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Since 1950

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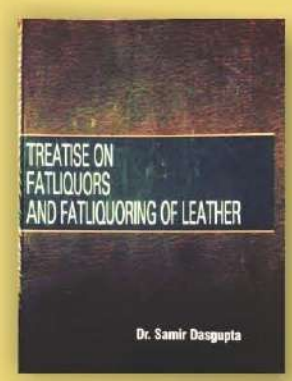
# ILTA PUBLICATIONS



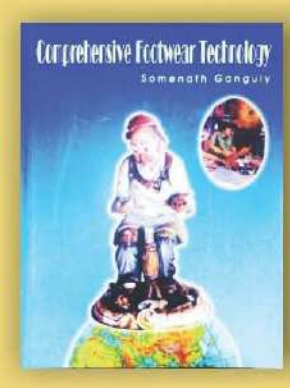

Title of the Book
Treatise on Fatliquors and Fatliquoring of Leather

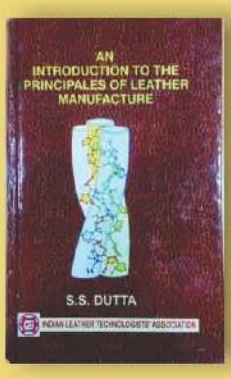
Author
Dr. Samir Dasgupta

Price per copy*
₹ 1500.00 / $ 60.00

Title of the Book
Comprehensive Footwear Technology
**(Presently out of stock)**
Author
Mr. Somenath Ganguly

Price per copy*
₹ 500.00 / $ 50.00




Title of the Book
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Author
Prof. S. S. Dutta

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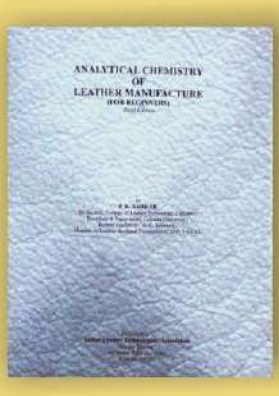


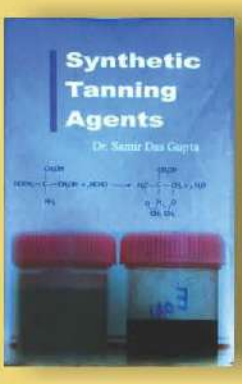


Title of the Book
Synthetic Tanning Agents

Author
Dr. Samir Dasgupta

Price per copy*
₹ 900.00 / $ 30.00

Title of the Book
Hand- Book of Tanning

Author
Prof. B. M. Das

Price per copy*
₹ 750.00 / $ 25.00


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ILTA
Since 1950

## Indian Leather Technologists' Association

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

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(JILTA)

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# JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

Indian Leather Technologists' Association is a premier organisation of its kind in India was established in 1950 by Late Prof. B.M.Das. It is a Member Society of International Union of Leather Technologists & Chemists Societies (IULTCS).

The Journal of Indian Leather Technologists' Association (JILTA) is a monthly publication which encapsulates latest state of the art in processing technology of leather and its products, commerce and economics, research & development, news & views of the industry etc. It reaches to the Leather / Footwear Technologists and the decision makers all over the country and overseas.

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(Member Society of International Union of Leather Technologists and Chemists Societies)

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# JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

# COP 29 and Global Leather Industry

Some of the world's wealthiest countries from across the Global North and the Global South are urging negotiators at COP29 to get serious about climate finance, as talks around a new $1.3 trillion annual continue. The G20's Leaders' Summit, which brought together some of the planet's most powerful sovereign countries (and its biggest emitters), wrapped up in Rio as those in Baku headed into the COP29. In the G20's final communique, leaders said they want a "positive outcome" on climate finance at the UNFCCC COP29 currently underway in Baku. They have also reaffirmed their commitment to strengthened multilateralism, the UNFCCC and the pursuit of the 1.5$^0$C temperature increase limit established in the Paris Agreement.

"G20 Leaders have sent a clear message to their negotiators at COP29: do not leave Baku without a successful new finance goal. This is in every country's clear interests," said Simon Stiell, the Climate Change Executive Secretary of the UN.

The climate finance details in the declaration are remarkably thorough. The text recognizes the need for rapidly and substantially scaling up climate finance from billions to trillions from all sources. It also focuses on reforming global financial institutions and debt structuring to make funds available for developing nations struggling to address climate challenges. In its discussion of climate finance, the countries stated that a reform of global multilateral development banks will be crucial to ensure the success of climate action. Increasing financing from the world's multilateral banks, which control more than $23 trillion across 155 countries, has long been an ask for advocates seeking to free up more money in the system.

Experts praised a remarkably streamlined communique considering the larger tumult in the political system.

"Despite the tense geopolitical times, the G20 delivered a united result thanks to Lula's resolve. On the back of the US elections, getting a communiqué that does not backslide on existing commitments was a big challenge, especially with Russia and others determined to block progress," said Linda Kalcher, Executive Director of Strategic Perspectives. "Leaders pushed back strongly on climate denialism, they committed to the Paris Agreement and to work together on a successful outcome in Baku. The real litmus test now for effective multilateralism on climate is bridging the divides to agree on a meaningful new climate finance goal. It's time for the G7 to put their cards on the table and talk numbers."

The G20 communique also launched an alliance to combat hunger and poverty and called for the taxation of the super-rich. The communique explicitly includes a reference for cooperation to ensure that ultra-high-net-worth individuals are effectively taxed. A 2% wealth tax can mobilise US$250 billion a year, and can be crucial to freeing up money for climate finance to help developing countries build resilience and transition to clean energy. There are some climate blind spots in the communique. The G20 text does not specifically advance the 'transitioning away from fossil fuels' language that was agreed on in 2023 in Dubai.

"The G20 has sent the right signals on finance: they are willing to engage meaningfully in conversations about needed reforms to the international financial architecture, and back up the outcomes of negotiations on a new climate finance pledge here at COP29," said Catherine Abreu, Director of the International Climate Politics Hub. "But they have failed to reiterate the global commitment made last year to accelerate the transition away from fossil fuels. No amount of finance can save us from a world that is warmed by 3-4 degrees which is what awaits if major global powers keep sidestepping the need to phase out coal, oil and gas. Brazil's G20 outcomes have made its work to land Mission 1.5 at COP30 next year more difficult and more important than ever."

The undersigned organizations, call on the decision making body in COP 29 to endorse the call to :

- Recognize the cyclical, climate efficient nature of leather and its potential for a positive contribution to reducing the

climate impacts of consumer products. In particular, a full and proper impact assessment of the role of leather as a driver of deforestation and the development of reliable measures of the lifespan of materials and products and their impact on consumption

- Support LCA methodologies that accurately account for the environmental impact of all materials, including end of life properties and the consequences of use and substitution.
- In keeping with the aspiration for reduced consumption, greater circularity and reduced waste, to promote 'slow fashion', durable products, and items that can be used many times, repaired and refurbished, and last for years.
- Wherever feasible to encourage the use of natural fibres like leather and reduce unnecessary reliance on fossil-fuel-based materials.

Signatories to the Leather Manifesto for COP as below :

- Alliance Française du Cuir (AFC)
- Australian Hide Skin and Leather Exporters' Association Inc (ASHLEA)
- Centre for the Brazilian Tanning Industry (CICB)
- Centro Tecnológico das Indústrias do Couro (CTIC)
- China Leather Industry Association (CLIA)
- Confederation of National Associations of Tanners and Dressers of the European Community (COTANCE)
- Fédération Française des Cuirs et Peaux (FFCP)
- Fédération Française Tannerie Megisserie (FFTM)
- International Council of Hides, Skins and Leather Traders Association (ICSHLTA)
- International Council of Tanners (ICT)
- International Union of Leather Technologists and Chemists Societies (IULTCS)
- Leather Cluster Barcelona (LCB)
- Leather & Hide Council of America (LHCA)
- Leather Naturally (LN)
- Leather UK (LUK)
- One 4 Leather (O4L)
- Society of Leather Technologists and Chemists (SLTC)
- Sustainable Leather Foundation (SLF)
- Türkiye Deri Sanayicileri Dernegi (TDSD)
- UNIC Concerie Italiane (UNIC)
- Verband der Deutschen Lederindustrie e.V. (VDL)
- Wirtschaftsverband Häute/Leder (WHL)
- Zimbabwe Leather Development Council (ZLDC)

Nevertheless, all eyes are now on the final days of negotiations in Baku as countries look to reach what can be a landmark climate finance deal.

Goutam Mukherjee

***Dr. Goutam Mukherjee***
Hony. Editor, JILTA


## 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.

2. EU CMR: Stahl Neo® products are certified free from carcinogenic, mutagenic or reprotoxic (CMR) substances as per EU criteria.

3. EU REACH SVHC: Stahl Neo® products meet EU REACH criteria for substances of very high concern (SVHC) (less than 0.1% concentration).

As a result, Stahl is now able to offer tanners the most comprehensive range of future-proof solutions on the market – providing peace of mind for stakeholders across the leather article value chain.

Scan the QR code to download the Stahl Neo® brochures and discover the specific benefits of each product in our portfolio.

www.stahl.com


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**

Stahl

# 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)*

# STAHL COMPLETES ACQUISITION OF WEILBURGER GRAPHICS

Stahl, the world leader in speciality coatings and treatments for flexible materials, has completed the acquisition of WEILBURGER Graphics GmbH, a leading German-based manufacturer of water-based and energy cured coatings for the graphic arts and packaging industry.The transaction significantly strengthens Stahl's new packaging coatings divisionfland supports its strategy to broaden its franchise for coatings for flexible materials.

The acquisition of WEILBURGER Graphics, a division of Grebe Holding GmbH strengthens Stahl's strategic position in Europe, positioning the company as the second-largest player in the region. WEILBURGER Graphics had 2023 sales of 70 million euros and over 140 employees – primarily based in Germany.

Maarten Heijbroek, CEO of Stahl: "I am very excited to now officially welcome our new colleagues to the Stahl Group. We have been highly impressed by WEILBURGER Graphics' quality, advanced technology, and the deep customer knowledge of their people. flWe can't wait to work together as of today. We are committed to ensuring a continued service to all customers during and after the integration."

Günter Korbacher, managing director of WEILBURGER Graphics GmbH, comments on the acquisition: "The affiliation with Stahl is a perfect strategic fit for WEILBURGER Graphics. With our long and successful growth story of more than 140 years and a high level of brand awareness as an innovative and trustworthy supplier of packaging and graphics coatings, this decision offers excellent synergy effects and growth opportunities for our site in Gerardshofen. We are confident that we have made the right decision for our continued success. Becoming part of Stahl will accelerate our growth and offer our customers even greater added value."

*(Stahl News – 30/09/2024)*

# 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

## 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. Official confirmation has been received so far from IULTCS.

The event will be organized as a part of the Platinum Jubilee Celebration of ILTA in 2025.

Planning and details of both the program would be shared in due course.

## HEALTH CARE BENEFIT FOR ILTA MEMBERS

ILTA has launched Health Care Benefits for all the Members of the Association in collaboration with M/s Narayana Health w.e.f. 1st April, 2024. Initially the scheme has been launched 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 Leather Text Books, JILTA and different articles from renowned authors of Leather Fraternity online.

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

## 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) Membership No.
2) Type of Membership
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4) Full Residential Address of the Member
5) AADHAR No. of the Member
6) Blood Group of the Member
7) A HD quality Photo of the Member
8) Copy of the AADHAR card of the Member
9) Email ID of the Member
10) 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** 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

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b) Kindly mention your **Membership No.** (If any) against your each and every communication, so that we can locate you easily in our record.

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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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## 2022-2023


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# Smart Footwear : A Review

**[1]D. K. Chaturvedi, [2]Disha Verma**

[1, 2] Faculty of Engineering, Dayalbagh Educational Institute (Deemed to be University), Dayalbagh, Agra - 282 005 (U.P.)

**Abstract :**

Artificial Intelligence (AI) and Machine Learning (ML) is taking pace. In almost all the consumer goods and in consumer market got influenced by AI and ML. These tools are widely used in smart footwear and smart/agile footwear manufacturing. There are numerous ways to manufacture a smart footwear. They are classified based on applications such as medical and health care smart footwear, smart assistive footwear for impaired people, smart footwear for navigation in new/unknown areas, to study the foot movements and GAIT analysis, smart safety footwear, smart antiskid footwear, smart old person footwear, smart army shoes, energy harvesting smart footwear, etc. These footwear enables a person to take care of patients in real time by monitoring their conditions and suggest suitable actions. Another classification of smart footwear is depending upon the tools/techniques used to make smart footwear. Further, it depends on the sensors and IoTs used. This paper deals with the review of tools and techniques used in smart footwear for different applications.

## Introduction

The literacy level is a principal reason for all societal changes. Now the people are more conscious about their health, keep themselves fit and good looking. It leads to increase in demand of different types shoes, which are smart and intelligent. It can not only measure your health parameters such as blood pressure, oxygen level, diabetic level and calories intake and burn etc., but also give consultation to keep yourself fit and healthy. Indian sports shoe market is covered by four big global players namely ADIDAS, REEBOK, NIKE and PUMA [1,2,3]. These companies are actively involved in manufacturing the smart shoes. The NIKE has technological collaboration with Intel chip manufacturing company to incorporate intelligence in shoes. Now there is a paradigm shift from conventional mass-produced shoe manufacturing to customer centred customized production to accommodate life style, fashion and moreover their health and comforts.

Smart footwear is an exciting area where the quality footwear integrated with the latest technology/technologies. The first commercial smart footwear is Altra Torin IQ. It has pressure sensors, power supplying battery, and a microchip that connects sensor data to mobile phone through Bluetooth. The data generated by pressure sensor are impact force, the footfall location, contact time and cadence. The prime objective of this smart footwear was to improve running performance, efficiency and prevent injuries. The data received from the performer shoe has many important information which may not be known earlier and it can completely change the performance of a sport's person.

Fig. 1 Altra Torin smart running shoes [edgeservices.bing.com]

After this many footwear companies globally started working on smart shoe and manufactured them. Some smart footwear manufacturing companies are shown in Fig. 2.

*Corresponding author E-mail : dkchaturvedi@dei.ac.in / nishavermadei@gmail.com*

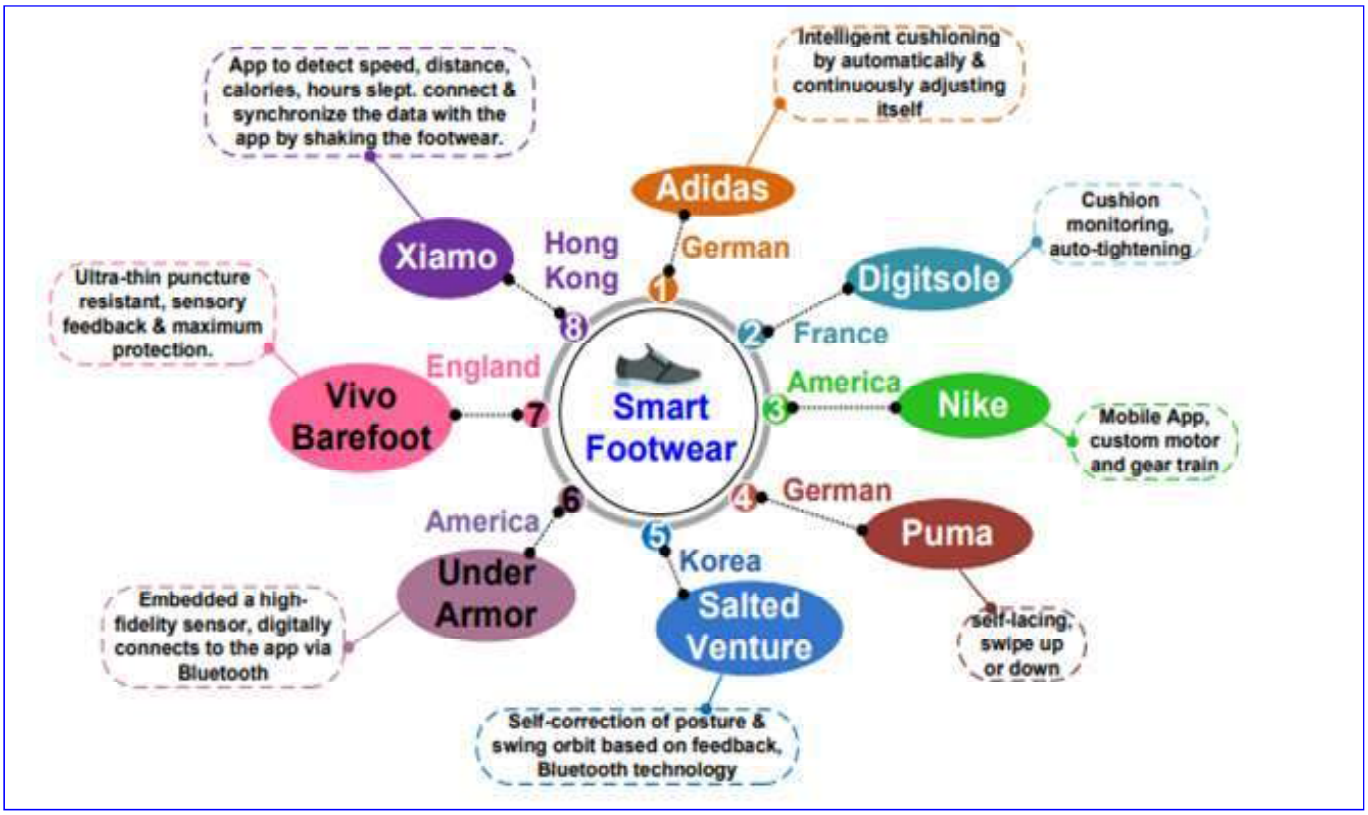


Fig. 2 Smart show manufacturing companies globally [2402.01645v2 (arxiv.org)]

In every smart/intelligent footwear learning has an important role. The performance of smart footwear depends on how efficiently it will learn from the environment or past experience. The learning is shown in Fig. 3.

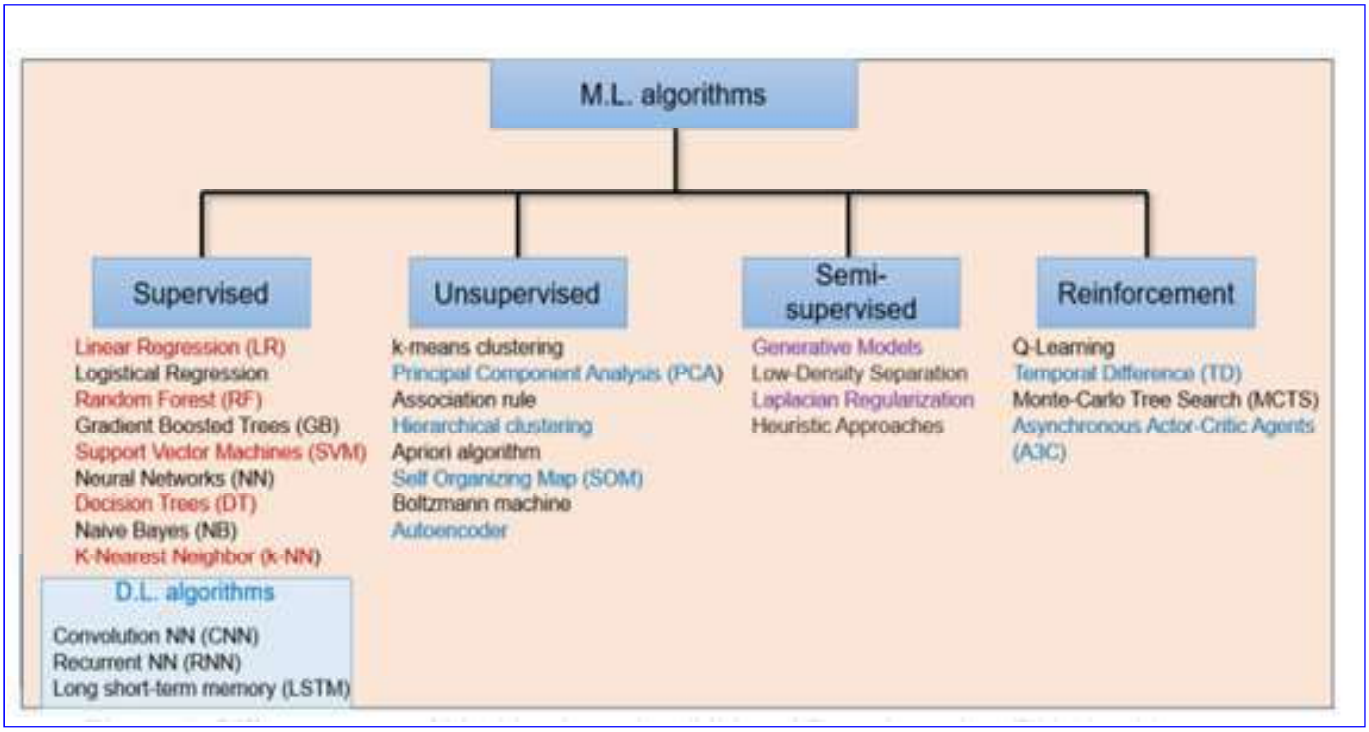


Fig. 3 Different Learning algorithms [2402.01645v2 (arxiv.org)]

The smart footwear normally consisting of different blocks as shown in Fig. 3. Sensing and Communication.

### 1. Sensor and Communication

Every smart footwear has some sensors or Internet of Things (IoTs) depending on the application of that footwear. For example, the motion analysis of a person for different purposes must have some pressure sensors, accelerometer and gyroscope on the footwear insole. Similarly, piezo electric sensors for energy harvesting smart shoes. In medical and health care applications temperature sensor, heart rate, blood pressure measuring sensor, step counter etc. All these sensors measure different quantities and then send them to some remote location or local memory device. Communication may be through internet or through some physical or virtual channels. The commonly used sensors/ IoTs are summarised in Table – 1. Different parameters tracked by sensors are also tabulated in Table – 2.

At present IoT is facing with many challenges, such as

- Scalability
- Technological standardization
- Interoperability
- Discovery
- Software complexity
- Data Volumes and interpretation
- Power supply
- Interaction and short-range communication
- Wireless communication
- Fault tolerance.
- Data privacy and security

Intelligent Footwear insoles that can act as a Bluetooth-connected accessory (i.e., IoTs) and can link activity or position to a smartphone app. They can function as a high-tech brain.

The data module is the driving force of the smart footwear. The customer data is collected in this module. The other modules all depend on the data module to improve their levels of intelligence, efficiency, and productivity.

### 2. Data Storage

The data received in the above step can be stored at suitable place, so that it can be quickly retrieved and used for further action. The amount of data generated is depending on the following five Vs :

- Volume – High volume of Data
- Variety – High diversity of data source, structure, and format
- Velocity – High Speed Data Production
- Value – Raw Data is hardly useful without viable value proposition
- Veracity – High fidelity and reliability

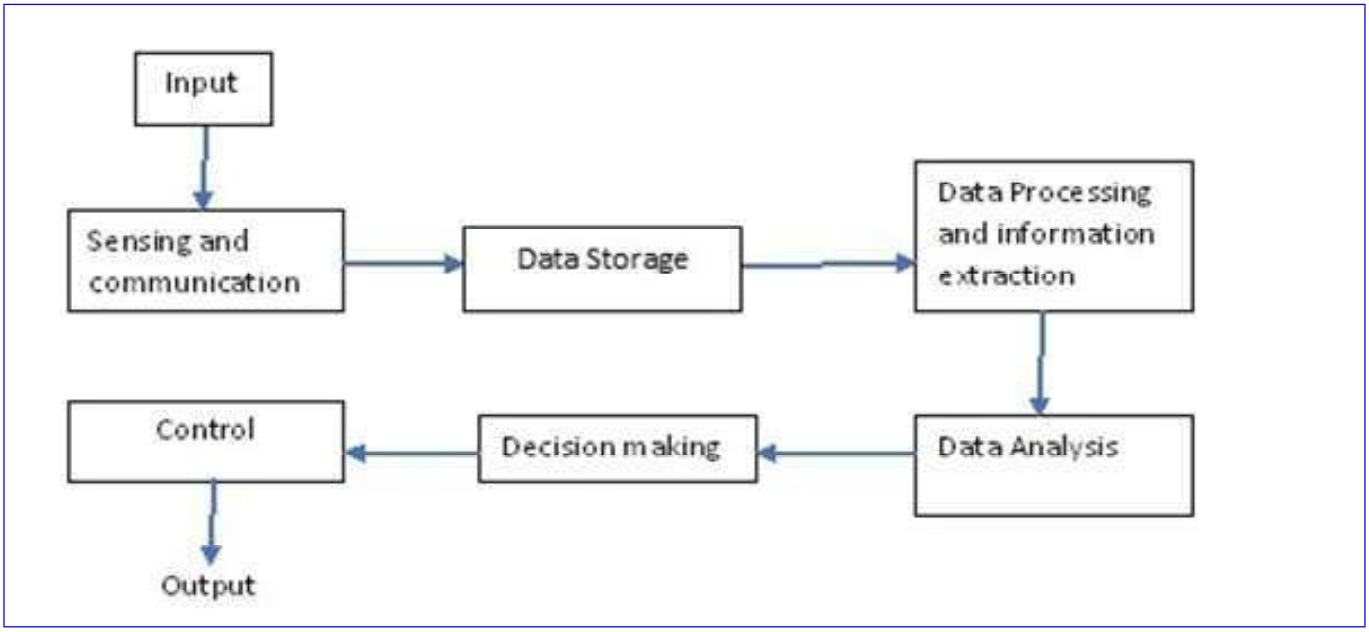


Fig. 4 General Block Diagram of Smart Footwear / Smart Insole

Due to the profound impacts of the Internet and Internet of Things (IoT), a huge volume of data is being generated from smart footwear. Distributed storage and cloud computing enable manufacturers to collect, store and analyze big data in a more efficient, accurate and responsive manner than ever before.

**4. Data Processing and Information Extraction**

The data is pre-processed before using it. Mainly in pre-processing of data, the missing data is completed or removed, remove noise from the data, and also check the erroneous data. The pre-processed data is then used for information/feature extraction.

**5. Data Analysis**

Different soft computing techniques such as neural network, fuzzy information processing system, optimization based on nature inspired techniques, etc. are used to analyse the pre-processed collected data for some inferencing.

**6. Decision making**

The appropriate decision is to be taken based on the analysis.

**7. Control**

Once the appropriate decision has been taken using some intelligent tools, then suitable control action is initiated.

**Applications of Smart Footwear**

Smart footwear is used in the following areas [1, 2] :

- Games and Sports– Smart footwear is very commonly used in sports and games to enhance the players' performance [7-9].
- Fitness of an individual – It is used in different fitness activities such as walking, running, jogging, cycling or doing exercise.
- Health care and Medical – It is used for diagnosis of different disease or abnormality in the body. It is also used to maintain the history of different bio-physical parameters of an individual. Smart footwear for diabetes and rehabilitation [18-20, 27-28].
- Industrial and work safety- This is also a prominent area where smart footwear is used to protect the industrial worker from hazardous environment or any safety issue.
- Women and kids' safety – To safeguard women and kids from any unforeseen situation.
- Gaming and virtual reality
- Fashion and life style.
- Assistive footwear for blind persons [4-6, 10-14, 21-26]
- Army shoes [15-17]
- Comforts of an individual and many more.

**Factors normally taken care in smart shoe manufacturing :**

- Selection of suitable sensors
- Sensor accuracy and its reliability
- Power consumption and battery life
- Self-powered sensors
- Comfort and wear ability
- Durability and water resistance
- Data transmission, storage and analysis and feedback mechanisms
- Suitable tools and techniques for decision making and control
- Integration with other devices and systems

**Challenges and issues related to smart footwear :**

- Reduction of power consumption and battery life
- Comforts and wear ability – Integration of sensors and electronic circuits can compromise comfort and wear ability.
- Withstand with environmental conditions- dust, dirt, water, mud, humidity and temperature variations.
- Data accuracy and reliability – This is mainly dependent on sensor selection and their limitations.
- User interface and feedback – Quality of smart footwear and customer satisfaction is also an important issue in its development.
- Seamless Integration is also an issue.
- Cost and affordability
- Privacy and data security
- Calibration issues related to sensors

- Lack of national and international standards
- User adoption and awareness
- Balance between fashion and functionality
- Sensor performance may be affected by humidity and sweat.
- Weight of smart footwear
- Compatibility with different footwear types

**Conclusion and Future Scope**

The paper discusses the history of smart footwear and companies manufacturing globally. Different learning methods and the important blocks and their functionality of smart footwear, different sensors and their working principles, issues and challenges are also discussed. Smart footwear enables the doctors to follow up and analyse the patient's physiological data history during his absence, helps the sports persons to improve their performance, assist people having blindness or dementia, enhance women and kids' safety and security. Orthotic smart footwear can prevent the ortho problems well in time.

The smart footwear is still evolving, and we can expect more exciting developments in the future. The real time monitoring can be done in future with the help of smart footwear.

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INTERNATIONAL UNION OF LEATHER TECHNOLOGISTS AND CHEMISTS SOCIETIES
(www.iultcs.org)

# NEWS RELEASE FROM IULTCS

## IULTCS PROUDLY PRESENTS THE OFFICIAL LAUNCH OF OUR NEW SCIENTIFIC NEWSLETTER — NEWSLEATHER !

Get ready to dive into the future of leather science. Whether it's groundbreaking innovations, sustainability practices, or the latest regulatory updates, news leather is your ultimate source to stay informed, engaged, and ahead in the leather industry.

Why should you subscribe ?

- Exclusive insights on technological advancements in leather production.
- Updates on sustainable leather practices and the global impact.
- Be the first to know about research breakthroughs and industry standards.
- Totally free for every member of our incredible leather community!

It's time for us to come together, as leaders of sustainability, and shape the future of leather.

## IULTCS YOUNG LEATHER SCIENTIST GRANT PROGRAMME 2025 ANNOUNCED

IULTCS and the IUR Commission headed by Dr. Volker Rabe are extremely happy to announce that the IULTCS Young Scientist Grant Programme for 2025 is underway. The details are as follows and further information can be found on the IULTCS website https://iultcs.org/ or by contacting the IUR chair Dr. Volker Rabe (Volker.rabe@tfl.com)

**Background :**

The IULTCS is committed to further intensifying co-operation between the individual member societies and to providing a platform to promote the latest innovations in the field of leather science and technology. For this reason, the latest findings in this field are shared with a broad public in the form of presentations at the global IULTCS congresses organized every two years by a regional member society.

In addition, the IULTCS would like to make a more direct contribution to leather research through its IUR Commission and at the same time provide additional support for younger scientists. For this reason, the Young Leather Scientist Grants were created to recognize outstanding achievements in three different categories by individual young scientists. The grant is freely available to the winners. Optionally, the winners are also given the opportunity to present their award-winning work at an IULTCS congress.

INTERNATIONAL UNION OF LEATHER TECHNOLOGISTS AND CHEMISTS SOCIETIES
(www.iultcs.org)

**Award categories**

1) **Basic Leather Research Grant** – Sponsored by TYSON Leather (1500 €)

- Basic research in collagen and/or leather.
- Analytical method development
- Innovative leather processing or new chemicals thereof
- Hide/skin preservation.
- Tannery waste treatment
- Environmental studies applied to the tanneries

2) **Professor Mike Redwood Sustainability/Environmental Grant** sponsored by Leather Naturally (1000 €)

- Innovative environmental techniques e.g., wastewater treatment, solid waste and emissions
- Studies on sustainability leather processing
- New chemicals for leather processing improving environmental impact e.g., carbon footprint and/or water management.

3) **Leather Machinery/Equipment Grant** sponsored by Italprogetti (1000 €)

- Innovative new machinery for leather processing
- Simplification and/or rationalization of leather production
- Increased efficiency through e.g., energy savings

**Admission requirements for applicants**

- Not older than 35 years (date of submission)
- Student or Scientist on a university or a leather school
- Having an advisor at his/her institution

**Application Procedure :**

The Document Form must be completed and saved as one PDF file only and identified as: *YLSG_year_applicantname*.

- ❖ Leave one empty page between the documents.
- ❖ Applications must be assigned to one of the categories.

The complete application form to be submitted to the IUR chair Dr. Volker Rabe (Volker.rabe@tfl.com) must have the following parts :

1) Application Form
2) Research Project Plan. Include Title, Introduction, Objectives, Methods, Hypothesis / Expected results, benefit for the local and/or global leather industry in one sentence and Literature. Maximum 3 pages.
3) Curriculum Vitae of the applicant (one page)
4) Curriculum Vitae of the advisor (one page)
5) Letter of recommendation from the advisor (one page)

Note : Applicants that do not follow the above rules will have their submission rejected.

**Award criteria & Selection :**

The application will be evaluated and ranked based on the following criteria :

1) Clear aim of the research
2) Methods
3) Expected results
4) Originality of the research
5) Correct citation
6) Global or local benefit of the research

The qualifications of the researcher and the advisor will also be evaluated. The Selection Committee has not been established; it will be made by renowned scientists on the field.

**Timeline :**

- September 2, 2024, launch the YLSG 2025, with rules on the IULTCS web site and press release
- November 30, 2024, deadline for submissions
- January 30, 2025, winner selected and press release
- February 15, 2025, payment of the award and sending the IUR/IULTCS certificate

**Report :**

The winners must complete a final project report which has to be submitted to the IUR Commission Chair by February 28, 2026.

The report should be accompanied by a one-page review of the project by the advisor and will be posted on the IULTCS/IUR web page.

*(Email from Julian Osgood - 10/09/2024)*

# 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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# REPORTS

## TALK SHOW ON PEACE

ILTA, a Member Society of IULTCS, is working as a non-profit making voluntary organization among the leather fraternity of India since 1950. Its tireless efforts have endeared itself among the peoples concerned with leather fraternity throughout the country.

As a part of its various public awareness programme, ILTA organized a "Talk Show" on 3rd September, 2024 where Mr. Utpal Chatterjee, Global Ambassador of Peace, A Global Peace Icon & Former Sheriff of Calcutta, delivered a lecture on the topic **"Peace at a Premium"**.

***: Quote :***

I'm so happy to see so many smiling and dry faces awaiting such a great future.

Mr. President, Mr. Principal, Mr. Secretary, The one and only Ratan Choudhury, the HRD coordinator.

And most important components of this afternoon, which is gradually turning into evening. The bright faces of IMTA. Boys and girls, you are the people who invigorate people like us.

Only on, only the other day I turned 75, and having seen the likes of the great J. R. D. Tata, uncle of Ratan Tata, the great Rusi Modi, arguably the greatest man in the industrial relations in the world, into the late age, with Rusi Modi I remember spending virtually the last but one day before he left us all. I was like a son to him. It was such a great experience being with such wonderful, great Indians.

They thought like Indians, they behaved like Indians, and they made India proud. J. I. D. got that, got the Bharat Ratna Rusi Modi got everything but the Bharat Ratna. Meeting such great people, and being a person who grew up in their presence virtually, are just the right people to endurance.

Now, I am very concerned, very involved in peace building, as they now say, all over. Whether you go to Malaysia, whether you go to Moscow, whether you go to Kiev in Ukraine, whether you go to Latin America, or whether you are in good old London, they will continuously be speaking on peace building.

Peace is no building. Peace is what can keep us alive. Peace is what can keep us stable. Peace is what can give us sustenance. Peace is what brings such inquires. Peace is when the economy prospers. Peace is when people don't cope. Peace is when people don't worry about the depleting water resources. Peace is a lot of things, but peace is not war.

And war can never bring in peace. If there's a pause, during the war, don't mistake it to be peace.

The question is, I intended to start a little differently. But then, let me carry on the way I started. And why peace is indispensable, completely and only indispensable.

I don't know, among the boys and girls, how many of you have read good literature when you were back in school, or even after school, during the interim time, before you came and decided, to enrol your names here in this great institution. Did you do a little bit of reading of literature? Be it English, be it Bengali, and be it Hindi.

Did you do some reading of creative writing? Be that as it may. Let me start by quoting to you just an excerpt from a huge, enormous sentence. It was the best of times. It was the worst of times. It was the epoch of belief. It was the epoch of incredulity. It was the season of light. It was a season of darkness.

Imagine what a bundle of contradictions this little excerpt was.

This was written by the great Charles Dickens. And he started his novel, A Tale of Two Cities, London and Paris. With these words. And, a day in a few centuries, remember, had the French Revolution as its backdrop.

Now, why am I speaking about the venture dilution? Venture Dilution was something that happened on the 14th of July, 1789 because the French of dilution people realize being Louis the 14th and Maria and her next is Queen, were ruling and they had no idea of the realities on the ground. The ground realities were not known to them.

We in India, right now, in 2024, have arguably the largest and most vibrant democracy in the world. In 1780s, France had an aristocracy running there. The lords and ladies, the rich and the famous were the ones who were running the country. But they're not doing justice to the mass. And the masses comprise poor people.

**Relatively poor people.**

In fact, it's now become a joke, and cliché, in literary circles, that somebody had once come and knocked on the Queen's door. With a temerity, who knocked on the Queen's door. The Queen shouted from inside, what is it? She opened the door, and there was this man with his head bowed. Your majesty, people are shouting outside.

Why? Because your majesty, they say, there is no bread. There is no water. No bread. No bread. So what? She slammed the door by saying, ask them to go and eat cake instead. There was just no feeling. So, you see, there are a lot of people in Europe. Europe is a, like a large country. A country like India, in fact, very strictly speaking, India, for those who are better adept at geography, we are able to answer, Europe.

India is a little bigger than Europe. And if you were to look at the ancient India, do remember, India had no neighbours. Sri Lanka was part of India. Nepal was part of India. Burma or Myanmar was part of India. Bangladesh was part of India before 1947. Afghanistan was part of India. India was huge. In any case, whatever is left of India is almost as large I personally feel, is larger than Europe.

But in any case, in Europe, people were concerned. They were not so creative people. We have heard of so many of them. From the Renaissance period, we have heard of people like Da Vinci from Italy. Michelangelo. You've heard of Raphael. You've come to England and you've heard of people like Wordsworth, Keats, Shelley, and earlier, William Shakespeare.

The list goes on. But in the 1780s, you had a 19-year-old William Wordsworth who paved the way for romantics like Keats and Shelley. People like him, the young musical composers, we had the Mozarts and the Beethovens around that time. There're so many people. All of them moved to Paris to see how the Bastille would fall.

And the falling of the Bastille would be the success of the revolution. To cut a long story short, the Bastille fell on the 14th of July. And after that, there was such celebration. People felt justice had been delivered. But was it? Yes, the government was ousted. A new government, a kind of a make shift government is formed.

Not an elected government. The government of chosen people who were thought fit to lead. In other words, put in place with responsibilities. But then, what never ceased to stop, never stopped, was the guillotine.

I'll tell you what a guillotine is. It's a huge, I think the height must be nearly 50 feet, if not more, tall. A blade, huge blade, almost a gigantic axe, and, by a particular lever, when it was pulled, the guillotine would fall on a person whose head would be below, and it would cut.

The guillotine falls with a huge weight. And the head goes rolling. Like a ball. Hundreds and thousands of heads rolled. That marked the success of the French Revolution. That was violence. How that could be misconstrued as peace? But the problem was, the celebrations that followed the French Revolution became muted too soon. People like William Wordsworth became depressed, very sad. Because after that, even on suspicion, people pulled out people from houses and everybody was guilty. The guilty went on. Non-stop, day in and day out, even in the night. And that after French Revolution was called the Reign of Terror.

I'm spending a lot of time deliberately on the French Revolution, primarily because what is prevailing indirectly in the world today would remind you of the Reign of Terror. In various other forms.

**I'll prove it to you in a minute.**

When that happened, to cut a long story short, all people like Wordsworth returned home. Wordsworth went back to England, to the Lake District in England, which is now a great tourist attraction. And he went and settled down, in his sister Dorothy's cottage. A cottage is a beautiful cottage, and if someday you go to England, and you go to Lake District that would be a, you would feel you're almost arrived in heaven.

No wonder Wordsworth loved nature so much, because nature never looks more beautiful than it does in places like Lake District. Now when he went there, Worse work, it took him some time to get out of the shock of what he had witnessed in practice.

So, he sat down, and he wrote a poem.

If my memory serves right, the first few lines of the poem ran like this. The world, listen to me carefully, please. "The world is too much with us. Late and soon. Getting and spending, we lay waste our powers. Little we see in nature that is ours. It is a solid rule. The world, and we are with the world all the time."

We are only getting and spending, materialism.

And we live with the past. We, God has blessed us when he sent us to this world with plenty of, he gifted us with plenty of knowledge, wisdom or the ability to learn and be wise. He gifted us with so much. The power of observation. It does not, it did not just send us to eat and drink and be merry. It gave us a lot of gifts.

The problem is, we don't use those gifts. Which is why today, not far, and where you are, from Paribesh Bhavan, where you know all learn about environment. Today, one of the most major concerns of the United Nations is environment. So, we don't look into the nature that is ours. Nature is two pronged. Nature meaning the nature that you see, the green that you see. And nature does not just agree.

Everything, the mountains, the seas, everything is nature. And the nature that is ours means our nature, man's nature. We don't see who's that? Who's happy? Who's feeling terribly morose? Who's feeling awful? And we do nothing about it. This is a fact. Ladies and gentlemen, I did not want, I have no intention to come here and give you a very serious, high-grade topic, which is very possible for me.

I can't do it. I want to tell you something that you will understand. You all know, since childhood, all of us, even the very senior, established, esteemed faculty and the gentlemen who are sitting in front, were also once children, like I was a child, once upon a time. And what did we love as children? Of course, we loved being loved.

By our parents. By our elders. True. But what did we love? We loved to listen, especially before we went to sleep. A good story. Even today, even in school, if you remember, besides the serious classes, if the teacher ever told you, now I'm going to tell you a story, ah, there was something inside you that became very happy.

You think of a story. Now let me tell you something that was not a story. It sounds like a story.

In 269 B. C., you do your own calculations.

We have, at least according to me, the greatest emperor that India had. Ashoka the Great. You know the Government of India symbol, the Ashoka Chakra. Ashoka the Great, from the Chandragupta Maurya Empire. In 269 what happened? The Kalinga War. Where is Kalinga? At the coast of Odisha. Here was a war to settle who will take the coast at, the coastal areas.

It was a terrible war. It was one of the most horrific wars in the history of mankind. At one point in time, Ashoka was invincible. He was undisputed leader of the entire India. And as I told you, we are no neighbours around India. There was just India, and after that, there was China, and the other Asian countries that you see today.

Ireland, for instance, has been one country that was never invaded, ever, in its history. And the Ashoka, the great, In the middle of the war, in the afternoon, suddenly his attention was diverted by one of his left handers. He said, what's happened? He said, just look. Look. He pointed to the river. The river had turned its colour into red, purple red. How could a river change its colour? The river had not changed its colour at all. The river was the same. The colour changed because so many people died, so many soldiers died, and all the young widows, they came to mourn, they came and they had the husband's head in their lap and their blood rolled into the river and the river's colour changed.

Ashoka looked, he stared, and he couldn't believe it. He had been in wars before. We have seen bloodshed. We have seen the dead before, people dying before. But this was something that transponded. Changed completely. Now, the

matter is very simple. When you saw the red, the colour red. Ashoka was transformed. He took his large sword, huge sword, and just threw it away. That was the end of Ashoka being in a war ever. What did he do? I'll cut a long story short.

Ashoka sent thousands of emissaries all across Asia to spread the word of Buddhism. What did Buddhism stand for? Peace. See, I'm coming to peace, and I'm coming, taking other routes to come to peace, just to explain to you, because Buddhism has no distinct for guidance of any kind. Everything, you read the Dalai Lama's writings, or if you listen, read his speeches, you'll understand.

How much emphasis is given on peace, and why not? The whole Asia became Buddhist. Later on, there's another story that China, which is also all Buddhist most of China, The communist China became communist, or Maoist. But then the rest of Asia stayed Buddhist. Even Laos during difficult times.

Cambodia, during difficult times. Vietnam, during difficult times. They are still all Buddhist.

But the fact remains, peace, as is written here, is my language, is a tecrimia. It's very expensive now. It's very hard to get. Whatever is hard to get, is very expensive. Expensive, not in terms of rupiah, ana, paisa. Not in terms of dollars, pounds. It's or the Euros, or Euros. It is just not fair. Do you know, India is a very peaceful country?

But do you know the rank of India? World peace. Any idea anybody? You know the rank of India. There are over 200 countries in the world. What is the rank of India? In the region of 124, which is much better than what it was two, three, at least four years back. India was at 130, beyond 130. Now 124.

This is improved. It'll improve more, but the fact remains, even as I'm talking to you. There are at least 64 places in the world where there are conflicts. Present day world.

The lady when she was reading my resume mentioned that I had interviewed Mikhail Gorbachev. You have all heard of him. He was one of the greatest men at least that I have seen and history would recognize. It was Napoleon Bonaparte, it was the first person who changed the history of Europe, or paved the way for what you used to see in Europe, let's say, last century, when Swami Vivekananda was there.

Before he went and after he left Chicago.

That was Europe. That was paid by thanks to Napoleon. The next man who changed the cost of European history was way back in 1991. A certain man whose name was Mikhail Gorbachev, he was the president of the U-S-S-R. U-S-S-R, meant the Union of Soviet Socialist Republics. Republics in plural. Mind you, that's very important.

Why is there a war today between Ukraine and Russia? There was a, when it was USSR, it was Gorbachev. Around that time, the president of the United States was Ronald Reagan. The Prime Minister of Britain was Dame Margaret Thatcher. The Chancellor of Germany was Helmut Kohl. These people used to get together for their own meetings quite often.

Now I went to Stockholm for the disarmament, nuclear disarmament summit in 1988 in January when the temperature outside was minus 35 degrees centigrade. All right. Around that time, I worked very hard. I was much younger. I could do a lot more like what? I could do a lot, use my brain much more. I could skip lunches, skip dinners, and keep sending reports.

The man who noticed it was Mr. Arbatov, who was a chief advisor to Mr. Gorbachev. And Mr. Arbatov and I became very friendly. For some reason, he took to me. I'd gone with our then Prime Minister.

When we got close,

I told Mr. Agartal, I have but one request. Yes, you tell me. The way a Russian would speak English. You tell me. He said, I would love, I know it's very difficult. He doesn't meet western journalists one on one. I would be very happy to meet, I knew it was impossible, I was asking for the moon.

I said I would love to meet Mr. Mikhail Gorbachev. Ah, you want to meet Mr. Gorbachev? I said, yes.

He looked up. And then he looked down. Yes, I've seen you. I've seen you the way you walk. Very good. I will tell you, where do you stay in India? I said Calcutta. Oh, you stay in Calcutta. Good. Where do you go back? Within two weeks, the Consul General of Indian Calcutta is going to meet you.

I will not say anything more.

I'd almost forgotten about it. And then I get a call. How do you know my number? From the Russian Consul General. Miss Chat G. I said, yes. This is so and I'm the Russian Consul General. When would you be free? Would you be free today? Lunchtime? Yes, anything in particular? Please come, let us have lunch.

Talk over lunch. And, within three months I'll be free. I was flying to Moscow. It was bitterly cold. And I met Mr. Gorbachev. Mr. Gorbachev, when I met him, he was so friendly, very nice, a no-nonsense man. He was a tall man. He was close to 7 feet, almost.  Must be 6'11 He had a moustache. A large moustache. A barrel of a moustache. If I asked, I had gone prepared. If I asked Mr Gorbachev a question, he'd There's no depression. This is a garbage job. Answer. And it took 8 minutes to answer each question. 8 to 9 minutes.

I was taking down, notes. But, before I could take down notes, it was a tall man. Who answered the eight minutes of Mr. Gorbachev's answer in one and a half minutes. This happened twice. Then I stopped. I said, Mr Gorbachev, please forgive me. I was as polite as possible. Please forgive me.

I asked that question. You take eight or nine minutes to answer. And this gentleman answers it in one, one and a half minutes. I don't know what he's editing. He edits the whole thing out. How can I possibly carry an interview into the garbage? What would it feel like? My question and your answer in one sentence.
A short sentence. Would it be fair? There's a garbage truck looked at me. And I looked at him. And he broke into a smile. You know what I did? This amazing personality walked one step towards me. He was on that sofa; I was on this sofa. He just came, put his arm around me, and he says, you are young. You are impatient.

But how do you know that he has not said the whole thing? Mr Gorbachev, let's cut that out.

When you meet Mr Reagan, I've seen, both of you walking alone together, just two of you. I've seen you and Mrs Thatcher. I've seen you and Mr Kohl. You speak in English, so why can't you speak in English to me? Don't worry when you go out of this room after the interview and after we share a little bit of something else we need some tea and snacks, you will get the entire transcript and I got the entire transcript. Do you know what he did?

The bunny you were afraid of? Because of his approval, the RN, Russia was open. The Cold War with the United States ended.

And not only that, all the plural, the republics became actual republics. Earlier, we were all under Soviet rule from Moscow. So, Ukraine got its sovereignty, Estonia did, Georgia did, Latvia did, so many of these countries did. But Putin, Who in East Germany was an SS man, an ordinary constable who looked into personal lives and took negative action, became close to Jensen, who was Gorbachev's successor, and climbed the step very high very soon.

And he decided, he would change the Russian government and Russia by capturing all these republics that had gone away. That is why he waged a war on Ukraine. The war with Ukraine is over. Today we have got the Gaza. Something that was started by the Hamas. You have wars going on everywhere. The situation in India is not very good.

In Manipur, you have got the Chinese throwing, sending drones. There's Chinese intervention. Pakistan is a constant trouble. Myanmar is helping the Chinese. Myanmar is a terrorist outlet. Everywhere you have this. If you read, if you enter your Google, if you search my name, it's called "Chatterjee comma journalist".

You'll find plenty, if you want to know something more about me. You'll find plenty, including photographs. But, if you go there in Google, and search, you will have everything. Everything that I'm telling you. I don't read Google. After three paragraphs, my head becomes a bundle of confusion. It's much better to do the homework in a different way.

I do it early morning, till very late in the night. Sometimes I go to sleep at three in the morning. I write. I'm writing a book.

I wake up sometimes very early. At around 4.35, because at that time, the world is totally quiet and at peace, and it allows me to do plenty of work. Mental and cerebral work. Ladies and gentlemen, those who know me relatively well, my friend Pranav here for instance, they know I'm an incurable optimist. I see good in everything and in everybody.

If I lose my cool over somebody, I keep it to myself, generally. But rest assured, I'll be the first person to go and shake hands with that person. And help him. No matter what the situation. Today is the age, we must remember, never to compromise with the truth. As a person, be a peaceful human being. Learn to love peace, honour peace by setting an example.

Try to help those who are not as well off as you. Try to keep a pleasant disposition. Keep smiling. Before I came up, I was in the principal's room. I tell you, the six of us have a marvellous chat, as if you had known each other for donkey's years. That is how you should keep yourself. Be pleasant, be friendly.

It's infectious. It spreads. Nobody will ever misunderstand you.

Try to set an example, let your example rub off on others. If only our leaders all over the world, if 56 places are having conflicts, multiply that by two.

Those many countries are involved. So, multiply that. Think of the leaders of those countries. If they could also be a little friendly. Most of what is happening today and leading to frictions, mental, physical, is because of the fact that there is so much of hate being spread. Hate is speech. Hate in declarations, hate in threats, and hate everywhere.

Let us cut that hate out. Let us try and bring others closer. That is what civilization is all about. When you read about the Indus Valley Civilization, when you read about the Mesopotamian Civilization, when you read about all the old civilizations. And the oldest civilization was discovered just the other day.

In the 70s, the excavations were first started by the French archaeologists, and then they came back in the 90s. And the civilization is called Mehergarh. Look up here on Google, MEHERGARH. There you have it. It is so advanced. It is believed how advanced it was 13, 000 years ago. People used to be buried after they were dead.

There was no religion. The French archaeologists came to do a lot of deductions. The port was almost as modern as today's ports. Surface transport, Magnificent.

Do you know when the Root Canal Treatment was discovered? 13, 000 years ago. During the Mehergarh civilization. Equal to the solar circuit of life. Aren't we doing a good job? Let us be determined. In our own respective words, let us bring in peace. Let us bring in peace.

When Obama became president, nobody gave him a chance. He became the first black man to enter the White House. And he said, what? We can! And they did. They could. We can.

So, with me, can all of you repeat? We can. What is this? You didn't have lunch today? No lunch? No water? We can. We can. But of course, we can. Thank you so much, everybody.

***: Unquote :***

## SNAPSHOTS

# Classification of Footwear - Sports Shoes *(Part-1)*

**Debabrata Chakrabarty**
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Shoes play an important function in our physical activities. They provide comfort, necessary support and protection to our feet. Though the distinctive feature between running and walking shoes is confusing. The design does not make much of a difference, but structure and features make a significant difference.

Energy consumption and muscle load are the two specific and related pivoting points that differentiate Walking, Jogging and Running which are the means of transporting our body with our own physical or muscle strength. Each of these are quite distinguishable. Jogging and running is the pace difference respectively.

Scientifically, we understand that :

**Walking** is slowest and easiest form of transporting our self and consumes half or even lesser energy than that of running.

**Jogging** has though more pace than walking yet burns lesser energy than our fastest walking speed.

**Running** is the most efficient and fastest mode of transporting our body by our self. It is a constant challenge to the body to maintain the pace.

Shoes need to be specific for each of the athletic purposes :

**Walking Shoes**, need not be as light and breathable but they must provide good arch support. A high arched on your foot, most probably have lesser natural shock absorption. In case of flat foot, we have less arch support which causes muscle and joint stress. Therefore, walking shoe should have more cushioning relatively and stability. Furthermore, their soles provide excellent traction and stability throughout heel-to-toe motion while walking.

- Walking shoes have more flex and blend.
- Walking shoe heels are more beveled.
- Walking shoes has lesser stability as it's not as necessary.
- Walking shoes are always heavier than running shoes.

**Walking shoe**

Jogging is slow running which sometimes is slower that top walking speed. It consumes lesser energy consumption than normal or fast running and very less compared to sprinting.

Walking shoes can be used for short and slow running but a normal running shoe are better to use.

**Running shoes** are lighter in weight and has more cushioning in the soles, particularly in the heel and the toe. Since running is more intense activity, runners exert more energy. Since feet get hot due to rise in body temperature while running, mostly running shoes are made of mesh for free breathability and reduce the shoes' weight substantially. Running shoes are specifically designed to support our feet's forward motion with attention to resulting impact and pressure reduction from running. Running shoes usually have thicker soles and supportive features, reducing the impact on joints.

**Sole :** Running shoes have a stiffer sole.

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**Heel :** Running shoes have thick heel wedges to provide more cushion. A thick heel when walking can actually cause tendinitis or shin splints, and can even cause a walker wearing a running shoe to trip.

**Motion :** Because the rotation of the foot is more exaggerated when running, most running shoes offer motion control to keep the foot more neutral.

**Weight :** Running shoes are lightweight for moving, hopefully, faster.

Spike Shoe Running Sneaker

**Differences between Walking Shoes and Running Shoes**

**Cushioning**

Cushioning is crucial when choosing running shoes. Cushioning absorbs shock and reduces the impact on joints, making them safe for long-distance runners averting injury. Various cushioning systems are available – EVA foam midsoles, air and gel cushioning etc.

Walking shoes also need cushioning as walking too involves much impact. Thus, adequate cushioning has to be there for providing comfort and shock absorption.

**Arch Support**

Arch support is an essential factor when selecting walking or running shoes. Arch support provides stability for the arch area of our foot, helps reduce fatigue and discomfort.

Running shoes specifically features two types of arch support: medial arch support and lateral arch support. Medial arch support provides support for the inside of your foot from below the arch of foot upwards, while lateral arch support supports on both sides. Both helps minimizing direct pressure on feet, improves foot balance and stability.

Arch support for walking shoes is not of much significance, though it is beneficial providing comfort or in case of an existing injury or abnormality – temporary or permanent. Generally, walking shoes have moderate arch support and are constructed with more flexibility than running shoes.

**Heel Height**

Heel height is the difference in height between the heel and forepart of a pair of shoes. It is an essential factor to be kept in mind when selecting running shoes as it determines the volume of cushioning our foot receives during each stride. Running shoes have lower heel height than walking shoes, generally 4-8 mm. Running shoes for sprinting has metal spikes to have better traction and avoid slipping/ skidding.

Walking shoes usually have heel height of 10-12 mm, which minimizes impact when walking, making them apt for walking.

**Flexibility**

A major distinguishing factor between walking and running shoes is flexibility. Running shoes are quite rigid, providing a platform for your foot to thrust up from during running, providing stability in each foot for with maximum efficiency and power in each stride.

Walking shoes are constructed for more flexibility, imparting a comfortable fit, a natural move to our foot while walking and minimizing risk of injury. It has soft midsoles that cushion your feet and allow them to bend and flex easily during walk.

**Durability**

Durability is quite important a factor to consider. Running is high-intensity activity and therefore, running shoes are prone to wear and tear over time. Therefore, more durable materials like reinforcement in uppers and rubber soles are used which can withstand the usage.

Walking is low-impact activity, thus walking shoes features less durable materials. Though they provide a comfortable fit and good arch support, most walking shoes are not as durable to withstand high intensity activity like running.

**Basketball Shoes** are quite similar to Tennis shoes as they need to absorb sudden, short burst of movements. Thus, they are lightweight, flexible, supportive with heavy cushioning that reduces shocks, impacts and vibrations that may cause shin

pain. The bottom pattern on the soles at the tread is specifically designed to provide excellent grip on the smooth and hardwood court. An excellent arch support is a necessity for these shoes for immediate absorption of any impact preventing pain as well as injury.

These shoes not only provide traction to the foot but also acts as a protective gear for the foot, ankle and knee without any compromise on comfort and durability else they may cause health issues. Experience of the game, physical built and style of game of the player are the factors to choose the correct pair of basketball shoes.

Basketball shoes is made of such as leather, synthetic, or mesh. Leather shoes are most durable and offer best support but are relatively heavy. Synthetic and mesh shoes are more breathable, lighter in weight but may not be as durable.

Basketball shoes are prone to lot of wear and tear, so it is pertinent to choose durable shoes. Shoes made in leather with reinforced stitching are the most durable ones and withstands the impacts due to constant jumping, running, and cutting on the court.

Basketball Shoes

**Cushioning :** Basketball involves extensive running, jumping and landing, so a shoe that can absorb all these impacts is required to protect our feet and joints. We must look for shoes with thick soles and good cushioning for good shock absorption.

**Traction :** Good traction is essential for any basketball shoe for both indoor as well as outdoor courts. These shoes must have excellent grip on the court and prevent slipping or sliding.

**Breathability :** Basketball shoes must be breathable to keep your feet cool and dry while playing. To facilitate the same in the shoes, also minimize sweat and odour, the shoe upper must be well perforated or made of mesh that allow air to circulate freely.

**Volleyball Shoes** are different from running and basketball shoes due to constant lateral and vertical movement of the players. While the upper is quite similar the sole consists of two parts – a midsole and a rubber outsole.

The upper of the shoe is made of nylon or mesh material keeping lightweight and providing breathability that helps reduce moisture and heat keeping the foot cool and dry.

The rubber outsole provides excellent traction on the floor and foot that minimize foot injury and are made of non-marking high quality rubber.

The mid-sole is to supports the ball area of the foot as the game demands quick movements and jumps during a game. The mid-sole is made up of a foam, gel or air cushions for flexibility and strong support.

The characteristic features of the overall shoe remaining same – Cushioning, Stability with ankle support, lightweight, and high breathability that allows easy repetitive and quick movements. The other notable points are optimum fit, arch support and stable counter.


Volleyball Shoes

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

## TN CM LAYS FOUNDATION STONE FOR RS 1,000 CR TAIWANESE DEAN SHOES FACTORY IN ARIYALUR


In a major fillip to the industrial growth in the state, Tamil Nadu Chief Minister M K Stalin on Friday laid the foundation stone for a new manufacturing unit of the Taiwanese company Dean Shoes at the SIPCOT industrial park, Jayankondam, here. The footwear major Long Yin Investment (Dean Shoes) will invest Rs 1,000 crore for the project in the industrially backward district and it will generate employment to 15,000 people.

This investment would further establish Tamil Nadu as a global hub for non-leather footwear manufacturing and would transform more districts like Perambalur, Ranipet and Ariyalur, driving distributed growth across the state, Industries Minister T R B Rajaa said. “More importantly, 90 per cent of these jobs are for women, a key pillar of the Dravidian Model,” the minister claimed.

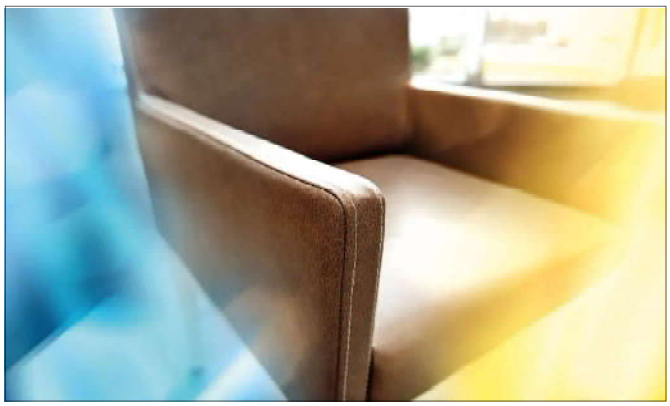
“With global brands like Nike, Crocs, New Balance, Adidas, Puma and many more now Made In TamilNadu, we are a top global footwear hub and now are home to more than 32 per cent of entire India’s footwear manufacturing sector,” Rajaa said in a post on the social media platform ‘X’.

“Yet another #NonLeatherFootwear major in #TamilNadu! Yet another #TNGIM2024 MoU has now turned into an investment!” he said in the post. The chief minister presided over the ground breaking ceremony in which vice chairmen—Otto Yang and Rich Chang, state ministers, and officials participated.

Stalin, on a two-day visit to Ariyalur and Perambalur districts, laid foundation stones for 53 new projects worth Rs 120 crore and inaugurated 507 completed projects established at a cost of Rs 88 crore on the occasion. He distributed welfare aids amounting to Rs 174 crore to 21,862 beneficiaries.

*(economictimes.indiatimes.com – 15/11/2024)*

## NEW TFL COLOUR TRENDS CATALOGUE SPRING -SUMMER 2026



TFL has released its new TFL Colour Trends Catalogue for the season Spring Summer 2026. In the catalogue, TFL presents the colour trends for leather garment, footwear, accessories and for the upholstery industry.

The colour trends are divided into “Wearing” and “Living”, devoting a section to each within the publication. Wearing comprises inspirations and colour trends for garments, footwear and accessories. The Living section features all colours that will decorate the season’s interior designs.

In “Wearing”, we introduce a new sentimentality and elegance. Neutral shades, beiges and greys return to leather in general, from goatskin to Nappa, and even nubuck, in a fresh colour palette and in water-repellent version. Full-grain leathers see a forceful return to the 3D theme, enhanced by removable finishes. Moreover, bright shades dominate the mood of the season.

The 1980s provide the inspiration for pearlescent and metallic finishes, antiqued with contrasting waxes, glossy wet coatings and glitter varnish. The washed-leather look is still very much alive, both in the full grain versions and in nubuck surfaces.

In “Living”, we will unlock the secret of “comfort”, an essential characteristic for any kind of furniture. Global players in the home furnishing sector see great advantages arising from the use of non-uniform natural leathers with genuine characteristics.

Free nature is the main theme of each collection, and the propensity to live well influences architects and interior designers to choose leathers that are extremely soft to the touch and have neutral shades, “slow washing” aspects and pouffes in all shapes, with dollaro and deerskin grains.

Homes are being designed to integrate nature and technology, with ample space for stylized and functional benches and chairs covered with impregnated splits. Being confident that the TFL Colour Trends catalogue will assist you in taking decisions regarding colour trends, we wish you a happy reading. The TFL Colour Trends catalogue is available now.

*(leathermag.com – 28/10/2024)*

## IS PROMOTING LEATHER SUSTAINABILITY THE RIGHT MOVE?

Mike Redwood, Columnist, International Leather Maker considers the leather industry's drive for greater sustainability in the context of changing perspectives and priorities for consumers and geopolitics.

A further shift away from the dominant liberal democratic model of world governance became apparent at COP29 when Azerbaijan's President, Ilham Aliyev, told a climate conference that "having oil and gas deposits is not our fault. It's a gift from God". Large sections of his audience applauded loudly.

Azerbaijan remains almost total dependent on oil and gas revenues and has just announced the intention to expand production. President Trump's resounding election victory during which he dismissed President Biden's climate policies as a "green new scam" clearly shows that large numbers of global citizens plus quite a few countries do not accept that climate change is real or at least serious enough to accept higher expenditure to slow or reverse it. In all major elections in 2024, climate change slipped down the agenda as other issues took priority, and this trend looks likely to continue.

The COP21 Paris Agreement of 2015 set long-term goals to reduce global greenhouse gas emissions enough to hold global temperature increases to well below $2^0$C above pre-industrial levels and pursue efforts to limit it to $1.5^0$C. It became legally binding in November 2016 and 194 states, plus the European Union, signed up. Currently, $1.5^0$C looks like a distant memory with an increasing frequency and severity of floods, droughts and wildfires indicative of what is to come.

This creates difficulty for the leather industry, given the industry wide investment that has and continues in all matters of sustainability. Brundtland's accepted definition of sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" is founded on maintaining biodiversity and moderating climate change so that life is not made more difficult or indeed impossible in the future.

**Leather has to be seen as good**

For leather to divert from its path is not possible as despite much of the negative publicity leather has, in reality, always been a good citizen and servant to society. Leather has been embedded in society's development throughout the 11,700 Holocene years and all good tanneries are tightly embedded in their communities. Yet, at a moment when managing environmental risk is being ideologically classified as "woke", tanners could easily find proudly promoting sustainability counterproductive.

As it happens, selling "sustainability" rather than the product is not a viable approach to marketing. We need to remind ourselves that leather sells because of its properties and its emotional appeal. Telling customers "my leather is sustainable and so worth paying more" will fail. We have known for a long time that only a small segment of consumers will pay more for sustainable goods while groups such as golfers and many buyers of luxury goods look first for other characteristics such as technology or uniqueness.

Even before the recent inflation we all experienced, less wealthy consumers were understandably attracted by the price of cheap plastic goods. It is also hard to promote sustainability without suspicions of greenwashing.

A well devised ESG policy remains essential. Albeit the term is much abused, a well-managed responsible business finds it is an important template. It is vital that the leather industry maintain its leadership position in environmental, circularity and governance areas. It is the underpinning of great leather and always has been. It should not be lost.

I wrote only a week or two ago of the need to use the beauty of leather to appeal to the emotional side of consumers, which is so often dominant during purchasing. The question is how to contextualise this within a sustainability framework without being called out for greenwashing or being "woke".

**Features and benefits**

First the features and benefits of the leather must work for the brands, the product makers and the consumers. Features focus more on the makers and benefits are what give value to consumers. Therefore, as well as beauty and basic performance, it may make sense for tanners to talk about their identity within their community – much more significant than just exploiting an historic founding date – and their care for the local and wider environment through management of water, energy and chemicals. These are highly attractive and relatable credentials (as long as they are presented honestly).

In offering true value for money, being able to add the term "meaningful" through the creation of shared values through building goodwill via social or environmental good does make sense. Shared values also arise via the fact that leather is durable and long lasting; but why not move that to trustworthy such as with safety harnesses, or fireproof upholstery which does not require constant reproofing and maintenance?

With leather we have a material that is much more than a material of elegance and high performance. Tanners have always argued that they have integrity, and we should recognise that in many respects that integrity sits within the leather we make. We buy leather for many reasons but keep the article because it is steadfast, it evolves with the owner without making demands, without disappointing. Fingerprints and stains often get remembered as moments of history, shared experiences. It should rarely need repairing but can be if required. It does not pollute the sea with microparticles.

Increasingly, scientific studies show that leather uses resources sparingly and safely and its high qualities as a material in every aspect is part of what makes it a target to copy or replace. In that respect it has been driving positive change. And it always adapts to be relevant. Sustainability and circularity are vital aspects of leather. We should never be shy about promoting them. But in our marketing, we must do it in the right place and in the right way.

*(internationalleathermaker.com – 20/11/2024)*

## TANNERIES TO BE CONNECTED TO JAJMAU CETP


Chairman of the Uttar Pradesh Pollution Control Board, RP Singh, along with member secretary, Sanjeev Kumar Singh, conducted an inspection of the 20 MLD CETP (Common Effluent Treatment Plant) facility at Jajmau. They issued directives stating that the CETP conveyance channel installation must be finalised before Maha Kumbh.

During the inspection, officials reported that out of the required 23,407 metres of conveyance channel, 950.50 metres remain pending. Additionally, 145 chambers out of 417 are yet to be constructed. The officials were directed to expedite the pending construction of pumping stations 1, 2, and 4. A 60-day timeline was set for connecting all tanneries to the CETP conveyance system and chambers. It was noted that notices under Section 33A were dispatched to tanneries regarding these connections.

The Chairman instructed the Jajmau company manager to secure requisite authorisations from the Municipal Corporation, Cantonment Board, and PWD. The rising mainline installation at Jajmau check post was given a 20-day completion deadline. Additionally, consultations with Municipal Corporation officials were recommended regarding road cutting on the 150-foot road.

Kanpur: Chairman of the Uttar Pradesh Pollution Control Board, RP Singh, along with member secretary, Sanjeev Kumar Singh, conducted an inspection of the 20 MLD CETP (Common Effluent Treatment Plant)facility at Jajmau. They issued directives stating that the CETP conveyance channel installation must be finalised before Maha Kumbh.

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*(timesofindia.indiatimes.com – 09/11/2024)*

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

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.

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# Valorisation of Invasive Species - For Leather, Fur, Bristle, Meat and By-Products *(Part - 23)*

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## Nine Banded Armadillo

## Armadillo Carapace Basket

The word "armadillo" in Spanish, literally means "little armour". As many as 20 armadillo species belonging to eight genera, comprise the family of these armoured mammals, some among which are the three, six, seven and nine banded armadillos, hairy, long-nosed hairy, Andean hairy and screaming hairy armadillos, greater fairy and pink fairy armadillos and the largest family representative - the giant armadillo, which possesses 11-13 hinged abdominal and 3-4 neck bands, 80-100 teeth bereft of enamel, two 22 cm long falchion shaped third claw on forelegs, is a metre and a half long from nose to tail, and tips the scales at 18-32 kg in the wild and up to 54 kg in captive condition.

While nineteen of the twenty live in central and South America, the nine banded armadillo, also known as the common long nosed armadillo, first seen in the Lower Rio Grande Valley of Texas in 1849, has been highly successful in its northern expedition, scampering, burrowing and diffusing unrestrainedly, all the way to Illinois, 2380 km away .

The "pocket dinosaurs" are assumed to have migrated from South and Central America through the Isthmus of Panama to Mexico, entering the US, through Texas, and subsequently commencing colonization of areas to the north and east. Since then, the riparian, nocturnal, sedentary, asocial, solitary, antediluvian looking animals, with a pronounced predilection for swamps, have rapidly domiciled in much of Southern USA in the last 175 years (1849-1923), thereby establishing the largest distribution among all armadillos, with a range that currently extends from northern Argentina to Midwestern US.

During the second half of the nineteenth century, European colonists, settling in large numbers in the Lone Star State, are thought to have facilitated the range expansion of the brigandine fortified non-natives, presumably by translocation of some animals during their onward or return travel for trade and commerce. In addition, reduction of prairie fires, subjugation of native tribes, among them Huron, who hunted armadillos for consumption, and clearing of wild bush and vegetation, which had constituted barriers for the expansion of the species, served to simplify and expedite the forward progress of the animals.

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"Metastasis" of the "ninebanders" was further ameliorated by transportation of cattle from Texas ranches to other states by railway. Stowaway armadillos hiding in grass and hay crates, loaded onto railway cars, as fodder for the bovines, scampered away to found new colonies, when the cars were unloaded at their destination, several hundred miles away. Even in present times, the story is no different, in the case of transportation by road. As recently as in September 1991, an armadillo was discovered concealed in a tyre consignment, being carried by a Consolidated Freightways truck, making a 1,921-mile trip to Cheyenne, Wyoming from Orlando, Florida, while another managed to make it to Rochester, Minnesota in 2018, on a truck hauling grain, before perishing as a roadkill.

The "chain-mailed" phalanx diffused north of the US along two major pathways.

Firstly, its range expansion in Texas progressed with the cingulates moving laterally to eastern New Mexico, advancing north into Missouri, Nebraska and Oklahoma and east into Louisiana. The "armada" of the "little armoured ones" successfully negotiated River Mississippi, within the next fifty years to enter the Magnolia State and pressed forward towards Alabama.

Secondly, the 1920s witnessed several instances of intentional as well as inadvertent liberations of captive armadillos in south central Florida by bankrupt itinerant circuses, buskers and street performers showcasing armadillos as unique "tortoise-hedgehog hybrids" Records exist of an unspecified number of animals being set free , in 1924, by a small private zoo , when it closed and fugitives from a travelling circus in 1936. The accidental escapees or intentionally released animals went on to form stable, self-sustaining, free-ranging populations.

By 1995, nine banded armadillos had become well entrenched in Florida, Georgia, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma and Texas. Presence of the species was also reported from, North and South Carolina, Kentucky, Tennessee, Kansas and Missouri.

By 2005, the mammals had become "deep-rooted" denizens of fifteen states, inhabiting 30% of US territory, and continuing their migration, without interruption or break, to be sighted as far north as the southern segments of Nebraska, Illinois, and Indiana and even in Iowa. If the trend of mild winters persists, the non-indigenous creatures are expected to reach as far north as Pennsylvania and New Jersey, to complete a near term hegemony in the US Midwest, although the harsh winters of Minnesota, Michigan, Wisconsin or Maine might prove too formidable for the armadillos to surmount.

The overriding reasons of this relentless expansion by the species are threefold – high fecundity, few natural predators and no inclination on the part of Americans to valorise the interlopers or initiate "invasivorism" - eating the invasive species as a method of population control

At the present rate, northern expansion of the armadillo is expected to continue until the cingulates reach as far north as Connecticut, New Jersey, Pennsylvania and Ohio and all states south of the East Coast of the country.

Further north and westward push of the hard –shelled, long-eared, burrowing quadrupeds is expected to be hindered and thwarted by the punishing northern winters. The animal's grit and fortitude to plough on may be adversely impacted by its non-hibernating nature, insufficiency of insulating fur and body fat and susceptibility to protracted, remorseless cold wave and polar vortex conditions.

These limitations notwithstanding, the northward campaign of the persistent armadillos has now reached Kentucky Dam and Evansville, Indiana, in the east and Omaha and Nebraska in the west. By the turn of the present century, the xenathrans had overwhelmed North Carolina, whereas only five years earlier, they could only been seen in the southern tip of the Palmetto State.

The austral blitz of the "pocket dinosaurs", outside the United States, has progressed southward through Central and South America into northern Argentina and Uruguay, where the caravan is continuing its push into the Southern Cone of continental South America.

Although historically confined to the Southwest, today their territorial range extends from eastern New Mexico in the west to South Florida in the Southeast, from the border between the Carolinas in the east to Nebraska in the west. South Dakota, Arizona and Colorado have all reported occasional sightings. Although there is no substantiation of established populations in these states, authorities are apprehensive of the potential for further expansion in all directions, particularly in the event of mild winters, when the ground is easier for the creatures to dig.

James F. Taulman, of the Department of Natural and Physical Sciences, Park University, Missouri and Lynn W. Robbins, Department of Biology, Missouri State University, in their paper," Recent range expansion and distributional limits of the nine-banded armadillo (Dasypus novemcinctus) in the United States" Journal of Biogeography 23: 635-648 (1996) concluded that the invasive species possessed the potential to establish self-regulated breeding populations from Cape Cod ,in the north east to Nebraska, in the mid-west. If assisted by human interference and intervention, to introduce the animals, west of the Rocky mountains, stable armadillo colonies could come up from California to Washington, spilling into Southern Canada, taking in New Mexico, Colorado and Arizona on the way.

The nine-banded armadillo is about the size of a Pomeranian or Shih Tzu in adulthood. Sleeping for up to eighteen hours a day in subterranean burrows, the mammals become active at twilight, emerging from their shelters to forage, root, eat, burrow and dig with their porcine snouts and three clawed front- and five clawed hind feet.

Its name is derived from the nine pleated and flexible skin bands. The over armour is formed of thickened, non-overlapping discontinuous bony plates, called scutes, covered with horn. The underside has a thick fuzz of coarse hair. A dark-brown layer of keratin with scales of two distinct and different sizes comprises the upper surface of the obligate burrower's shell, directly underneath which lies the osteoderm of triangular or hexagonal, calcium -rich panels, appended to each other by non-mineralized collagen fibres - giving the creature its nickname of "possum on the half shell". Although most armadillos visually appear to be devoid of hair, they do have coarse bristles on the lower abdomen and the belly. The wiry vibrissae are known as curb feelers, because they augment the tactile and cutaneous faculty of the cingulates under crepuscular and nocturnal conditions, when visibility is low.

Armadillo osteoderm consists of corporeally adjoined with connective tissues, glands, muscles and nerves, shaping a dynamic integument system, sentient of and capable of responding to even the slightest changes in its immediate environment. The compacted matrix of bony osteoderm is comprised of hard triangular or hexagonal leathery tiles, connected to one another by collagen fibres, and overtopped by a thin keratinous layer, to complete the carapace. Armadillos are the sole representatives among all extant mammals to bear carapace shells made up of ossified dermal tissue.

In some armadillo species, the armoured surface, both pliable and tensile, is constituted of overlapping, flexible strips, while in others they are securely contiguous with each other, on all sides, forming a large, rigid, leathery and bony outer surface called shield or buckler.

Armadillos are protected by four distinct shields - Caudal or tail sheath, Pelvic or rear abdominal buckler, pectoral or breast shield and cephalic or head guard. The ventral area of the animals is covered in soft skin and coarse, wiry hair. The nose tip, lower limbs and inner thighs are devoid of bucklers.

The shell cannot be desquamated or shed or renewed with a new or larger one. Therefore, the carapace and scutes increase in size, from infancy to adulthood of the animal, hardening optimally upon completion of physical growth.

The shell and exoskeleton deliver the animal, impact and puncture resistance, protection against phenotypic hurt, resulting in notching, scarring, bruising, abrasion, scuffing, scraping, parasitic and insect damage, through bites and stings, as well as from skin laxity arising from moisture associated skin damage due to their protracted subterranean lifestyle.

The exoskeleton also protects the "ninebanders" from all but the largest predators, and opposed to a commonly held belief, the US interloper does not possess the defensive ability to roll into a ball, take a foetal position, and project the bare minimum of surface area to perceived external threat. To escape from dangerous situations, the "Possum on the half shell" unsettles and startles potential predators by propelling its body to first execute a vertical jump, 3-4 feet high, followed by darting at speeds of up to 48 km per hour, although under normal circumstances, it prefers to amble languidly at 0.5kmph, relying on its auditory and olfactory faculties which compensate for its poor vision.

This reflex and strategy, designed to protect itself from danger, risk, or injury, has quite the opposite effect, with the animal jumping or scurrying directly into the fender or undercarriage of a speeding vehicle, resulting in instant death. Although the road clearance height of most modern vehicles enables them to pass safely over stationary armadillos, their impulse to leap and fatally strike the undercarriage of vehicles, results in an alarmingly high road kill rate average of 3.5 animals per 100 km in the US – leading to uncharitable monikers of – "hilly-

billy speed bumps", "Texas speed bumps", "road pizzas" and "Texas turkeys" – steel belted, Kevlar –reinforced car tyres are known to be compromised after going over the particularly hard shell of an adult "Diller".

While most humans can hold their breath for a maximum of two minutes or less, this ability in armadillos in three times greater. They are reasonably good swimmers and can navigate small and narrow creeks, ponds and streams in two ways. They descend to the bottom, retain their breath for 4-6 minutes, and walk across the benthic floor, gripping the soft mud with their curved concave claws, or aerate and distend their gastrointestinal tract, to twice their normal volume, thereby achieving adequate flotation and buoyancy to swim across the water body by paddling.

In the only known instance among mammals, the female nine-banded armadillo always begets genetically identical quadruplets of similar gender from a single ovum., exhibiting a phenomenon known in medicine as obligate polyembryony. In adverse conditions, pregnant females can pause or suspend uterine embryonic development for up to two years, reviving the process when conditions improve. The females of the species can also postpone by as long as 120 days, in- utero embryonic implantation, which when added to the developmental period of a further five months, prolongs the period of foetal furtherance inside the womb, between conception and birth to 8-9 months.

The Florida Institute of Technology, in a path breaking study , discovered, that female armadillos, caught late fall or winter, towards the imminent completion of the 90-120 postponement between fertilization and implantation, withheld delivery of their pups, as long as after 20 months after the last mating season, following which they were sequestered from males.

The unparalleled, "ultra-delayed parturition" is of immense importance to the scientific and medical fraternity in preserving human embryos without cryogenic control.

Being naturally endowed to tunnel by excavating soft soil and humus, a pregnant female delves into the ground, in a secure location, and hollows out tunnels that can be as much as 25–30 feet long, and go over 5 feet deep, with multiple exits, in which she brings forth her quadruplets. For the next thirteen weeks, the conscientious mother nurses her young and ensures the hygiene of the roost as well as that of her offspring, venturing out occasionally to forage at night.

At the end of three months, the inmates leave the confines of their dugout to eat crickets, beetles, worms, small scorpions, insects, larvae, grubs, termites, ants, spiders, cockroaches, and occasionally eggs of snakes, lizards and even carrion or ripe fruit, under the watchful care and protection of their mother, locating their food olfactorily., and moving towards the source of the odour. Upon becoming independent, at the end of 6-12 months, the quartet strikes out on its own.

Although the aesthetically pleasing and hardworking "scrapper" is an interloper in the US, on June 16, 1995, it was designated as the Texas small state mammal, after an election held in elementary schools in the Lone Star State to decide on the State mammal, brought on a tie between the longhorn (which was adopted as the Texas large state mammal) and the armadillo.

Texans describe the placental, industrious omnivore as a "hardy , pioneering creature" with "many remarkable and unique traits that distinguish a true Texan, such as a deep respect and need for the land, the ability to change and adapt, and a fierce undying love for freedom."

Besides humans, chimpanzees, crab eating macaques and managabeys, the prehistoric countenanced nine banded armadillo is the only species which can contract Hansen's disease (leprosy). Although the disease has been eradicated, for most part, in the US, 150 - 250 cases are still reported annually. Mycobacterium leprae, which is also known as Hansen's bacillus, carried by nine banded armadillos has been discovered in 60% of the human leprosy cases in Southern USA, mainly Louisiana and Texas - with patients and armadillos carrying the same strain of the offending bacillus, indicating zoonotic transmission.

Armadillos are widely used in leprosy research because with rabbits, non-human primates, and mice, the xenathrans contract the debilitating disease systemically. Their low basal metabolic rate and low body temperature of 34 degrees C, one of the lowest among mammals, renders them significantly vulnerable to the leprosy bacterium, Mycobacterium leprae. The omnivorous mammals can pass on leprosy to humans through urine, faeces, undercooked flesh and physical handling. As many as 20% of armadillos in the US, are presumed to be vectors for the leprosy bacterium.

While it is true that armadillos can carry leprosy , it is estimated that less than 20% carry it. Even more significant is that only

about 5% of humans are susceptible to leprosy. So, if any human comes in contact with, or eats an armadillo, there is only about a 1% chance (5% of 20%) that a leprosy-susceptible human will contact a leprosy-positive armadillo. Even then, the chance of actually contracting the disease is not particularly high. It is however undeniable, that 1% chance of leprosy is a credible threat.

Apart from leprosy, the burrowing mammals also carry diseases such as St. Louis encephalitis, arboviral disease, leptospirosis and Chagas disease. An estimated one-fifth of the armadillo population in the US, is presumed to be carrying the Hansen's bacillus.

Much of the US, the fourth largest country in the world, has been successfully colonized by the non-native nine banded armadillo, in less than two centuries, primarily because of the following reasons :

- Flexibility of behaviour and diet
- Amenability to substitution of one food source with another thriving on nourishment from many different sources
- Propensity to thrive in a wide range of habitats
- Commensurate comfort in urban and rural human dominated landscape
- Ability to surmount aqua barriers of creeks, streams and small rivers by paddling, swimming or walking across benthic zones
- Vagility, contributing to dispersal and range expansion through persistent migration

Advantageous reproductive biology, doubly strengthened with obligate delayed implantation and obligate polyembryony -with each litter of comprising quadruplets

During the Great Depression, many Southerners, including the inhabitants of one of the richest states in the country, Texas, when faced with critical protein deficiency in their diet, were reduced to trapping, catching, cooking and consuming invasive armadillos as sustenance protein. With gustatory pleasure of the meat for the palate, similar to fine-grained prime cut of pork, armadillo meat acquired the nickname, "poverty pig", "poor man's pig" or "poor man's pork".

Herbert Hoover, the 31st President of the USA (1929 - 1933) was widely ridiculed nationwide, during the depression, for his incompetent and inept handling of the US economy. He was alleged to have advised famished residents of the Gulf Coast, to consume armadillos as emergency ration during acute food shortage, if they could not afford better. Hence the hapless mammal acquired yet another nickname - "Hoover's hog".

Today, while most Americans do not eat armadillos, the exception are the descendants of colonial-era British-American pioneer settlers, the first among whom established residence in the territory in 1763 after Spain ceded Florida to Great Britain. The community known as "Florida Crackers" is very proud of its daily way of life, traditions, history, customs and conventions. They continue to eat armadillos regularly , as their ancestors had done for the last two and a half centuries.

In the bayou areas of southern Louisiana, communities formed by descendants of French Canadians are renowned for their armadillo based Cajun cuisine - Armadillo in Mustard Sauce, Armadillo and Rice, Baked or Barbecued Armadillo and Fricassee Armadillo, with a single mammal sufficient to serve a dozen diners.

In Northern Argentina armadillo meat has been favoured by many generations for its flavourful, moderately protein rich, low-fat flesh, barbecued, grilled, smokes or roasted in grills or simply over spits or campfires. The Argentine City of Santiago del Estero is particularly renowned for its armadillo dishes. The flesh, which is low in carbohydrates is reputed to provide more essential micronutrients and energy value than beef. Armadillos of all species are consumed in many countries in continental South America, central America and the Caribbean, with the most popular being the giant armadillo , with a single adult delivering as much as 30kg of meat – sufficient to feed a small village.

Armadillos, locally known as tattoos, are also a popular wild meat option in Trinidad and have a respectable reputation on the island - nation's culinary landscape. On offer are spicy curries, dry curried meat, Buccaneering armadillo meat (smoked) Trini style.

Notwithstanding its armour-like skin which is rarely used for leather production, the "ninebander's" skin has been periodically harnessed for making cowboy boots, guitar straps and wallets. Armadillo accessories are usually handcrafted.

Texas is particularly renowned for its cowboy boots with pointed round toes, pull tabs and a standout leather soles, with Side pull tabs being provided to enable easy wear and removal. Available in sizes 6-11, the pull up boots cost USD 290 -320 a pair. Handbags and baskets in futuristic designs have been made by designers from armadillo. In Argentina bladesmiths have been known to make knife, sword and dagger handles with armadillo tails. South American craftsmen are also known to design hats from armadillo leather and lamps from their carapace, while in 2020, a taxidermist offered his creation of a stuffed and mounted "diller" swilling beer, while relaxing on its back, for USD 299.95 - creating a niche for segments ranging from utilitarian to bizarre.

In the third highest country of the world, Bolivia, armadillos have great cultural significance. Every year, more than a thousand dancers at the Carnival of Oruro, in Western Bolivia, the city reverberates with percussion of rattles made from the carapace of Andean hairy armadillos. The matraca, also known as carraca, is a hand-held musical instrument from the family of idiophones, popular for peppy sound effects in Bolivian traditional rhythms, such as caporal.

For making armadillo carnival rattles, the wretched animals are trapped alive and suffocated to death, to prevent unaesthetic injuries or wounds. The air-dried faces of the creature, transfixed in a macabre rictus, are attached to the matracas, to make the clattering doubly sinister. Armadillo shells are embroidered on costumes, hollowed out and made into rattles, or embellished on the body of guitars, and Even though it's illegal in Bolivia to purchase and sell armadillos and trinkets made from them, they can easily be bought at the witches' market in Sagarnaga Street in the National capital, La Paz, and elsewhere.

The "rhino-pigs" have been popular Texas souvenirs since 1896, when Charles Apelt, (1862 -1944), an immigrant from Germany, settled in Comfort, Texas, encountered and scored his maiden armadillo kill. By using a restraint to latch the creature's tail to its nose, over its dried shell, lying on its back, he designed a kitsch lady's purse, using a linen backing inside and embellishing the attractive shell with beads and coloured ribbons. The prototype was a runaway success and soon thereafter, as many as fifty hunters in his employment, scoured the countryside to dispatch and deliver "tactical possum" for purse production, retaining the small head transfixed in a terrified gaze in some bespoke models.

Establishing the Apelt Armadillo Farm in 1898, in Comfort, the entrepreneur exhibited his "Diller" creations to an international clientele six years later, at the St .Louis World's Fair. Burgeoning demand saw 40,000 units of the novelty, sold by the only known commercial attempt in the world, till date, at valorising invasive armadillos. The product range was soon expanded to include wall hangings, curios, table and floor lamps, ashtray stands and writing desk sets,

At its zenith, the factory's weekly production was 100 carapace baskets, carrying a price tag of $2.50 each for undecorated versions and $15, if embellished with beads, decorative bows and silk lining. Concomitantly, the farm became a supplier of live animals to pet woners, research institutions and zoos. As many as twenty thousand live animals and products derived from it, were exported annually from the farm and factory.

To recreate their natural habitat and induce them to breed, labyrinthine network of concrete burrows crisscrossed Charles Apelt's sprawling farm and to cater to both curious, gluttonous as well as casual visitors, "ninebander" barbecue was served on site – where people could dine on the flesh of the animal , whose shell basket they were purchasing.

The enterprise remained in operation, for seven decades, until 1971 before downing shutters, by which time, armadillo racing had become a popular amusement in Texas. Several organizations, mainly from San Angelo, began promoting races throughout the US, Canada and Europe, drawing punters and speculators galore.

To celebrate the quadruped and its talismanic association with Texas, between 1970-80, "the Michelangelo of armadillo art", James Franklin's surrealistic "Diller" drawings were splashed all over the former the music hall, showcasing rock and country music, in Austin, Texas, christened "World Armadillo Headquarters".

Today, the ubiquitous armadillo is seen on a multitude of tourist merchandise in the Lone Star State, such as – bread baskets, ice buckets, hand puppets, boots, hats, purses, wallets, lamp shades and trinkets. Jackalore Junction and Jernigan's Taxidermy are two major suppliers carrying armadillo souvenirs and decorations.

A traditional musical instrument, resembling a five stringed guitar, called the charango, is particularly popular in among the

Andean communities of Ecuador, Peru and Bolivia. These small "guitarrillos" have armadillo shells, substituting the woodwork, as the backs of their curved, hollow bodies to function as sound boxes, for exceptional acoustic fidelity. This was particularly advantageous for communities residing in high Andean altitudes where trees suitable for music making were difficult to come by.

A trapped feral armadillo could be slaughtered, its flesh eaten, its shell scraped clean of flesh and air dried, a thick wooden neck fitted to the carapace with provision for five strings – and a charango would be in place to strum to an accompanying ditty.

Armadillos have long been integral to zootherapy in Mexico, Central and South America, for folk medicine and rituals. In Oxchuc, Mexico, toasted tail and shell of the nine-banded armadillo are used to aid labor, while communities in the Brazilian Amazon use its parts to treat earache and rheumatism. In Sumidouro, Brazil, armadillos are hunted for food and medicine, though consumption is limited by cultural beliefs about its risks for the sick. The cingulate's movable bands are utilized for treating bronchitis, gastritis, and back pain, often toasted, powdered, and consumed as an infusion.

There are many imaginative and innovative ways in which the non-indigenous " hilly billy" could be valorized in states other than Texas. Aramadillo carapace has good impact, scratch, stain, puncture, stitch tear, perspiration – and perforation resistance. In addition, it possesses exceptional polishability, durability, physicality and appreciable resistance to swelling and cold crack.

Probably the only limit of what can be fashioned from the "half shell" of the "possum on the half shell" is the limit of the manufacturer's imagination.

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# ELEMENTARY KNOWLEDGE ON FOOTWEAR MANUFACTURE

## METHOD OF FOOTWEAR MANUFACTURE—PART-IX

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**Method of Construction—Assembling**

Lasting of a shoe is the very first operation of assembling. We know that lasting may be done by hand or by Machine. Though machine lasting is fast capturing places of hand lasting and gradually hand lasting is taking off from the growing market. Hand lasting still survives, because it is the foundation of machine method, For Surgical and bespoke work it is still the normal method since each shoe can receive the individual special treatment which is not possible by machine.

Before starting the actual hand lasting the toe and Counter stiffeners are inserted in the respective position of the closed upper. The counter stiffener should come behind the breast of the heel to give solidity to that seat portion of the shoe during wear while the toestiffener is used to retain the shape of the last and also to solidify the toe portion of the shoe. The closed upper is drafted first on the last. An in sole is put on the bottom of the last with three temporary nails. Drafting is the initial stretchout of the upper for giving it's approximate shape of the last in preparation for the actual lasting itself. A series of pulls taken with the hand pincer in different direction according to the shape of the last to give an ultimate shape of the shoe. The drafting is done in such way that an uniform tension is set up and the final moulding is balanced so that as soon as the shoe is unlasted it will retain the shape of the last during it's life. After drafting operation the actual hand lasting is started. The final pulls during lasting operation starts from inside waist. Continuing with the starting point and an interval of 5 to 7 m/m, a series of pulls ( Strong ) is taken throughout lasted edges of the concerned shoe. The final attachment of of the upper with the insole may be done by various ways. Previously it was done by revetting or by stitching but now a-days with wide use of adhesives final lasting by hand is also done with the aid of adhesives. The direction of stain in drafting and lasting are shown in ( fig. 167-a, 167-b, 167-c)

**Lasting by Machine :**

In machine lasting it is essential to condition the upper to be used before lasting. The basic function of conditioning of upper is to confirm the exact shape retention of the concerned last. The process is performed by tension of upper material to deform it from its two dimensional shape to a three dimensional shape of the last surface.

The penitration of water vapour in to the closed upper before lasting and its subsequent drying after lasting plays most vital role to enhance the shape

( Continued from Page 498-509 of the previous issue )

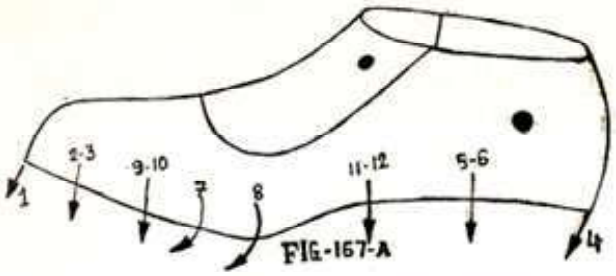


FIG-167-A

retention properties of upper leather. The synthetic upper material however do not benifitted from this treatment as the synthetic substance cannot absorb water. These uppers may be heated either with or without moister prior to lasting and cooled or dried in the same manner as in case others after lasting.

The penitration of water vapour into upper leather before lasting has the following advantages—

i) Softening of the leather to ease lasting ;
ii) Reduces the Chance of grain Crack ;
iii) Improves long term shape retention.

There are various ways to vapourise the uppers.

A) Mulling Chamber or Atmosing room ;
B) Rapid Conditioning Cabinet ;
C) Contact Mulling.

Mulling chamber or Atmosing room—A small room or a chamber is used for this purpose. The bundles of closed shoe uppers were hung on the pegs. The relative humidity of the chamber or room was raised by spray of water vapour from outside. These sprays broke up the water extremely fine droplets so that a mist was formed in the room. The upper kept in this room receives the water vapour. The upper are kept at or just above room temparature with a relative humidity of about 80-90%.

**Rapid conditioning Cabinet :**

This method is mainly used for the uppers which has a tendency of grain cracking. The uppers are kept lying in a row in the Cabinet on a rod. A rapid stream of water vapour at 50°c is sprayed over the uppers. The uppers receives the vapours and taken out of the Cabinet and soon brought it for lasting. In this process total upper is soften becauses whole part of the upper is sprayed thoroughly. As sueh backpart of the shoe is in a better condition for back moulding and seat lasting.

In this method the upper as well as the thermoplastic toe puff is also softened. This helps to get a better toe shape, The synthetic uppers are required only a dry heat to condition

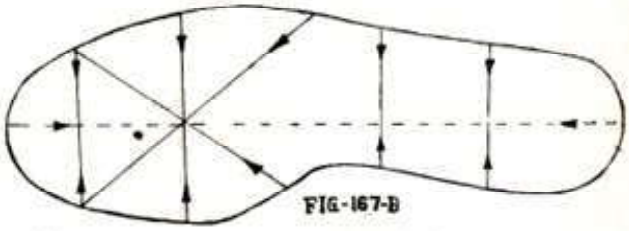

FIG-167-B

Direction and ordep of hand draffing Strain.

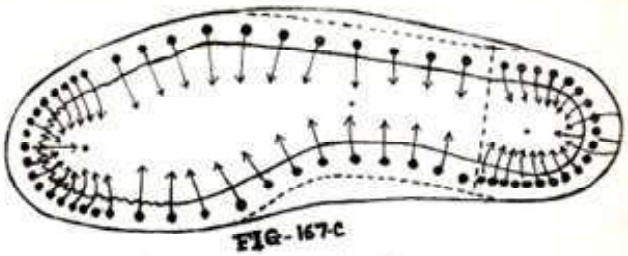

FIG-167-C

Direction of Strains in hand lasting

them for lasting. The upper with a fabric base is some advantages in using moist heat. Leathers are usually required moist heat so that the machine can be pre-set to give either of these conditions.

The uppers are placed single only into the machine. Dry heat or moist heat is brought to bear on the vamp. Some machines are equiped with more than one upper as to enable the workman to place them in position.

**Heat setting :**

Before introduction of modern machineries and the conveyor system of working the lasted uppers were kept 1-2 days on the last to get the proper shape retension. This process neds a large number of shoe last and at the same a large amount of working capital for this purpose. The old system of forced drying in some case are fundamentally same with the new technique of heat setting though the approach was unscientific.

Now a days modern shoe factories are following these systems—

**a) Infra Red :**

It is the oldest system in modern technique though is not followed largely. A cabinet, equiped with infra Red, is attached to the conveyor over which the lasted shoe to be passed. As the heat receives from the infra Red is directional, all parts of the shoe does not receive the equal heat treatment. This is the main disadvantage of this system.

**b) Stress Relaxation :**

This is one of the best system of shape retension developed by S.A.T.R.A. Research work was carried out with shoe machinery and shoe manufacturing company for a quite long time to develop the H.V.A. ( High Velocity Air ) type of heat Setter. ( Fig 168 )

The basic principle of this system to provide relaxation to the upper material which are tightly attached to the last and then again setout the shoe firmly on the last to have a very good shaperetension. The method is followed by two ways,• Firstly the shoes are passed through a section where the shoes will receive hot moist air. This will help the upper relaxed on the last. Secondly the shoes are passed through a hot dry air section. This helps to remove the moister from the lasted upper and sets the shoe firmly and more accurately to the new shape. In the both above mentioned cabinet a high velocity air currents are passed, to ensure all round heating, over all parts of the shoe.

**c) Dry Heat Setting :**

Now a days it is noticed that a substantial quantity of shoes are being manufactured with synthetic material. To get better shape retension dry heat setting is more help full for synthetic material.

It helps to reduce process time, requires less number of lasts & less manufacturing area. It provides the exact last shape.

Machine lasting has been introduced in the footwear industry at least 50 years ago. Now a days there have been many developments in machinery used particularly for cemented construction. Most of the factories now-a-days are following cement lasting method. This

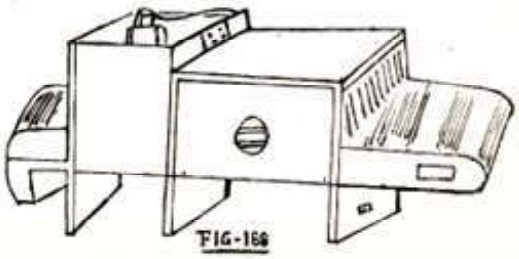

FIG-168

cement lasting has simplified the process. Complete lasting of a shoe is governed by two to three machines at present.

1. Fore part lasting Machine ;
2. Side lasting Machine ;
3. Heel or seat lasting machine ;

A machine has been developed recently which covers seat and side lasting in one machine. In this case the total lasting operation can be done by only with two machins. The fundamental job of a lastiug machine is to mould the upper on the concerned last and at the sametime attach ment of upper with the insole of the shoe.

Lasting may be done in the following three ways.

i) Using adhesive throughout ;
ii) Using tack and staple ;
iii) Using both adhesives and tacks. .

I) Using of adhesive throughout the upper and insole edges are more popular now-a-days. It may be simple chloroprene based adhesive or hotmelt cement.

II) Lasting by tacks and staples are not widely used now-a- days. It is confined for a few types of heavy boots only.

TABLE—1

Recommended temperature and dwell times for conventional machines

| MATERIAL | TEMPERATURE | DWELL TIME |
|---|---|---|
| Grain leather | Moist air at 80°C<br>+ dry air at 120°C | 1.5 min.<br>3.5 min. |
| P. U. Coated leather, finished split, Poromerics. | Dry air 140-150°C | 5 min. |
| P. U. Patent leather | Dry air at 100°C | 5 min. |
| P. U. C. F. of all types | Dry air at 130-140°C | 5 min. |
| P. V. C. Coated fabrics Synthetic Suede | Dry air at 120°C | 5 min. |

Recommended temparatures an l minimum dwell times for forced heater.

| Material | TEMPERATURE | DWELL TIME |
|---|---|---|
| Grain Leather | Moist air at 120°C<br>Dry air at 120-130°C | 2.5 min. |
| P. U. Coated leather<br>Finished Split<br>Poromerics<br>P. U. C. F. of all types. | Dry air at 120-130°C | 2.5 min. |
| P. U. Patent leather<br>P. V. C. Coated fabric<br>Synthetic Suedes<br>Uncoated fabrics | Dry air at 100°C | 2.5 min. |

III) Combination system such as fore-part and side-part with the help of adhesive and seat lasting by tacks Tacks at seat is widely used especially when extra Security is required at the seat.

**Insertion of Stiffener**

In a shoe stiffener are used in the specific position to help to keep the shape intact Toe and counter ( Seat portion ) are reinforced with synthetic material ( Stiffener ) which are generally fibre board or fiber based material coated or impregnated with thermo-plastic resins. Toe puffs are attached, with solvent or applying heat, in between upper and lining, as per the character of the stiffener. It remains soft while lasting the fore part and take it's original shape as soon the shoe is completed.

**Back part moulding :**

Synthetic fibre based or thermoplastic counters are inserted into the upper. The upper is now fixed to the machine to get pre-shaped Counter position of the shoe upper. The machine has aluminium last, pincers and a pair of pads. The machine is pneumatically controlled, both the pads and the pincers which are the main machine elements to be controlled and operated pneumatically. The pad sub-assembly has two pads, right and left pad can be filled with air. This inflated pads help to grip the moulds. The pads are released automatically and the spring in the pad sub-assembly helps the pad to open up again. Two pair of pincers are placed just below the mould. The basic function of the pincers is to grip the uppers and pull them down so that the back part takes the shape of the mould and rests tightly on the mould. The machines with both hot and cold moulds are the latest development. When machines with only hot moulds are used, cooling is done in almosphire air and therefore the cooling is slow, but in machines which have cold moulds also can cool the mould more rapidly and gving a much better form and fits very well to the heel.

**Upper and Insole Cementing**

Lasting edge of the upper and insoles are required to be cemented with adhesives. Cement may be applied by roller type machines, It is also cemented by hand. Choroprene based permanen adhesive or Latex ( high percentage of solid content ) or Polyurthene based adhesives are used for this purpose. Hot melt adhesives are also being injeeted during the lasting operalion.

**Fore part lasting**

Lasting machine was introduced in U. K. Sometime during 1950's. Initially the machines were equipped with two heads ( right and left ) to operate for individual feet. After a series of develpments the modern machines are having only one head which is sufficient for lasting both the shoe. It helps to shorten the size of the machine as well as the ease of work to an operator.

The conditioned upper is initially stretched over the toe of the last in the bench pincer which is attached with the machine. Now the upper is placed in the machine for gripping the lasting allowances of the upper with their series of pincers equiped in the machine. The last with upper is being held at the waist position by the operator. The pincers grip and pull the entire fore part of the upper as soon as the pedal switch is pressed partly. When the pedal switch is pressed fully all the pincers engage and grip the entire fore part of the upper. The last is then pushed upward at a controlled rate into the gripped upper. This helps the drafting of the upper correctly in to position over the last. A teflon

coated toe band is then engages around the toe area ( Fore part ) holding the upper securely against the last just above the featheredge, Immediately a heated metal wiper plate or blade moves inwards in a har zontal plane under the bottom of the fore part. The action wipes the upper material ( lasting allowance of the shoe ) aginst the insole and attaching it firmly Correct timing of the machine enables the pincers to release fractionally before the final wiping action takes place. The final downward pressure known as the "bedding pressur-" ensures that the lasting allowances are pressed flat to the insole. The shoe with lasted forepart is released automatically from the machine which is adjusted with preset time dwell. ( fig 169 a-b )

The lasting machine provides the following results if it is functioned properly.

i) Toe upper in the forepart area to grip the last tightly.

ii) Top lines tight and properly balanced,

iii) Exact toe shape to last.

iv) No creases at the feather edge.

v) Lasting allowances are flat to the insole.

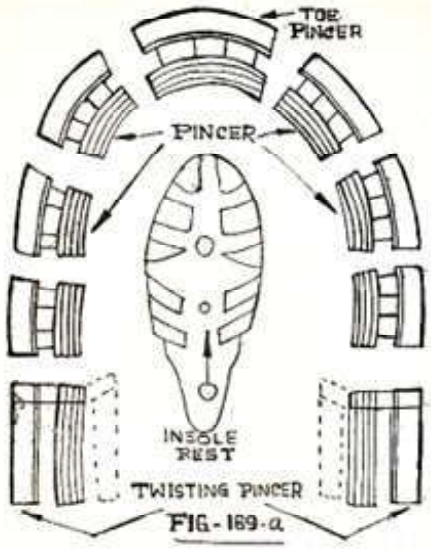

FIG-169-a

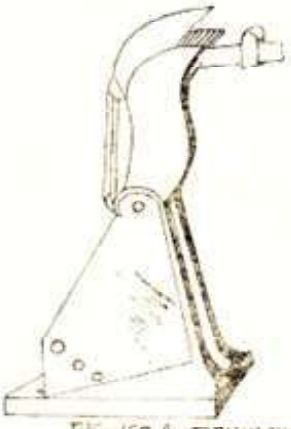
FIG-169-b BENCH PINCER

vi) Upper stucked to the insole firmly.

vii) Both (right-left) the upper to match as pairs.

viii) Proper position of vamp on on the last.

**Side lasting**

"Kamborian" cement side lasting is a machine widely used by the footwear industries. The operation in this machine is very simple. The lasting margine of the side is fed between two feed roller or transport roller vertically and the bottom face of the last where the insole has been tacked with last horizontally. There is a nozzle placed just after the transport roller and through this nozzle hot melt cement is depositated on the unlasted waist of the insole. The waist or side lasting is carried out automatically by placing the shoe through the underneath of a rotating ironing roller whose axis is horizontal. This ironing roller wipes the lasted margin on to the last over the cement area and irons the lasted margin over the insole. For ironing heat and pressure are required. When the

roller rotates a pneumatic pressure is applied so that the roller exerts a pressure on the lasted margin. The heating of the roller not only helps in ironing but also melts the hot melt adhesive ( cement rods ) which sticks on to the roller during ironing.

**Seat lasting**

Lasting in this part may be done either by tacks or by adhesives. If tack lasting is to be done the concerned last should be made heel plated. Now in footwear industries most sophisticated seat lasting machines are used where seat and side lasting are done by one machine only.

The seat lasting machine is controlled by hydraucally and electrically. The penumatic system is not used. In a tack lasting arrangement maximum of 21 tacks may be used. The last ( already lasted in fore part and seat area ) placed in the last rest remains, included position away from the machine towards the operator. The last is pulled in when the foot padel has been operated. There is an initiator which actuated the lifting of the last rest.

The heel band grips the heel around the entire heel so that the seat portion of the shoe held firmly for the seat lasting operation. The shape of the heel band can be adjusted with the help of a lever to suit the shape of the seat. The wiper head is in two segments. These together form a horse shoe-shape, which is the shape of the heel. When the shoe is ready for seat lasting the wiper performs a double stroke, that is, the wiper wipes lasting margin twice over the heel portion of the insole so that good quality lasting may be obtained. Place the shoe in right position, the foot pedal is released. After an adjustable time delay, heel band closes and the pull in device presses the shoe with a high pressure on the heel band. As this delay is over, the heel wiper carries out double stroks. The wiper closes for second time, the pressure is exerted on the last rest. After a suitable time delay the tacks are driven in. As the tacks have been driven in the heel band opens and the last moves down. After a short delay the heel wiper opens and the pull-on device returns to the starting position. All the tacks in the heel area are hammered once at a time. The tacks revetted to the seat portion of the shoe.

The correct seat lasting provides us with the following results.

I) Back height to be correct.
II) Back seam is placed Centrally, upright and straight.
III) Seat and quarter portions are moulded nicely.
IV) Lining of the quarter get shaped very nicely.
V) No crease at the feather edge.
VI) Top line correctly balanced.

DEPARTMENT WISE PARTICULARS OF OPERATION AND THEIR RESPECTIVE MACHINE OR EQUIPMENTS :—

| DEPARTMENT | PARTICULARS OF OPERATION | MACHINE OR EQUIPMENT |
|---|---|---|
| A<br>MANIPULATION | Clicking of Preparation and Various Components | |
| 1. | Selection of Upper leather | Table stock |
| 2. | Clicking of upper Components | Hydraulic Clicking M/c. |
| 3. | Splitting of Components | Band knife Splitting M/c. |
| 4. | Skiving of upper Components | Single or tripple Skiving M/c. |
| 5. | Insole edge bevelling | Edge bevelling M/c |

| DEPARTMENT | PARTICULARS OF OPERATION | MACHINE OR EQUIPMENT |
|---|---|---|
| 6. | Insole & Counter Moulding | Hydraulic Insole & Counter Moulding M/c. |
| 7. | Punching, Gimping & Perforating | Respective die and Hydraulic press |
| 8. | Embossing | High frequency heat & pressure & Embossing M/c. |
| 9. | Socks Embossing | Simple automatic Embossing M/c. |
| 10. | Matching of the Components | Table work |
| B SEWING | **OPERATION RELATED TO SEWING SECTION** | |
| | **System of Work** | **Conveyor** |
| 11. | Checking of upper Components | Table work |
| 12. | Back Joining | Zig Zag M/c. |
| 13. | Folding & Fitting of upper at various Stages | Table work & Auto folder M/c. |
| 14. | Stitching of upper & Subsequently excess lining trimming | Sewing M/c. of various types |
| 15. | Eyeletting | Eyeletting M/c. |
| 16. | Lacing & final selection | Table work |
| C ASSEMBLY | | |
| 17. | Distribution of last & Concerned components to the Conveyor | Manual work |
| 18. | Toe puff & Counter tightening | Toe puff activator & Counter Moulding M/c. |
| 19. | Attachment of Insole | Insole attaching M/c. |
| 20. | Cementing on upper & Insole Edge | Manual or Cementing M/c. |
| 21. | Forepart lasting | Forepart lasting M/c. |
| 22. | Seat lasting | Seat lasting M/c. |
| 23. | Side lasting | Side lasting M/c. |
| 24. | Shape retension of the shoe | Heat setting M/c. through High Velocity Air. |
| 25. | Roughening of bottom parts | Roughening M/c. |
| 26. | Tack removal | Manual |
| 27. | Cementing | Manual or By Cementing M/c. |

| DEPARTMENT | PARTICULARS OF OPERATION | MACHINE OR EQUIPMENT |
|---|---|---|
| 28. | Heat activation for sole attachment | Heat activation M/c. |
| 29. | Sole putting and sole attachment to the lasted upper | Manual & Hydralic Sole press |
| 30. | Unlasting of last from the lasted shoe | Unlasting M/c. |
| 31. | Socks putting, painting, grading & final packing | Manual Table work |

**Stuck-on construction or cemented method of construction—**

As soon as the adhesive have been introduced in the footwear iadustries the Stuck-on process becomes as a number one popular methods of construction in the footwear trade throngout the World. The fundamental of this construction is to join ( STUCK ) Soles with the lasted upper by means of adhesives fig 170. The preparation of the

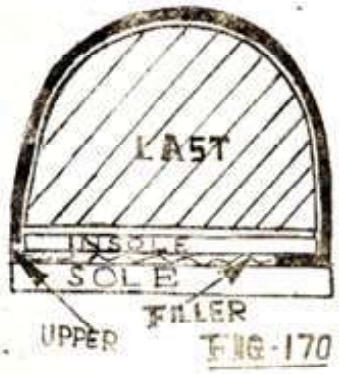

FIG-170

shoe bottom and the sole is a very delecate type of work if you want to get a very good bondage. Now a days a variety of materials are being used for upper as well as bottom material which are available in the market. The method of preparation must be suitable for the upper, sole and adhesives to be applied on the construction. The operation from mulling of the upper to total lasting may be followed the way we have discused already.

**Preparation of the shoe bottom—**

The selection of this method is based on the upper material to be used in the construction.

i) Grain leather to be roughened with emery paper or with wire brush for opening up the pores.

ii) Grain suede leather may be lightly roughed.

iii) P.V.C. or P. U. Coated mattrial will be solvent wiped.

iv) Poromeric materials to be roughed or solyvent wiped.

The main idea of this operation is to demove the grain layer including the finishing materials applied on it, with emery paper or wire brush. While roughening the bottom surface the operator should ensure that a prominent feather line is visible. This will help to bond with the sole accurately. The depth of the roughening according to the material must be understood by the operator other wise it may be the failure of bondage. The roughening should be made in such a fashion that short regular fibres are exposed. Any pleant in the toe or seat portion must be sanded flat to obtain a good result. The cohesion of bondage is largely dependant on proper roughening. We must maintain the following—

i) The grain Surface over lasted margin must be removed.

ii) Roughening not extend over featheredge.

iii) No deep roughening to feather edge.

In case of P.V.C./P.U. coated material instead of roughening the surface, it is wiped out with the solvents. Commonly M.E.K. (Methyle Ketone) is used for this purpose. Acetone may also be used. This solvent removes migrated plasticesers from P.V.C. Surface as well as other contaninants so enabling the adhesive to 'Key' to the surface.

**Attachment of Shank :**

In footwear industries, now-a-days most of the mechanised manufacturs prefers to use pre-moulded insole in which shank is also in built. It is either revetted or eyeletted with the insoles. However, some manufacturers still likes to attach shank after bottom roughening. The shank is attached with tacks on the seat portion of the shoe. Half plated last is requided for this purpose to get it revetted on the insole. Exact positioning of the shank is a must otherwise it will protude over the joint line on which the ball of the feet flexes Sufficient portion of the shank must be placed under the heel otherwise under strain on the heel breast area can result with consequent fracturing of the insole at this point. We must follow that—(1) Correct shaped shank is used, (2) The shank is positioned correctly ; (3) The shank is attached securely.

**Cementing on Bottom Portion**

Application of adhesives on the bottom part is most vital as it stucked the both surfaces to make it as a complete shoe. There are two main types of adhesives are widely used in the footwear trade for the stuck on construction (1) Chloroprene based adhesives for rubber based soles and (2) Poly urethene based adhesives for P.V.C., P. U. and T. P. R. based soles. Chloroprene based adhesives do not requite any heat while in the P. U. based adhesives heat activation is a must. The adhesives can be applied by hand brush or by a presure extruder brush or by a roller type machine. A thin layer (low viscosity) of adhesive must be applied as a prime coat to facilate the easy penitration of adhesive into the fibre structure of upper. A second coat is then applied. Application of two coats of adhesive is always adviseable while in case of P. U. & P. V. C. unit sole a thin layer of single coat only be applied. More adhesive layer in the Unit sole may cause depletion of the bondage. Drying of the adhesives applied on the upper and sole completely is a must because evaporation of all solvent from the joining part is vital for correct attachment. commonly the cemented shoes are kept on open racks for 15-20 min. to make total evaporation of the solvents. Heating cabinets with intra red or tunnels over conveyer with heater is also used for this purpose. The following pts. are very very essential to get correct results.

(i) Even application of adsive over the shoe bottom.
(ii) Complete evaporation of solvents.
(iii) Application of heat where it is essential.

**Attachment of Bottom Filler :**

After lasting a cavity is formed within the perimeter of the lasted upper which must be filled to get the exact shape of the bottom of the last. This is filled in many ways. In case of moulded unit sole if it is made with extra substance in the centre it can serve the purpose. But most of the case an extra piece of material (felt, foam or Serap leather, cork sheet) pre shaped as per the bottom cavity filler of the last is stucked to the cavity of the upper. It is to be remenbered

that the filler must be correct substance & size and of course it should be placed properly.

**Halogenation :**

Thermo Plastic Rubbed (T.P.R.) soles are usually requires halogenation for getting proper bondage with upper. The surface edge of soles are treated with a chlorine based solution in a volatile solvent. This treatment has two main affects—it materially restores any brittle surface present has occured by Oxidisation but also a Chemical bond is promoted in addition to the normal physical bond. Halogenation is a hazardous process due to the high risk of dermatitis, consequently the only protection is that afforded by nitrile rubber gloves. However providing adequate safety standards art observed, halogenation, when properly used, has great benifits in improving bond levels.

**Heat Activation :**

For attaching micro rubber sole to the upper heat is not required, beside this all other soles i.e., P.V.C./P.U./ T.P.R. requires heat activition. A machine have been developed where you can put a pair of lasted upper and unit soles for heat activation Temparature and required time is present by the operator as per the type of sole. Commenly it is 80°-90°C and time is 60-90 Sec. Both the Surface must get the same temperature which ultimately joins. The surfaces thus stucked and pressed are chemically reacted to ensure a good permanent bondage.

**Attachment of sole :**

The dried sole is fitted on the lasted upper by hand and the complete shoe is now brought to the sole laying press. It is positioned on the pad and held under pressure for a preset time dwel and at a pre-adjusted pressure. These machines are mostly two station having right and left foot respectively. In this machines generally hydraulic or pneumatic pressure is employed. In pneumatic machine shoe is clamped into position and the air bag is in flated around the shoe bottom at a pressure of 70-80 lbs/Sq. mch. This pressure is sufficient for this purpose. Air is filled in the machine through Air Compressor or by simple paddle driven way.

The hydraulic type has a pad made from solid rubber but operates on same principles. The pad boxes can be changed easily if any changes is required to be incorporated. Correct setting and equal pressure all over the bottom surface is essential to achieve a good bond. Time is required only 15-20 sec. for each shoe. The total process of sole bonding with upper specially with P.U. based shoe is so complicated now-a-days that any negligency may cause adhesion failure to the shoe As such it is advisable to check at least a pair of shoe (where at least 200 pcs. of shoe are made per day) must be checked to ensure the bondage of the lot.

ADVANTAGES AND DISADVANTAGES IN STUCK ON CONSTRUCTION—

| Advantages | Disdavantages |
|---|---|
| 1. Easy to attach the sole with lasted upper | 1. Each stage of work to be followed carefully otherwise there may be adhesion failure, |
| 2. Product becomes lights | 2. Difficult to maintain Temp. time. Schedule for constn. |
| 3. Less work man is reqd. | 3. Improper mixing of Resin & hardner in P. U. adhesive will cause adhesion failure. |
| 4. Finishing work is easy. | |
| 5. Any type of shoe can be made | 4. Repairing work is difficult. |

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# Hands of Leather Finishing - Waxes and Oils

**Pulok Mazumder**

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**Waxes and Oils and Fashion Industry; Chemistry and sources; sustainability factors and other key parameter in leather care products, leather finishing.**

A practical hands-on application.

**Importance of Waxes and oils in Fashion World**

Waxes and oils play crucial role in the leather goods and Cosmetic Industries, particularly within fashion world.

**Leather goods**

- **Conditioning and Preservation :** Waxes and oils are essential for conditioning leather, keeping it supple, and preventing it from drying out and bags, shoes, jackets ,and furniture .
- **Waxes and Oils Enhancing Appearance :** Waxes gives leather a polished, glossy finish, enhancing its visual appeal, while oils can deepen the colour and give it a rich, natural look.
- Both the oil and waxes are used in restoring old or worn leather goods, reviving their texture and appearance, Restoration makes it possible to use lower quality leather fashionable and acceptable.

**"Cosmetic Industry"** deals with human skin which is alive and leather Industry we make dead animal skin alive with treatment i.e., dressing on dead skin once tanned, crust resembles skin similar like cosmetic Industry.

Both the industry if we see through eyes of Leather Engineers undergone remarkable changes last 5 decades, the finishing of animal skin and hides (which is dead skin) we the leather engineer or leather doctor restore grains alive same way cosmetic industry treating and make miracle. The FINISHING by putting layer with care product ,dressing (upgrading) and finally adding shine and dull to make its aesthetic values and attractiveness.

- **Moisturising :** In cosmetics, oils, and waxes like beeswax and shea butter are used for their moisturizing properties, which are essential in products like lip balm, creams, and lotions.

A Leather Engineer can resemble how important is to maintain moisture in leather, its similar LIKE skins here, act same way. The human skin reacts same way the leather crust (means dermis and epidermis of leather). Hence, moisturizing so important for Leather Engineer.

- Waxes are often used to give cosmetic products the right consistency and to stabilise formulations, ensuring they maintain their form and effectiveness over time on Texture and Stability.
- Like leather, waxes can provide a protective layer on the skin, adding Shine in products like hair pomades, and Protecting skin from environmental damage.

In the fashion world, the use of high-quality waxes and oils ensure that both leather products and cosmetic formulations meet the standard of luxury, durability, and aesthetics demanded by consumers.

**The market for waxes and oil-based article in the continent.**

Particularly for shoes and leather goods, is concentrated in several key regions due to the presence of established leather industries, fashion markets, and consumer demand, these includes :

**Europe :**

**Italy** known for its luxury leather goods and high-end fashion, Italy is a leading producer of leather products. The demand for high-quality leather products, including waxes and oils, is significant for leather industry - the innovative waxes and oil-

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based product invented by Italian Chemical Industry. Author has experiences working with both German and Italian company more than decades in his working life still enjoyed working Italian innovative products rather than German industry. Italian brands are renowned for leather products.

**France** another hub for luxury fashion, France has a strong market for leather goods and related care products. The emphasis on preserving the quality of premium leather items drives the demand for waxes and oils. Two renowned brands of France have embarked in fashion world for their boutique collection every year.

**UK** and **Germany** these countries having strong market for leather goods, particularly in fashion footwear, where maintaining leather quality is essential . One of German brand oil wax shoes are imitated worldwide as fashion shoes based on oil waxes.

In **North America :**

**United States the U.S.** has substantial market for leather goods, particularly in high-end fashion, footwear, accessories. The outdoor and workwear industries also drive demand for durable leather products, including waxes and oils, which is are essential for maintaining the longevity of leather boots and gear.

Author serving a US customer having tannery in northern part since last 15 years there is only oil and wax-based articles, US has moved from resin article in 1990 and no comeback on resin. The percentages resin article mere 5-10% more of fancy colour and seasonal white only.

In **Asia Pacific :**

**China** as the world's largest producer and consumer of leather goods, China has growing market for leather products. The increasing middle class and their demand for quality fashion and luxury goods have expanded the market for waxes and oils.

**India** is a major producer of leather goods and footwear. While traditionally more focused on production, the domestic market for leather products growing as consumer awareness and demand for quality care increases. If you go to any mall and look for Indian brands, more and more articles made from waxes and oils, it is increasing day by day.

**Japan** known for its meticulous attention to detail and high-quality craftsmanship, Japan has a niche but strong market for premium leather products. Consumers in Japan place a high value on the maintenance and longevity of leather goods.

In **Latin America :**

**Brazil** as significant producer of leather and leather goods, Brazil has a growing market for leather products. The local production of high-quality products drives the demand for conditioning and protective products like waxes and oils.

**Established Leather Industries** in these regions with strong tradition of leather production and craftsmanship have a higher demand for leather products to maintain the quality of their goods.

**High Consumer Awareness** in these markets where consumers are more aware of the need to maintain and protect leather products, especially in the luxury sector, show higher demand for these products.

**Luxury Fashion** these are known for fashion, the emphasis on maintaining pristine condition of leather goods drive the demand for high- quality waxes and oils.

**Climate Factor** these regions are varying with different climates, particularly those with harsh weather conditions, see higher demand for protective products to ensure leather goods with stand environmental stressors.

**These markets continue to grow as the global demand for leather goods and high-quality leather products increases, driven by both luxury and practical need.**

**Sources of Waxes and Oils :**

Plant and animal-based waxes and oils are in constant demand over petrochemical-based alternatives due to their natural, sustainable, and often bio-degradable properties. This shift is driven by growing consumer awareness of environmental and health concerns, as well as the push for cleaner ,more eco-friendly products. As a leather engineer we must know the most-in demand plant and animal-based waxes and oils :

**Plant -Based Waxes and Oils :**

- **Carnauba Wax** sourced from the leaves of the Brazilian palm tree COPERNICIA PRUNIFERA. Widely used in cosmetics

(lipstick, mascaras), food coatings, and leather care products due to its high melting point and glossy finish, making it a preferred alternatives to synthetic waxes. Carnauba waxes are popular for its hypoallergenic properties and natural shine.

- **Candelilla Wax** sourced from the leaves of the EUPHORBIA ANTISYPHHILITICA shrub native to Mexico. Used in cosmetics, food, and leather polishes. It's valued for its hardness and glossy finish, making it a good substitute of beeswax. Preferred for vegan products, offering a plant - based alternatives to animal-derived waxes.
- **Soy Wax** made from hydrogenated soybean oils. commonly used in candles, cosmetics, and as carrier oil in skin care products. Favoured for its renewable and biodegradable nature, as well as its ability to hold fragrance well in candles. There are saddlery articles where this fragrance place's key role in buying vegetable harness leather made of.
- **Jojoba Oils** extracted from the seeds of the SIMMODSIA CHINENSIS plant. extensively used in skin care and hair care products for its moisturizing properties and similarity of human sebum. Highly sought after in the cosmetic industry due to its non-comedogenic and long-lasting moisturizing properties.
- **Coconut Oils** extracted from the kernel or meat of coconuts. Utilized in skincare, hair care, and leather care for its moisturizing and conditioning properties. Popular for its natural origin and versatility, being used in both food and non-food products. One of popular waxes of leather finishes which is economical in the market compared to other oils and waxes.

**Animal based Waxes and Oils :**

- **Bees wax:** Produced by honeybees (Apis mellifera) from their honeycomb. Widely used in cosmetics, skin care, candles, and leather care products, its value for its emollient, protective, and thickening properties. Highly valued in both traditional and natural products for its natural products for natural, non-toxic, and protective qualities.
- **Lanolin:** derived from the wool of sheep, lanolin is a waxy substance that protect sheep 's wool from water and harsh weather. Common uses in skin care, especially those of dry or chapped skin, and in leather conditioners. Preferred skin care and leather care for its deep moisturizing properties, though some consumers avoid it for vegan reasons.

One must know plenty of availability of Petroleum bye products leather industry was using numerous fossil-based waxes and oils.

- **Fossil (Petroleum) Based Waxes :** One must know Paraffin wax derived from distillation of crude oil, specifically from the lighter fractions of oil. Paraffin wax is colourless or white, odourless, and solid at room temperature. It has a relatively low melting point.(typically between 46$^0$C and 68$^0$C). Commonly used in candles, cosmetics (as thickening agent) food coatings, and as a sealing material in various industrial applications. It also used in leather care products to add a protective layer.
- **Microcrystalline Wax** extracted from the heavier fractions of crude oil during the refining process. Macrocrystalline wax is denser, more flexible, and has a higher melting point (60$^0$C to 90$^0$C) compared to Paraffin wax. It has a smaller crystal structure, making it less brittle. Used in pharmaceutical, adhesives, and as a component in rubber and tire production. It also applied in leather treatments for enhanced water resistance and durability.
- **Petroleum (Petroleum Jelly) :** a semisolid mixture derived from the oil refining process, specially from the waxy residues left after distilling crude oil. It is a smooth semi-solid and hydrophobic, with a melting point typically between 37$^0$C and 60$^0$C. Widely used in skin care products as a moisturizer and protective barrier, in medical ointments and in leather care as a conditioner and water repellent.

**Petroleum -Based Oils :**

- **Mineral Oils** is a bye product of distillation of crude oil, mineral oil is a clear, colourless liquid. Mineral oil is non-polar, hydrophobic, and varies in viscosity depending on its refining process. Used in cosmetics (e.g., baby oil,) as lubricant in machineries pharmaceutical formulations, and as preservative for wooden and leather goods.
- **White Oil :** Liquid Paraffin is a highly refined mineral oil, free from impurities and colour. Liquid Paraffin is odourless, and non-reactive, with a low to medium viscosity. Used in cosmetics, food processing, pharmaceuticals, and as lubricant in various industrial application.
- **Vaseline (Petroleum Jelly) :** A bye-product of oil refining, similar to petroleum but often more refined for cosmetic and medical use, it's a semisolid, hydrophobic ,and used for

its protective and moisturizing properties, Commonly used in skin care as a barrier to prevent moisture loss, in medical applications for wound protection, and in leather to soften and protect.

**Shift of Future fashion industry towards sustainable Products**

The future of fashion, leather, and cosmetic industry is leaning towards greater use of sustainable, plant-based waxes and oils. These trends align with the growing emphasis on environmental responsibility, consumer preferences for natural products, and broader movement towards a more sustainable economy. While challenges remain, the industry is likely to continue innovating and adopting these materials, making them an integral part of future product offerings.

Key drivers of the shift toward sustainable and bio-degradable waxes and oils because of Consumer demand for sustainability.

- **Eco-conscious Consumers :** Growing demand for products that are environmentally friendly, ethically sourced, and fee from harmful chemicals. This trend is particularly strong among younger generations, who prioritise sustainability and are more likely to support brands that align with these values.
- **Transparency and Ethical Sourcing:** Present day Consumer are increasingly interested in the sourcing of raw material and the environmental impact of products. Brands that offer transparency in their supply chain and use sustainable materials are more likely to gain consumer trust and loyalty.
- **Bans and Restrictions :** Government and regulatory bodies worldwide are imposing stricter norms and regulations on the use of synthetic chemicals and non-biodegradable materials, especially in cosmetics and personal care products, this regulatory environment encourages the adoption of natural, bio-degradable alternatives - leather industry can't escape same.
- **Incentives for sustainable Practices :** In some regions, there are incentives for companies that adopt sustainable practices, including tax benefit, subsidies, and certifications that can enhance brand reputation.

**Technological advancement :**

- **Innovation in Plant-Based Materials :** Advances in biotechnology and material science are making it easier and more cost effectiveness to produce high-quality plant-based waxes and oils. These innovations allow for the development of products that perform as well as, or better than, their synthetic counter parts.
- **Scalability :** As demand increases, the production of plant-based materials is becoming more scalable and economically viable, allowing for broader adoption across industries.

**Environmental Impact and Resource Efficiency :**

- **Lower Carbon Footprint :** Plant based wax and oils generally have lower carbon footprint compared to fossil-based products, as they are derived from renewable resources and often less energy-intensive processing.
- **Biodegradability :** Plant based materials are typically biodegradable, reducing their environmental impact and helping to address issues like plastic pollution and chemicals run off.

**Corporate Social Responsibility or Social Marketing :**

- **Brand image and responsibility :** Many companies and Brand in the Fashion Industry are integrating sustainability into their Core Business Strategies as part of their CSR initiatives. Using Plant-Based biodegradable materials helps companies meet their sustainability goals Appeal to environmentally conscious customer base.

**Implication for the Leather and Cosmetic Industries :**

- **Leather Industry :** The use of plant-based waxes and oils in leather processing become more prevalent, as the materials offer the dual benefit of sustainability and performance, Plant based alternatives such as Carnauba Wax and Jojoba can make fashionable articles replacing fossil-based products in tanning and finishing processes.

The future of fashion, leather industries is leaning towards plant-based waxes and oils. The trend align with growing emphasis on environmental responsibility, consumer preferences for natural product and broader movements toward a more sustainable economy.

**The Science and Chemistry of Waxes and Oils :**

As a leather Engineer one should have knowledge of science and chemistry of oils and waxes, understanding their structures,

properties, and how they react, interact with different materials. Before going to application on different substrates, tannages, articles, and consumer need.

Waxes and oils are both types of Lipids, but they differ in their chemical compositions, physical properties, and uses.

**Waxes :**

**Chemical Structures :**

- **Composition :** Waxes are ester of long chain fatty acids and long chain alcohols. They typically contain 14to 36 carbon atoms in their fatty acid chains and 6 to 30 carbon atoms in their alcohol chains.
- **Hydrophobicity :** Waxes are highly hydrophobic due to their long hydrocarbon chains, making them excellent for protective coatings.

**Properties :**

- **Solid at room temperature :** Waxes have high melting point between 60$^0$C to 100$^0$C which means they are solid at room temperature but can melt upon heating.
- **Plasticity :** Waxes are malleable and can be shaped when warm, but they harden upon cooling. This property makes them useful in applications where protective but flexible layer is needed.
- **Low Polarity :** Waxes are non-polar, meaning they do not dissolve in water but can dissolve non-polar solvent like oils and organic solvents.

**Common Types :**

- **Natural Waxes :** Derived from plants or animal.
- **Synthetics Waxes :** Created through chemical processes, such as Paraffin wax, derived from petroleum.

**Oils :**

- **Composition :** Oils are primarily try glyceride, which are ester formed from one molecule of glycerol and three fatty acid molecules. The fatty acids can be saturated or unsaturated, and the degree of saturation affects the oil's physical properties.

**Saturation :**

- **Saturated Fatty Acids :** Contain no double bonds between carbon atoms, leading to straight chains the packs closely together resulting in solid fats at room temperature (e.g., Coconut oil)
- **Unsaturated Fatty Acids :** Contain one and more double bonds, causing links in the chain to prevent tight packing, making them liquid at room temperature (e.g., Olive Oil)

**Properties :**

- **Liquid at Room Temperature :** Most oils are liquid at room temperature due to presence of unsaturated fatty acids, which lower their, melting point.
- **Hydrophobic :** Like Waxes, oils are hydrophobic and do not mix with water, making them effective as moisture barriers and lubricants.
- **Viscosity :** Oils have varying level of viscosity, depending on their fatty acid composition. More saturated oils tend to be more viscous.

**Common Types :**

- **Vegetables Oils :** Derived from seeds, nuts, or fruits (e.g., Olive Oil, Coconut Oils. Soybean Oils)
- **Animal Fats** : Derived from the tissues of animal (e.g., Tallow, Lard)
- **Mineral Oil** : Derived from petroleum (e.g., Paraffin oil)

**Interaction and Chemical Behaviour :**

- **Saponification :** When Oils (Triglycerides) reacts with strong base (like Sodium hydroxide), they undergo saponification, producing soap and glycerol. This process is the basis of traditional soap-making.
- **Oxidation** : Unsaturated oils can undergo oxidation, leading to rancidity. This process involves the reaction with oxygen with double bonds in the fatty acids' chains, forming peroxides and other degradation products.
- **Hydrogeneration** : Oils can be chemically hydrogenated to convert unsaturated fatty acids into saturated ones, turning liquid oil into solid fats (e.g., margarine production)

**Application Waxes and Oils in Leather industry - Finishing of oil and waxes-based articles :**

All chemical company dealing with leather chemicals and specialised in articles making as per demand of industry and fashion world are in continuous research for product development, there are ranges of finishing oil sand waxes, made from different sources of raw material we discussed in previous chapter with technological advancement to serve fashion industry, fashion world innovative artistic design and creativity by designers .which cover wide ranges of leather articles ,input and initiation derived from fast changing fashion world.

In Leather Industry full ranges of oil and waxes used which we discussed already, the ranges selected as per their chemical nature, chemistry suited to upgrade and various effects to the surfaces of buffed and full grain leather for developing.

The effects are generally –

- Milled to strong Pullup
- Light to dark Surfaces
- Oily or dry feel
- Soft to hard firmness
- Water resistance

The selection of waxes and oils from variety of waxes and oils -here is some product overview which cater the needs of article demanded by Industry.

- Standard Pull-up oils for Shoe and Leather goods Industry.
- Nubuck oils for Shoe Upper mainly.
- Feel Modifying Oils for shoe upper basically
- Aqueous Oil and Waxes for diverse article for shoe, leather goods and furniture Industry.
- Water Resistant Pull up oil and wax for non-water-resistant crust hiking boots, walking shoes.
- Water resistance pull up oil and waxes for water resistance crust safety upper for Industrial uses - Furnace, construction worker, Factory and diverse Industries.

**Role of Crust Tannages and other aspects :**

wax vs oils; oil vs waxes on articles

Producing Pull Crust needs some specialization, or which determine oil vs wax combinations and type, amount to apply, equipment type and ageing procedure, drying time, cooling time and piling etc.

Also, to like human skin, leather crust must be receptive towards oils and waxes, here comes –

- **Dry Crust vs wet stuffed crust** (Absorbency play key role)

We will discuss about wet stuffed crust and its importance to Pullup leather more acceptable, durable without any problem of spewing or migration in different geographical weather and condition.

- **Tight Surface vs Open Surface** (Buffing behaviour)
- **Heavy Chrome line** or stuck through penetration.

It is very pertinent to update here that majority oil pulls up or wax pull up leather defined by 4 or 5 types broadly –

**1) Pit Stop** : Articles are dark surface on full grain, basically unfinished only oil or wax applied as per customer or fashion demand.

**2) Timberland :** Article are variable pull up depends on article demand ,having silky surface feel on full grain as well as corrected grain leather ,it is full finished after oil and wax application

**3) Cyclone :** It strong pull up with silky surface on corrected grain leather and fully finished.

**4) Crazy Horse or Mad Dog** : Strong Wax break on Corrected grain leather and unfinished look

Above 4 types are very much desired by shoe upper people now a days leather goods and belt follow similar lines.

Majority of American Cowboy Shoes are made in these lines, having continuous demand.

For Hiking boot and walking shoes below two types of articles are demanded by US market.

1) Waterproof pull up on non-waterproof crust.

2) Waterproof pull-on waterproof crust where bally or measure flex should not hamper.

3) Nubuck treated with feel modifying oils or Nubuck sheen enhanced with Pull Up oils.

4) Furniture market worldwide like leather goods market follows fashion world where antique, break look pullup with specification Furniture parameter met with pull up oil sand waxes followed with finishing.

5) There is another market evolved - Construction industry, Safety Industry, Industrial Shoe Market of New Zealand and Australia opted for Performance Leather based shoe with touch of fashion - where fashion meets Performance based articles on wax and oils-based leather

Here mostly, now adays used only Water based oil and waxes on full grain or corrected grain leather.

Leather Engineer selecting oil and waxes based on characteristics of particular Oil and waxes when he designs a formulation to meet article aesthetic, depends on chemical nature provided by oil and wax :

- Different degrees of pullup
- Darken the surface to some degree.
- Provides Specific surface feel.
- Change temper of the crust

When working with waxes and oils, it is always best to pay attention to following points –

A. Heated Cylinder (65$^0$C-70$^0$C)

B. Cylinder Size

C. Application Quantité (Gm/Sq.Ft.)

D. Pre-heated leather (If Possible) better and mor even penetration.

E. Leave over night for wax and oil to settle.

F. Penetration of the product to be applied.

Author in his four decades in production and marketing having practical experiences, gather some very useful points to remember before making pull up articles, his numerous experience says –

- All oil and waxes changes colour of the crust to neutral, red, green, slightly green, brown, slightly brown.
- Penetration of all oil and waxes are fast, medium, slow, and medium fast.
- All oil and waxes changes temper of the leather to soft, hard, medium hard, medium soft.
- Application temperature (Melting Point) of each oil and waxes are different.
- Application quantity are different for Nubuck, Crazy Horse, Pit Stop, Cyclone .
- All oil and waxes are giving different degree of darkness - less, medium, high.
- All oil and waxes are giving different types of feel -oily, draggy, grizzly, very dry, slightly grizzly, oil and waxy.
- Never Apply Oil First -its will high light defect.
- Apply Wax first it will merge defects.

Author faced numerous issues making oil pull up articles, the issues normally coming from consumer or brands while it is in transit or in shop floor, are –

1. **Spew Formation** - It's not Spew but Wax Migrated in extreme cold weather when application quantity in Crazy Horse, Mad Dog or Cyclone article crosse s more than 22 gm. per sq.ft.
2. **Poor Adhesion** - After finish or during uses, finish layers peeling off due to improper usage of oil and waxes or due to adhesion promoter subsequent finish adhesion not correct.
3. **Migration Oil and waxes to Flesh** - Causing shoe making problematic or if shoe making is ok, during uses it can spoil inner lining or socks, leather looks uneven and dirty.
4. In Furniture Poor Adhesin causing poor Veslic rub where 80 wet rub and 250 dry rub fastness must be passed.

All these issues can be tackled if one makes right crust with wet stuffed i.e., drum stuffing wax used in crusting during or after fat liquoring.

## GST COLLECTION RISES 8.5% TO RS 1.82 LAKH CR IN NOV


Gross GST collections grew 8.5 per cent to over Rs 1.82 lakh crore in November on account of increased sales spurred by the festive season.

The Central GST collection stood at Rs 34,141 crore, State GST at Rs 43,047 crore, Integrated IGST (Rs 91,828 crore) and cess (Rs 13,253 crore), according to government data released on Sunday.

The total gross Goods and Services Tax (GST) revenue grew 8.5 per cent to over Rs 1.82 lakh crore in November compared to Rs 1.68 lakh crore in the same month a year ago, it said.

In October, the GST collection of Rs 1.87 lakh crore was the second-best GST mop-up with 9 per cent annual growth. The highest-ever collection was in April 2024 at over Rs 2.10 lakh crore.


During the month under review, GST from domestic transactions grew 9.4 per cent to Rs 1.40 lakh crore, while revenues from tax on imports rose about 6 per cent to Rs 42,591 crore.

Refunds worth Rs 19,259 crore were issued during November, registering an 8.9 per cent decline over the year-ago period. After adjusting refunds, net GST collection increased by 11 per cent to Rs 1.63 lakh crore.

The projected GDP growth of 7 per cent in FY25 augers well for GST collections in the remaining four months of the current fiscal year, considering the fact that the collections in the first 8 months of FY25 have exceeded that of FY25 by more than Rs 1 lakh crore and are ahead of the budget estimates for FY25, said MS Mani, Partner, Deloitte India.

The net GST collection stood at Rs 12.90 lakh crore during the current fiscal so far against Rs 11.81 lakh crore collected during the April-November period last year.

*(rediff.com – 02/12/2024)*

## INDIA'S MANUFACTURING SECTOR GROWTH FALLS TO 11-MONTH LOW OF 56.5 IN NOV

India's manufacturing sector growth fell to a joint 11-month low of 56.5 in November, restricted by competitive conditions and inflationary pressures amid a softer increase in factory orders, a monthly survey said on Monday.

The seasonally adjusted HSBC India Manufacturing Purchasing Managers' Index (PMI) fell from 57.5 in October to 56.5 in November, signalling a softer improvement in the health of the sector. However, the pace of growth remained above its long-run average.

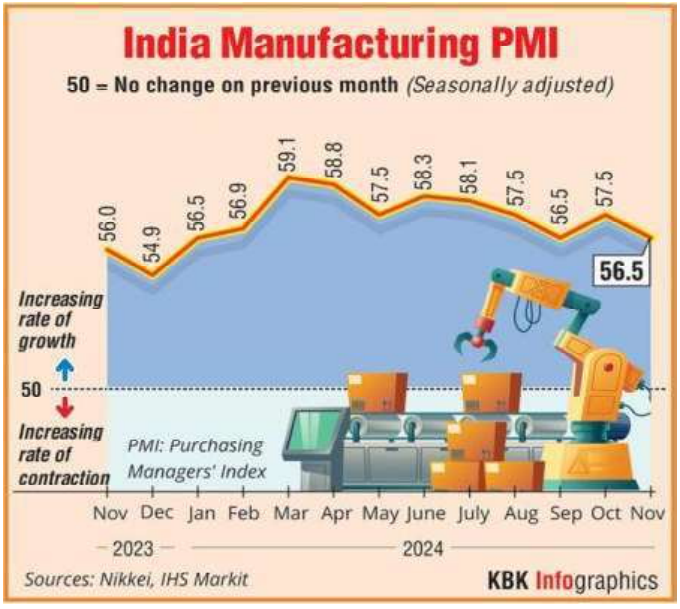
In PMI parlance, a print above 50 means expansion, while a score below 50 denotes contraction.

"India recorded a 56.5 manufacturing PMI in November, down slightly from the prior month, but still firmly within expansionary territory," Pranjul Bhandari, Chief India Economist at HSBC said. Bhandari further noted that strong broad-based international demand, evidenced by a four-month high in new export orders, fuelled the Indian manufacturing sector's continued growth.

At the same time, however, the rate of output expansion is decelerating due to intensifying price pressures. On the domestic macroeconomic front, the latest government data released on Friday showed India's economic growth slowed to a near two-year low of 5.4 per cent in the July-September quarter of this fiscal due to poor performance of manufacturing and mining sectors as well as weak consumption.

According to the survey, the expansion in sales and output in the manufacturing sector during November was largely supported by positive demand trends, though firms indicated that growth was somewhat restricted by competitive conditions and price pressures.

"Goods producers experienced a weaker, albeit still robust, upturn in new business intakes during November," the survey said, adding that growth was "stymied by fierce competition and price pressures". On the price front, Indian goods producers increased their selling prices to the greatest extent since October 2013.




Survey participants suggested that additional outlays on freight, labour and materials had been shared with clients. "Input prices for a variety of intermediate goods — including chemicals, cotton, leather, and rubber — rose in November, while output prices soared to an 11-year high as rising input, labour, and transportation costs were passed on to consumers," Bhandari said.

India's retail inflation soared to a 14-month high of 6.21 per cent in October —above the RBI's tolerance band, mainly on account of rising food prices. It was 5.49 per cent in September. The RBI, which is mandated by the government to contain inflation at 4 per cent (+/- 2 per cent) has projected retail inflation to be 4.5 per cent in the current fiscal year.

Although price pressures curbed domestic sales to a certain extent, the growth of new export orders gained momentum. "The rate of expansion in international demand was the best seen for four months, with panellists reporting gains from Bangladesh, mainland China, Colombia, Iran, Italy, Japan, Nepal, the UK and the US," the survey said. With demand conditions remaining favourable, Indian manufacturers continued to scale up production. Accordingly, for the ninth month in a row, factory employment in India increased during November.

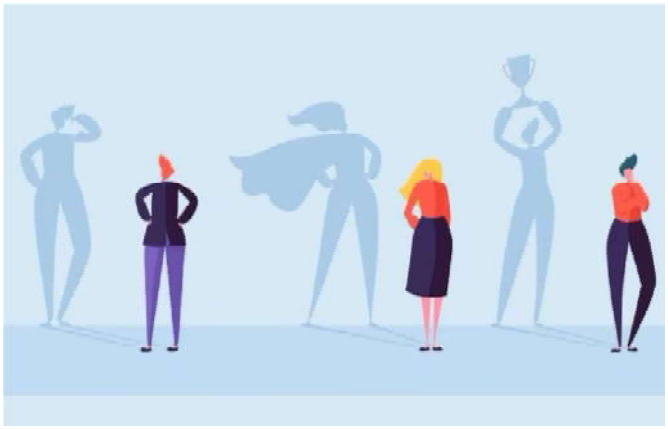
Going ahead, business optimism has increased by predictions that marketing efforts and new product releases will bear fruit. Recent capacity expansion efforts and forecasts of demand strength also underpinned upbeat forecasts for output in 2025. The HSBC India Manufacturing PMI was compiled by S&P Global from responses to questionnaires sent to purchasing managers in a panel of around 400 manufacturers.

*(rediff.com – 02/12/2024)*

## WOMEN IN SALARIED JOBS IN INDIA DOWN TO A SEVEN-YEAR LOW: MC ANALYSIS

The number of women in regular wage/salaried jobs in urban areas fell to the lowest level of 49.4 percent in seven years. Even as India grows at around 8 per cent, its workforce ratio remains skewed, according to a Moneycontrol analysis of annual periodic labour force survey data by statistics ministry released on September 23.

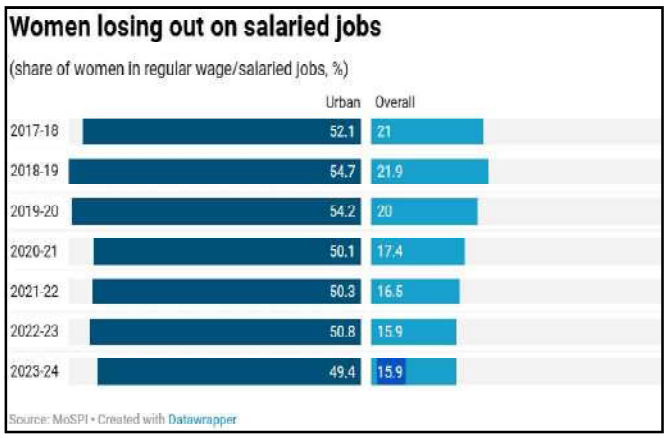
The number of women looking for work, as represented by the female labour force participation rate, rose to the highest level of 41.7 percent in 2023-24 (July-June); unemployment rose during this period to 3.2 percent from 2.9 percent in the previous year.



The rise came primarily from the rural economy, where the unemployment rate jumped again above 2 percent after falling to 1.8 percent in the previous year.

However, a closer analysis shows that even in urban areas, female unemployment declined faster than that of their male counterparts and the quality of jobs deteriorated.

The number of women in regular wage/salaried jobs fell to the lowest level in seven years at 49.4 percent as compared with 50.8 percent in the previous year. This marks the first time that less than 50 percent of the women were employed in regular wage/salaried work.



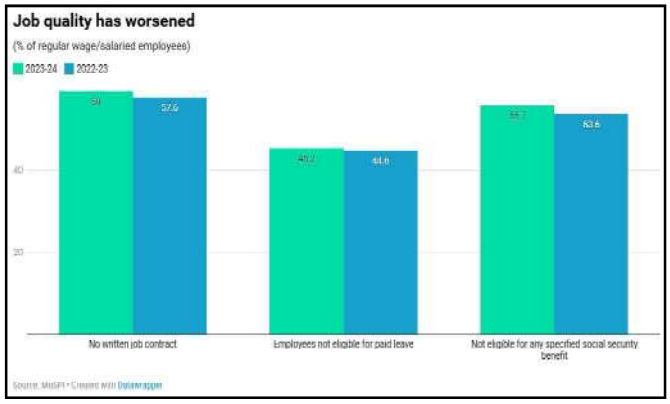

The decline corresponds with the rise in the share of women in the self-employed category.

While men also experienced a shift away from salaried work, the level of decline was much less pronounced than women.

**Lower pay**

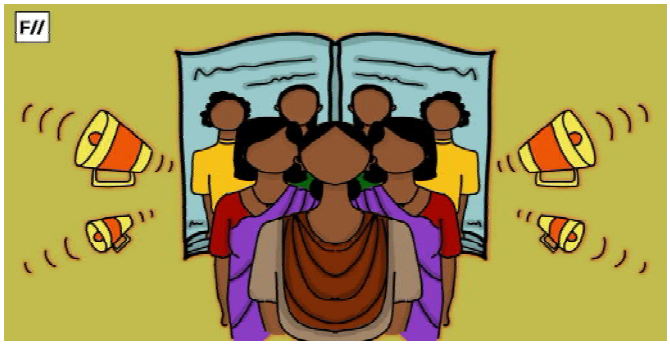
Moreover, a glance at the income levels shows that women were worse off when moving away from salaried work than men.

While the average monthly income of a salaried male worker was just 11 percent higher than self-employed male in urban areas, the difference for women was a whopping 132 percent. Salaried women earned Rs 19,709 on average, twice that of a woman's monthly income in self-employed category.
Not all salaried work is the same either.




The proportion of women having salaried jobs without a written contract rose to 59 percent in 2023-24 compared with 57.6 percent in the previous year. The ones without paid leave also rose to 45.2 percent from 44.6 percent and without social security benefits jumped to 55.7 percent from 53.6 percent in the previous year.

Meanwhile, men were better off across all categories as the share of men working in jobs without contracts and sans social security declined.




*(moneycontrol.com – 24/09/2024)*

**-: 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.

ILTA
Since 1950

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