almost every spring and autumn then. Since our shelter-belt forest was planted, it has blocked the wind and sand from afar and helped keep our homes clean," said Song Jianjiang, one of the first forest rangers involved in the afforestation project. In the first decade of the project, Kekeya saw about 2,200 hectares of artificial forest completed, with another 4,360 hectares established in the second decade. Since 2012, Kekeya has achieved 62,000 hectares of afforestation. Zhao Hongguang, a local apple grower, remarked on the stark difference in growing conditions compared to 30 years ago. "Back then, I planted over 2.6 hectares of land, but only 280 pear and apple trees survived. Now, one mu (one-fifteenth of a hectare) of land can produce 3 to 4 tonnes of apples. Four tonnes of apples can sell for over 20,000 yuan (about \$2,850). Most of my apples are sold to the Yangtze River Delta and the Pearl River Delta regions," he said.

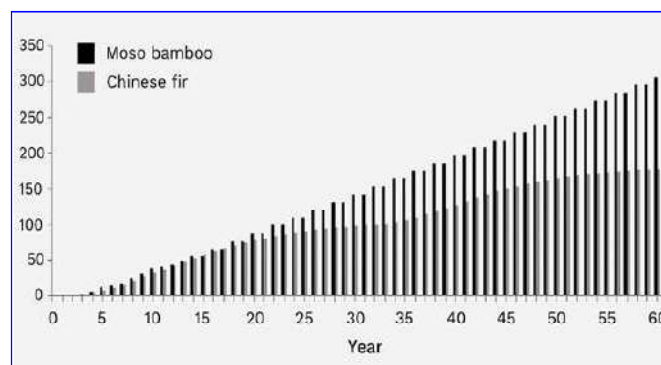
Residents Su Hui and his wife, Lu Fang, are both photography hobbyists. As the ecological environment improves, more birds and wildlife are captured in their lenses. "In recent years, as the ecological environment improves, some bird species that we had never seen before have appeared in Aksu, such as kingfishers, great rose finches and blue throats. These birds were never seen in Aksu before, but now they can be spotted

here," said Su. After relentless efforts spanning generations, the afforestation project in Kekeya has achieved over 80,000 hectares of afforestation. Kekeya's forest coverage rate rose from 8 percent in 1986 to 73 percent in 2020. Today, green spaces and pocket parks are spreading throughout Aksu's urban areas.

They have built the shelterbelt forest in Kekeya, and it has brought hope to everyone there.

The secret to bamboo's success is that it is a grass not a tree. It grows fast and accumulates carbon quickly, with an extensive root system that survives annual harvesting. This makes bamboo a fast-regenerating resource, which can supply more biomass than both natural and planted forests. Once mature, bamboo poles can be selectively harvested every year and used to make a wide range of durable products, which lock in carbon for the duration of a product's lifespan. This high yield makes bamboo a surprisingly effective carbon sink and important nature-based approach to mitigating global warming scenario. Study estimates that a one-hectare plantation of bamboo and its products could store 306 tonnes of carbon over a 60-year period compared with 178 tonnes for Chinese fir trees.

Carbon accumulation : managed moso bamboo versus Chinese fir



Modelled carbon accumulation of newly established, regularly harvested moso bamboo and Chinese fir plantations within 60 years. Source : Kuehl et. al. (2013)

Because of its usefulness as a source of rural income and significant ability to restore degraded land, China's southern provinces have been planting bamboo for decades : forest cover has increased from around three and a half million hectares in 1986, to almost seven million today.

Now, these bamboo afforestation initiatives can be recognised in voluntary carbon offset programmes in China. As far back as



2009, internet retail giant Alibaba bought offsets for some 50 hectares of bamboo planted in Lin'an county of Zhejiang province. Since then, researchers at Zhejiang A&F University (ZAFU) and the International Bamboo and Rattan Organisation (INBAR) have developed a methodology to make it easier for farmers and enterprises to receive carbon credits for planting bamboo. This has been recognised by China's macroeconomic planning body, the National Development and Reform Commission, as a "key energy-saving and low-carbon technology", and is widely applied. In Zhejiang alone, some 27,000 hectares of recently planted bamboo forests have produced 5.4 million certified carbon credits so far, and new afforestation projects are getting off the ground in Hubei and Fujian provinces.

Bamboo is considered as 'Green steel'. As well as storing carbon, bamboo products can "avoid" the carbon produced by more emissions-intensive materials. Research conducted on European industrial bamboo products, such as cladding, flooring and beams, has shown that they have a low or even negative eco-cost, over the course of their lifecycle, outperforming even hardwoods certified by the Forest Stewardship Council, and can be used as replacements for steel and cement.

China has already built a booming industry out of bamboo. Since a nationwide logging ban of certain forests came into effect in 1998, companies have been using the plant as a substitute for timber. Today, engineered bamboo, which has been processed to create a uniform, straight-edged material, is used to make everything from flooring to railway sleepers and manhole covers. At a 2017 forum on the Belt and Road Initiative, a private company from Zhejiang province displayed a bamboo material strong enough to build storm-drainage pipes and shock-resistant exteriors for bullet-train carriages. These durable products are "critical" to realising bamboo's carbon storage potential, according to researcher Pablo van der Lugt: "As the interest in a bio-based, low-carbon economy grows, we are seeing new opportunities open up for engineered bamboo products to substitute high-carbon, abiotic alternatives – and not just for architectural solutions indoors and outdoors, but also new heavy-duty applications."

Despite its potential, several issues have hindered bamboo's take-up as a carbon sink.

Being a grass bamboo requires different management and carbon assessment techniques to trees, but is often merged

with other types of forest: in the Food and Agricultural Organization's 2015 Forest Resource Assessment, there was no separate section for countries to report bamboo forest coverage. This lack of classification makes it harder for foresters to measure the potential of bamboo in their carbon sink assessments, which go on to inform countries' Nationally Determined Contributions to the Paris Agreement on climate change. In some countries, confusing legislation hinders the development of a bamboo sector: in India, bamboo was only recently removed from the country's Forest Act, which had restricted people's ability to harvest and use it.

China's forays into bamboo carbon storage could have important international implications. Despite its association with China, bamboo is a global grass, found abundantly across the tropics and subtropics throughout Asia, Africa and Latin America. The Food and Agricultural Organization puts the global coverage of bamboo at 35 million hectares, although according to Trinh Thanh Long, a forestry expert from INBAR, this is an underestimate: "When we take into account the countries which did not report, and the latest data available, the actual amount could be closer to 50 million hectares." Much of this bamboo is currently unmanaged, which means its carbon storage is relatively low, but with better upkeep, new plantations and regular harvesting global carbon stocks could become more significant.

Bamboo is becoming an increasingly important part of China's development cooperation with other countries in the Global South. In 2018, Xi Jinping mentioned bamboo in his speech at the Forum on China-Africa Cooperation, as part of a key push for cooperation on "green development and ecological and environmental protection". Following this announcement, a Sino-African bamboo training centre is now being built in Ethiopia, to help develop the sector in East African countries. INBAR, for years the only intergovernmental organisation to be headquartered in China, works with the Ministry of Commerce to host study tours and training programmes for thousands of foreign bamboo artisans every year. Since 2018, this has included training on how to use methodologies to assess and improve the management of bamboo carbon sinks.

On a global level, bamboo could be a significant part of China's push for natural climate solutions. In recent years, Chinese climate negotiator Xie Zhenhua has spoken at several UN conferences about the importance of bamboo, particularly as

a low-carbon construction material for infrastructure projects along the Belt and Road. In 2018, China's Premier Li Keqiang wrote a public letter asserting the government's willingness "to work with the international community" to promote the bamboo industry, which he said could play a "unique role" in combatting climate change; and at an international horticultural exhibition in Beijing last year, a large pavilion built from bamboo was visited by numerous high-level policymakers including former Vice Premier Liu Yandong. According to Li Shuo, a senior policy advisor with Greenpeace, the plant's association with China could be a significant part of its political appeal: "Chinese policymakers talk about providing 'Chinese solutions' to the global climate challenge. In this case, bamboo is a real solution with Chinese DNA."

Carbon storage aside, Li believes that it is bamboo's other services which could make the plant an important part of future climate policy. "The point about nature-based solutions is...they deliver co-benefits. That's where bamboo can play a very important role." Bamboo plantations furnish a wide range of environmental services, and are already being used to address chronic land-degradation issues: an internal INBAR audit shows that countries are planning to restore more than five million hectares of degraded land with bamboo in the coming decade. China alone plans to plant one million hectares between 2018 and 2030.

Climate benefits aside, bamboo is also an attractive plant for the private sector. In China's mountainous southern provinces, factories have long been producing flooring, furniture, paper and various alternatives to plastic, for a growing international market. To maintain a healthy supply, bamboo forests and plantations must be carefully managed and selectively harvested – efforts which also enhance their carbon stocks. According to Wang Xiaoqing, general manager of a company which supplies bamboo furniture to IKEA, the company must follow strict guidelines regarding sustainable forest management.

Wang believes that it is perhaps the growing appetite for bamboo coffee cups and floorboards which will make bamboo a bigger climate solution – as a replacement for wood, and as an incentive to plant more on China's degraded lands. She recounts how her father Jianqin, the company's chairman, first decided to experiment with bamboo in the 1980s. The company "used to work a lot with woods, like mahogany, but my father saw how this was destroying the forests. Then he started to think – what about the bamboo he saw all around him?"

Bamboo, often regarded as a symbol of sustainability and versatility, is emerging as a crucial player in the fight against climate change while simultaneously offering a promising source of livelihood for farmers. This fast-growing, renewable resource is proving to be an invaluable ally in mitigating environmental challenges and promoting economic resilience.

One of the most significant contributions of bamboo in the context of climate change lies in its capacity to sequester carbon dioxide. As a rapid and efficient absorber of CO₂, bamboo plays a pivotal role in carbon sequestration, helping to offset greenhouse gas emissions. This makes bamboo forests effective carbon sinks, thereby contributing to the global efforts to combat climate change and its adverse effects.

Furthermore, bamboo cultivation offers a sustainable alternative for farmers, providing them with a resilient source of income. Bamboo is known for its adaptability to diverse climates and soil conditions, requiring minimal water and chemical inputs. Its rapid growth cycle allows for frequent harvesting, enabling farmers to generate income more regularly compared to traditional crops.

The versatility of bamboo extends beyond its environmental benefits. The plant's various applications, ranging from construction materials and furniture to textiles and bioenergy, create multiple income streams for farmers and local communities. Bamboo-based industries not only foster economic growth but also promote the utilization of a renewable and eco-friendly resource, reducing dependence on more resource-intensive materials.

In addition to its economic potential, bamboo has the capacity to combat soil erosion and improve watershed management. The extensive root system of bamboo helps bind soil particles together, preventing erosion and stabilizing slopes. This makes bamboo an effective tool in sustainable land management, particularly in regions prone to soil degradation and water runoff.

The promotion of bamboo as a climate-resilient and economically viable crop requires concerted efforts from governments, NGOs, and local communities. Supporting initiatives that encourage bamboo cultivation, processing, and market development can unlock its full potential in both mitigating climate change and uplifting the livelihoods of farmers. As a renewable resource with multifaceted benefits,

bamboo stands as a shining example of how sustainable practices can contribute to environmental conservation and inclusive economic growth.

Maharashtra Agricultural Value Commission chairman Pasha Patel has commented that large-scale bamboo plantation can help fight climate change and suggested farmers in the state to take up its cultivation. Addressing a press conference in Latur, he said earlier this month, a 20-member task force was set up under the chairmanship of Chief Minister Eknath Shinde to promote bamboo cultivation in the state. Patel, who is also a member of the task force, said bamboo, the fastest-growing plant on earth, can significantly contribute in climate change mitigation, given its high carbon sequestration capacity.

Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide. It is a method of reducing the amount of carbon dioxide in the atmosphere with the goal of reducing global climate change.

“Some districts of Marathwada and Vidarbha face double woes of drought and unseasonal rains. Bamboo is an eco-friendly crop as it requires less water and absorbs more carbon. If bamboo is planted, then besides helping in fighting climate change crisis, it can be a source of livelihood for farmers,” said Patel.

He said the first priority of the task force is to complete bamboo plantation on 10 lakh hectares in the next five years.

The Centre has approved the use of bamboo as 7 per cent biomass in power-generating thermal plants in the country. The Government of India will provide a fund of Rs 1,000 crore for bamboo research, he added.

Conclusion

The area under bamboo cultivation in India is estimated to be more than 13.96 million hectares with more than 136 distinct species, according to National Bamboo Mission. Steps are being taken to multiply the cultivation of bamboo under the National Bamboo Mission.

Bamboo is a versatile group of plants which is capable of providing ecological, economic and livelihood security to the people. India has the highest area (13.96 million ha) under bamboo and is the second richest country, after China, in terms of bamboo diversity with 136 species (125 indigenous and 11 exotic).

- **Bamboo is a woody perennial grass species (family *Poaceae*)**
- **Bamboo a miracle crop omitted as “Tree” under Indian Forest Act (1927)**



The National bamboo Mission is progressing with the following objectives :

- To increase the area under bamboo plantation in non forest Government and private lands to supplement farm income and contribute towards resilience to climate change as well as availability of quality raw material requirement of industries. The bamboo plantations will be promoted predominantly in farmers' fields, homesteads, community lands, arable wastelands, and along irrigation canals, water bodies etc.
- To improve post-harvest management through establishment of innovative primary processing units near the source of production, primary treatment and seasoning plants, preservation technologies and market infrastructure.
- To promote product development keeping in view market demand, by assisting R&D, entrepreneurship & business models at micro, small and medium levels and feed bigger industry.
- To rejuvenate the under developed bamboo industry in India.
- To promote skill development, capacity building, awareness generation for development of bamboo sector from production to market demand.

- To realign efforts so as to reduce dependency on import of bamboo and bamboo products by way of improved productivity and suitability of domestic raw material for industry, so as to enhance income of the primary producers.
- Coverage of 1,05,000 ha area under bamboo over a period of two years by ensuring adequate stocks of selected genetically superior quality planting material.
- Promotion and diversification of bamboo products through establishment of micro, small, medium & large processing units and development of value chain in bamboo. Setting up and strengthening of bamboo mandi / bazaars/rural haats, including promoting online trade.
- Enhanced cooperation within the country related to research, technology, product development, machinery, trade information and knowledge sharing platform.
- Building/ Construction material (Bamboo mat trays, flooring tiles, magazine holders, Bamboo strand lumber, doors, windows, frames, trusses, columns, pole support, furniture, flooring tiles, mat moulded skin for doors)
- Raw material for pulp and paper industry
- Furniture (Tables, chairs, Cots, Laptop boards, cabins etc)
- Textiles (Shirts, Towels, Tissue papers etc.)

Bamboo stands out as a multi-faceted solution to some of the most pressing challenges posed by climate change. Its rapid growth, carbon sequestration capabilities, and potential as a sustainable resource make it an invaluable ally in the fight against global warming. By investing in bamboo cultivation

and integrating it into sustainable practices, we can promote environmental stewardship, enhance economic resilience, and foster a healthier planet for future generations. Embracing bamboo is not just about planting a tree; it's about cultivating hope for a sustainable future.

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6. Books on Sustainable Forestry : Titles like "Bamboo: The Gift of the Gods" by H.S. Bansal discuss bamboo's various applications and its ecological significance.





ILTA
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INDIA'S MANUFACTURING GROWTH HITS 12-MONTH LOW IN DEC



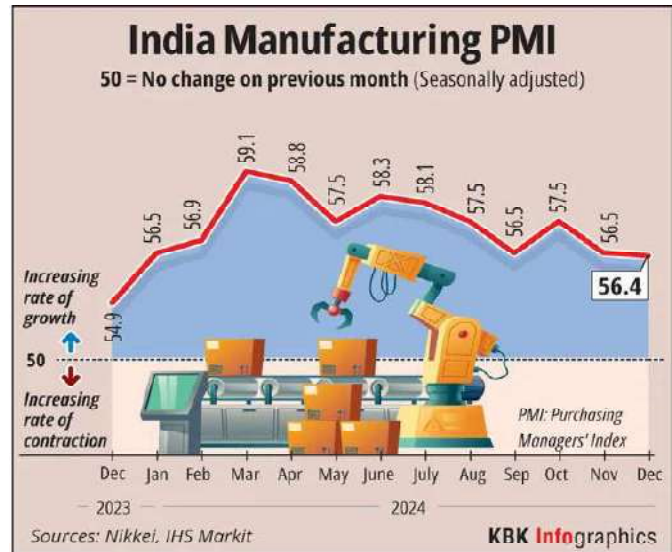
India's manufacturing sector growth fell to a 12-month low in December, as new business orders and production expanded at softer rates, a monthly survey said on Thursday. The seasonally adjusted HSBC India Manufacturing Purchasing Managers' Index was at 56.4 in December, down from 56.5 in November, indicating a weaker improvement in operating conditions.

Despite the decline, the headline figure remained above its long-run average of 54.1 thereby signalling a robust rate of growth. PMI parlance, a print above 50 means expansion, while a score below 50 denotes contraction. "India's manufacturing activity ended a strong 2024 with a soft note amidst more signs of a slowing trend, albeit moderate, in the industrial sector.

"The rate of expansion in new orders was the slowest in the year, suggesting weaker growth in future production," Ines Lam, Economist at HSBC, said. The manufacturing sector growth was hampered by competition and price pressures. Lam said there was some uplift in the growth of new export orders, which rose at the fastest pace since July.

"Although new export sales rose at a slower rate than total new business, the pace of growth for the former strengthened as firms were able to secure international orders from across the globe," the survey said. According to the survey, the "substantial" rate of growth resulted in further expansions in buying levels and employment.

Ongoing improvements in new work intakes prompted manufacturing companies in India to purchase additional inputs for use in production processes and on the job front, around one in ten companies recruited extra staff, while fewer than 2 per cent of firms shed jobs.



On the price front, with container, material and labour costs reportedly rising since November, Indian manufacturers registered another increase in overall expenses. On a month-on-month basis, however, the rate of input price inflation was moderate by historical standards. The HSBC India Manufacturing PMI is compiled by S&P Global from responses to questionnaires sent to purchasing managers in a panel of around 400 manufacturers. Looking to 2025, Indian manufacturers were confident of a rise in output.

"Optimism reflected advertising, investment and expectation of favourable demand. Sentiment was nevertheless curbed by concerns around inflation and competitive pressures," the survey said.

(rediffmail.com – 02/01/2025)

FISME RECOMMENDS GOVT MEASURES TO ADDRESS IMPACT OF PROTECTIONIST POLICIES



Amid the recent HSBC India Manufacturing Purchasing Manager's Index (PMI) report indicating a concerning 12-month low in manufacturing activity, the Federation of Indian Micro and Small & Medium Enterprises (FISME) has urged the government to take immediate action to mitigate the impact of rising protectionist measures on the sector.

During a meeting with Chief Economic Advisor V Nageswaran, FISME representatives outlined several key recommendations to address these pressing issues. FISME has called for a thorough analysis of the proposed quality control orders (QCOs), anti-dumping measures, and safeguard duties by reputable institutions such as the Indian Institutes of Management (IIMs) or the Indian Institute of Foreign Trade (IIFT) before any new tariffs or non-tariff barriers are imposed. They stressed the importance of consulting micro and small & medium enterprises (MSMEs) and user industries to ensure their perspectives are included in the final decision-making process. Additionally, they recommended that a group of ministers (GoM) oversee these measures to ensure balanced and effective outcomes.

During the meeting, FISME representatives raised alarms over the recent QCOs for steel, which impose 151 stringent standards and effectively hinder imports, allowing domestic producers to raise prices significantly. They also highlighted that similar restrictions are being extended to critical materials like copper, aluminium, and polymers, jeopardising MSMEs' access to competitively priced inputs. FISME said that the protectionist approach has led to increased production costs, reduced profitability, and weakened global competitiveness for MSMEs. FISME representatives emphasised that the decline in competitiveness could result in significant job losses, impacting related sectors such as transportation, logistics, and retail. A less competitive MSME sector would struggle to create jobs, ultimately hindering overall employment growth in India.

"The decline in MSME competitiveness due to higher input costs and reduced market access will lead to job losses within the sector. And job losses in the MSME sector will have a ripple effect, impacting employment in related sectors like transportation, logistics, and retail. A less competitive and dynamic MSME sector will have limited capacity for job creation,

hindering India's employment growth," said a FISME memorandum submitted to the government.

(business-standard.com – 03/01/2025)

INDIA'S APRIL-NOV FISCAL DEFICIT AT 52.5% OF FULL-YEAR TARGET



India's fiscal deficit (INFISC=ECI), opens new tab for April-November was 8.47 trillion rupees (\$98.90 billion), or 52.5% of the estimate for the financial year, government data showed on Tuesday. Net tax receipts for the first eight months of the current financial year were at 14.43 trillion rupees, or 56% of the annual target, compared with 14.36 trillion rupees for the same period last year, the data showed.

India's financial year runs from April through March. Total government expenditure for the eight months was 27.41 trillion rupees, or about 57% of the annual goal. The government spent 26.52 trillion rupees in the same period last year.

Till November, the government's capital expenditure, or spending on building physical infrastructure, was 5.13 trillion rupees, or 46.2% of the annual target, as against 5.86 trillion rupees for the same period a year earlier. The spending in the current year has been slow due to the national elections and capital expenditure is likely to fall short of the annual target. Some economists are factoring in a narrower fiscal deficit than the target of 4.9% of gross domestic product (GDP) for the Asian country on account of lower spending.

(\$1 = 85.6450 Indian rupees as on – 31/12/2024)

(reuters.com - 31/12/2024)

:- JILTA :-

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History and Activities of Indian Leather Technologists' Association #1

The Indian Leather Technologists' Association (ILTA) was founded by Late Prof. B. M. Das, the originator of Das-Stiasny theory and father of Indian Leather Science on 14th August' 1950. ILTA is the Member Society of IULTCS (International Union of Leather Technologists & Chemists Societies) representing India.

The primary objectives of the oldest Leather Technologists' Association which celebrated its Diamond Jubilee year in 2010, are :

- To bring all concerned with the broad spectrum of the leather industry under one umbrella.
- To organize seminar, symposium, workshop in order to create information, knowledge and latest development for the benefit of all concerned. To offer a common platform for all to interact with each other in order to understand each other's problems and prospects.
- To publish monthly journal as a supplement to those above objectives. The monthly journal of ILTA is known as journal of Indian Leather Technologists' Association and is the most widely circulated technical journal concerning leather technology.
- To publish text books for the benefit of students at various levels of study, for the researchers and industry.
- To have interface between urban and rural sector.
- To assist various Government Institutions, Ministry and autonomous bodies to formulate appropriate policies acceptable and adoptable to the industry.
- To organize practical training and to provide skilled manpower and to motivate good students for study.
- To conduct activities related to the growth of the export of leather and leather goods from India.

ILTA also organizes Prof. B. M. Das Memorial Lecture every year during the Foundation Day Celebrations on 14th August, Sanjoy Sen Memorial Lecture on 14th January, the birthday of our late President for several decades, Prof. Moni Banerjee Memorial Lecture on 15th March, the birthday of our late Founder-General Secretary of our Association and Prof. S. S. Dutta Memorial Lecture on 2nd February every year during IILF at Chennai. Many reputed scientists, industrialists and educationists have delivered these prestigious lectures. Foreign dignitaries during their visits to India have addressed the members of ILTA at various times.

ILTA have published the following books :

1. An Introduction to the Principles of Physical Testing of Leather by Prof. S.S. Dutta
2. Practical Aspects of Manufacture of Upper Leathers by J. M. Dey
3. An Introduction to the Principles of Leather Manufacture by Prof. S.S. Dutta
4. Analytical Chemistry of Leather Manufacture by P. K. Sarkar
5. Comprehensive Footwear Technology by Mr. Somnath Ganguly
6. Treatise on Fatliquors and Fatliquoring of Leather by Dr. Samir Dasgupta
7. Synthetic Tanning Agents by Dr. Samir Dasgupta
8. Hand Book of Tanning by Prof. B. M. Das

ILTA presents awards in the name of Prof. B. M. Das Memorial, Sanjoy Sen Memorial, Prof. J. M. Dey Memorial, Prof. Moni Banerjee Memorial and Prof. S. S. Dutta Memorial Medals to the top rankers at the University Graduate and post graduate levels. Prof. J. Sinha Roy Memorial Award for the author of the best contribution for the entire year published in the monthly Journal of the Indian Leather Technologists' Association (JILTA). From the year 2023, ILTA has started to present a Scholarship namely Prof. Moni Banerjee Memorial Scholarship to a student of B.Tech / M.Tech in Leather Technology who is meritorious but financially crippled.

contd.

History and Activities of Indian Leather Technologists' Association #2

Registration No. KOL RMS/074/2022-24

The International Congress of IULTCS used to held in different locations of the world once in two years. In its 125 years long history, for the first time the Congress was held in January 1999 outside the developed countries and that too in India at CLRI, Chennai. Indian Leather Technologists' Association organized the Congress under the able leadership and guidance of Late Sanjoy Sen, the then President of ILTA and IULTCS and Dr. T. Ramasami, the then Vice-President of ILTA and Director, CLRI, Chennai. In 2017 IULTCS Congress was successfully held again at Chennai, India for the second time.

In order to promote and provide marketing facilities, to keep pace with the latest design and technology, to have better interaction with the domestic buyers, ILTA has been organizing LEXPO fairs at Kolkata from 1977, Siliguri from 1992 and Durgapur from 2010. To help the tiny, cottage and small-scale sectors industries in marketing, LEXPO fairs give the exposure for their products. Apart from Kolkata, Siliguri and Durgapur, ILTA have organized LEXPO at Bhubaneswar, Gangtok, Guwahati, Jamshedpur and Ranchi. It commensurate with the time, demand and new perspective of the modern-day leather users. ILTA has started to organize LEXPO at Kolkata from 2022 in a new shape with the Manufacturers and Exporters of Leather Goods from all over India.

ILTA celebrated its Golden Jubilee with a year long programme from 14th August' 2000 to 13th August' 2011 along with the first conference of South East Asian Countries at Netaji Indoor Stadium, Kolkata.

The Association's present (as on 31.03.2024) strength of members is around 550 from all over India and abroad. Primarily the members are leather technologists passed out from Govt. College of Engineering & Leather Technology, Kolkata, Anna University, Chennai, Scientists from Central Leather Research Institute (CLRI), Harcourt Butler Technical University, Kanpur, Govt. Institute of Leather Technology, Jalandhar, Central Footwear Training Institute, Agra, Central Footwear Training Centre, Budge Budge, Footwear Design & Development Institute, Kolkata, National Institute of Fashion Technology, Kolkata etc.

In order to strengthen its activities, ILTA have constructed its own six storied building at 44, Shanti Pally, Kasba, Kolkata – 700107 and have named it "Sanjoy Bhavan".

This Association is managed by an Executive Committee duly elected by the members of the Association. It is absolutely a voluntary organization working for the betterment of the Leather Industry. None of the Executive Committee members gets any remuneration for the services rendered but they get the satisfaction of being a part of this esteemed organization.



Indian Leather Technologists' Association

[A Member Society of International Union of Leather Technologists and Chemists Societies] (IULTCS)]

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