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Portfolio

JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

NOVEMBER 2017 VOL.: LXVIII NO.: 11 RNI NO.: 2839/57 REGD.NO.: ISSN 0019-5738

Contents

Hony. Editor :

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Communications to Editor through E-mail :

jiltaeditor@gmail.com; admin@iltaonleather.org

Cover Designed & Printed by :

M/s TAS Associate

11, Priya Nath Dey Lane, Kolkata - 700 036

Published & Printed by :

S. D. Set, on behalf of Indian Leather Technologists' Association

Published from :

Regd. Office : 'Sanjoy Bhavan', 44, Shanti Pally

3rd Floor, Kasba, Kolkata - 700 107

Printed at :

M/s TAS Associate

11, Priya Nath Dey Lane, Kolkata - 700 036

Subscription :

Annual	Rs.(INR)	400.00
Foreign	**$** (USD)	45.00
Single Copy	Rs.(INR)	50.00
Foreign	**$** (USD)	4.00

All other business communications should be sent to :

Indian Leather Technologists' Association

'Sanjoy Bhavan', 3rd floor, 44, Shanti Pally

Kasba, Kolkata - 700 107, WB, India

Phone : 91-33-2441-3429/3459

Telefax : 91-33-2441-7320

E-mail : admin@iltaonleather.org; mailtoilta@rediffmail.com

Web site : www.iltaonleather.org

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.

Advertisement Tariff

Full Page / per month

Black & White	Rs. 5,000.00/-
Colour (full page)	Rs. 10,000.00/-
Colour Insert (One side) (Provided by the Advertisers)	Rs. 5,000.00/-

Full Page / per anum

Front inside (2nd Cover)	Rs. 96,000/-
3rd Cover	Rs. 84,000/-
Back Cover	Rs. 1,20,000/-

Mechanical Specification

Overall size : 27 cm × 21 cm
Print area : 25 cm × 17 cm

Payment should be made by A/c. Payee Cheque to be drawn in favour of :

Indian Leather Technologists' Association
and Payable at **Kolkata**

Send your enquiries to :

Indian Leather Technologists' Association
'SANJOY BHAVAN'
3rd floor, 44, Shanti Pally, Kasba, Kolkata – 700 107
Phone : 91-33-24413429/3459, Telefax : 91-33-24417320
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Its time to cut emission and prevent elimination of ourselves Please !!

In 2016, the earth's temperature was 1.3°C warmer than in pre-industrial times. More dishearteningly, even if countries take the action they promised at the Paris climate change conference in 2015, the world would be about 3°C warmer by 2100, well above the 2°C temperature guardrail to avoid dangerous climate change.

Human activities like excessive use of fossil fuels and changed land uses are responsible for the release of greenhouse gases (GHGs) and associated global warming.

The current pattern of increasing emissions needs a rapid phase down. The reason why bringing down emissions – even to zero – will not be enough to stabilize the climate is because the level of carbon dioxide in the atmosphere is already particularly unsafe.

NASA scientists can tell that these levels are higher than they have been at any time in the past 400,000 years. Today's concentration of CO2 in the atmosphere is above 400ppm which is comparable to this during the Eemian period, a time much warmer than what *Homo Sapiens* ever experimented and when sea levels were between 20 and 30 feet higher than currently observed.

Facing this reality, there is a consensus amongst the scientific community to develop revolutionary technologies like 'negative emissions' to remove existing and accumulating carbon dioxide from the atmosphere.

Closer examination reveals that many of the integrated assessment models used to study future emissions assume that the world would somehow make use of significant amounts of 'negative emissions'. These negative emissions in the models are used in addition to increasing use of renewables and improving the efficiency of energy services.

Negative Emission :

'Negative emissions' are nothing but the removal of carbon from the atmosphere. These are ways to remove carbon dioxide from the atmosphere, or even change the earth's radiation balance through geo-engineering.

- This can be done naturally, such as by protecting and restoring degraded forests so they become carbon sinks and better agricultural practices that leave carbon in the ground.

- Some also claim that the earth's radiation balance can be changed through geo-engineering, for instance by burning bio-energy, capturing the carbon released, and pumping it into underground geological reservoirs. This is known as Bio-energy, Carbon, Capture and Storage (BECCS).

Some scientists have been discussing the possibility of injecting cooling aerosols at a large scale in the atmosphere, but these geo-engineering technologies pose huge risks and are also not long-term solutions.

Few Environmentalists believe that :

- Geo-engineering projects are used as an excuse to keep burning fossil fuels despite unproven benefits.

- They will have unacceptable ecological and social impacts if used at an industrial scale.

- They cannot ensure stored carbon is not released through human or natural forces, including climate change.

- Due to competition for land for food and other purposes, and due to technological limitations, this approach is believed to be inappropriate for extensive use.

- Other methods to suck carbon dioxide from the atmosphere and increase carbon dioxide absorption by the oceans are also being explored, but their long-term implications are not clear.

- These models can pose a severe risk to society, especially to the poorest countries, which will experience the worst impacts of climate change. The irony is that these poor countries have emitted the least amount of GHGs.

- Negative emissions also create a moral hazard problem, where we expect (future) others to bail us out while we continue to lead profligate lives.

If negative emissions become feasible in future, they could help the world stay on course in reducing warming, but this cannot be assumed while we are running short of the carbon space available to escape dangerous climate change.

Climate change has already been experienced in many parts of the world with several seasons of intense storms, droughts, floods, fires. Any further delay in reducing emissions would put at risk many more lives, livelihoods and investments for decades to come. Hence,

- Economic growth as usual cannot be reconciled with climate impacts, especially as Earth continues to warm.

- Scientists need to speak openly and freely about the dangers of climate change without leaning on euphemisms.

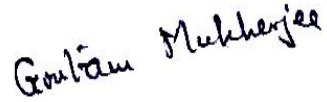
- Policies therefore need to support practices that successfully keep carbon in the ground, prevent deforestation, support agricultural practice that sequesters carbon and promote sustainable land use practices that reduce emissions.

- Needed one carbon tax.

- 'Lifestyle' and other consumption activities that may have hitherto been outside the radar of climate policy because they disturb the status quo would have to be considered.

- Policies should push especially the more prosperous communities towards less carbon intensive lifestyles, either through taxes or incentives or both.

In addition, the path to zero-emissions must be progressive and in line with the progress of carbon-neutral fuels such as hydro, solar and wind.



Dr. Goutam Mukherjee
Hony. Editor, JILTA

From the Desk of General Secretary

59th Annual General Meeting

The 59th Annual General Meeting of the Association will be held at the Auditorium of Indian Science Congress Association, 14, Dr. Biresh Guha Street, Kolkata – 700 017 on Thursday, the 30th November, 2017 at 03.00 PM (Registration from 02.30 PM) to transact the following business.

Normal Business :

1. To confirm the Proceedings of 58th Annual General Meeting held on 29th September 2016.
2. To consider and adopt the audited Balance Sheet and Statement of Accounts for the Financial Year ending 31st March 2017.
3. To consider and adopt the Annual Report of the General Secretary on behalf of the Executive Committee.
4. Formal announcement of the result of the Election for reconstruction of the Executive Committee for the term 2017 – 2019.
5. To appoint Auditor in place of M/s Ray & Ray who are retiring but are eligible for reappointment and to fix remuneration.

AGM Notice has already been posted on 8th November, 2017.

All members are co-ordially invited to attend.

LEXPOs in 2017 – 2018

LEXPO Reshaping Sub-Committee with concurrence of the Executive Committee has approached the competent authorities for a suitable fair period for allocation of ground at Gandhimore Maidan (Durgapur), Geetanjali Stadium (Kolkata) & Kanchanjunga Krirangan adjacent Maidan (Siliguri).

No confirmation of allocation has been received yet. Depending on the availability of the venue & economic viability, we may have to decide revised schedule in future.

Due to some unavoidable circumstances,
LEATHER SCIENCE ABSTRACTS (LESA)
is not being published in this issue.
Inconvenience caused is regretted.

BEREAVEMENT

With profound grief and a heavy heart we announce the sad demise of Dr. K. V. Raghavan, former Director of CSIR – CLRI & CSIR – IICT, former Chairman of Research Council, CLRI & a Sr. Life Member of ILTA on 12th October, 2017 and Mr. Tapas Deb, a Life Member of ILTA on 16th October, 2017.

May their soul rest in peace and May God give strength to the Members of the Bereaved families to bear the irreparable losses.

Corrigendum

Due to oversight, the title of the article by Mr. Sabyasachi Sengupta & Mr. Rahul Sethi was printed as "Emerging Trend in Fashion for Leather" instead of "Cloths, dressing-up and the Impact of time – Narration of as spatial montage seen in the lives of Anga-Vanga-Kalinga". Hence it is republished in this issue with correction.

Inconvenience caused is regretted

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(Susanta Mallick)
General Secretary

Executive Committee Members meet every Thursday at 18-30 hrs. at ILTA Office.
Members willing to participate are most welcome.

Clothes, dressing-up and the Impact of time - Narration of a spatial montage seen in the lives of Anga-Vanga-Kalinga

Mr. Sabyasachi Sengupta[1] Associate Professor & **Mr. Rahul Sethi**[2] Associate Professor
NATIONAL INSTITUTE OF FASHION TECHNOLOGY, KOLKATA

Key words: Anga, Vanga, Kalinga, Textiles, Society

Introduction:

Anga-Vanga-Kalinga – a chord that was built upon spinning and twisting many tales from mythology and history passing through the pre-modern period (till 1000 CE) got them placed as lively and polychromatic in various academic discourses. Apart from Kashi, Kanchi, Koshal, or Magadha these three names were always spelled together to narrate many common factors that were mostly associated with the socio-political and cultural scenarios of eastern part of this subcontinent. While retaining their individual characteristics, these three geographical spaces had developed a syntactical familiarity in socio-economic norms, arts and crafts that were primarily based upon culture, as well as in other livelihood guidelines and the most prominent visual accord was established in their dress senses. Since the mythic discourses, these individual societal identities that had originated from this geo-space, from community narratives of birth-marriage-death, merry-making and religious festivals or pala-parvanas through the seasons in the sun and winds of the expanses, a kinship that was built upon a grand old Gene-Code of the mythic saint dirghatamah still bears that common factor in weaving-embroidery-clothing life. The moment we see Saree, Gamchha (gamochha), dhuti (dhoti) we ought to find a milieu still carrying the lifeline of that very gene. Time has engulfed many customs and cultures; cities and towns have tainted their ethos, yet the marginal of villages and hamlets have retained this unison. In terms of design, aesthetics and crafts, one has inspired and adopted the other, never had experienced any slippage from the orbital journey of clothing and apparels. On the other hand, leaving the fetish of synthetic materials, gold and diamonds, now cities have slowly started accepting the uniqueness of Katki, Bhagalpuri, Shantipuri, Pippli, Dhokra, Kantha and many other indigenous make-ups. The cities have understood the traditional definition of beauty and aesthetics. For thousands of years, 'fashion and style' that was built upon different looms, literature, paintings and stone carvings is powerful enough to bring back certain lost habits.

As mentioned, since time immemorial, linguistic closeness (all three being Indo-European speech family members), food habits, and many other customs unified these three spaces. The presence of this dynamic setting can further be established from the documents and huge archival records of weaving, embroidery works and clothing, decorating them in an evocative way to substantiate their artistic dexterity. Dress being one of the few important visual and societal communication markers, conceivably after speech, is the oldest way to justify one community's bearing on culture and climate. A detailed diachronic study on social sciences, linguistics and history of weaving-embroidery-dress of the then marginal, subalterns and the mass that remained unseen by the academy would definitely connect to certain missing links of many purest expressions.

The Markerman of the Fashion-Style discourse :

Dress is the important human Marker (Identifier). And the Markerman consistently acts as a guardian of a three dimensional continuum taking responses from the riddles of 'may be-must be-may not be'. Ever since the race stepped out from the caves, it acts as the sentinel to 'our –your - their' ways of looking to the mind to the material and to appreciate beauty. The continuum consists of three dimensions which can be termed as Clime, Self, and Time. These three dimensions are well-built by their own definitions as well as each one complementing the other.

Keeping Clime as the first dimension; we can integrate geographical, political and geo-cultural identities as stipulated by clothes and dressing-up into this genus. Goopy and Bagha have to change themselves up while making fantastic journeys from Hundi to Shundi via Jhundi (in order to coping up with extreme climatic conditions) in Goopy Gayen Bagha Bayen, (Ray, Satyajit, Adventures of Goopy and Bagha, 1969). Likely, it is also found, clothes do change with each foreign visit a statesman makes. Muslin changes with each export; Nokshi kantha rests on a mummy (eisamay app, 2016). The second dimension is Self which can be filled up by sex, age, socio-economics, and many other politico-cultural

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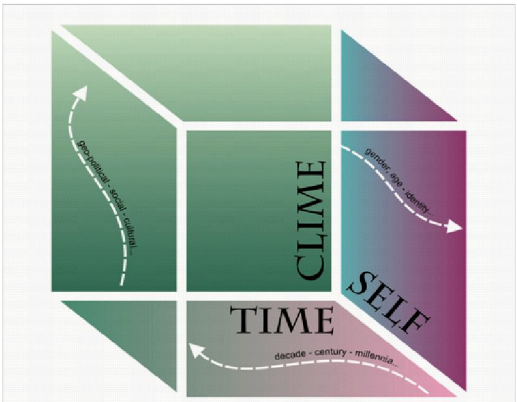
identities. The two good marginal fellas from Amloki and Hartaki villages (Goopy and Bagha) need to change their clothes the moment they were promised two daughters (princesses) of the Kings as their brides; Society forever remains euphoric if not amused with her clothes that she herself propels. From the dressing of Shikhandi to the disguise of Chitrangada and Vrihannala (Mahabharata) to the modern drag kings and queens gender senses put queer theories of Self in respect to one's owned clothes. Festival moods seek utopia, wars invite dystopia, and nonetheless the stolid Markerman keeps on documenting these realistic scores. Following Clime and Self the moment we need to elucidate the third dimension, the dimension that takes care of relativity, builds up the dynamic cube comprising of three dimensions is Time. It is observed, surpassing decades, centuries and millennia that the grand old Time has grown up with really complex stalks. Clothes change from Job Charnock to Steve Jobs, clothes change from Jessie Owens to Usain Bolt. Time shows us that same Shikhandi (Mahabharata) transforms into drag king or queen, thus builds up an ever changing narrative called Clime-Self-Time.



Markerman consistently acts as a guardian of the three dimensional continuum

The body and brain diad encompasses etiquettes of that very Clime-Self-Time. With time passing by aesthetic, social and state judgments change where men and women build up their individual clothing spaces. From time to time territories, societies, and states stipulate, 'Be on your mark and dare not cross the line that surely would invite coercion'. Style would be happy in its own space, but it is rather amusing to see fashion crossing the emotive line of control time and again. The Markerman is indeed merciless. Whatever is left in the essay triggers out a shock – it is at this moment the language of films needs to be introduced. If Modesty comes can immodesty be far behind!

Tagore, Ray and other semiotics of clothing :

Like ever-shifting culinary tastes of a race in duress (annochinta chamatkara - fascinating thrive for fooding, Ramakrisna Kathamrita), with each of the passing decades, dressing-up is also found to be following that Orphean gaze and performs amongst a given community. From the very first recognition of one's Self standing and babbling in front of the mirror as a growing up child develops a bond with flesh and brain that lasts till his death. The child grows up to a boy, at times becomes cynical about his choices to his already marginalized father "ki posakh aniyacho kine" (hope, you've bought clothes keeping the latest fashion in mind? - Pujar saaj, Tagore). He grows beard and moustache, his voice begins to adulterate, attains adolescence, time takes care of this journey. Tall, short, portly, lanky whatever it might be, Tagore provides a solution to the eternal question of the layers that make up the bodily aesthetics and psychology. "… Kshiti says, 'tell me honestly, will Byyom ever appear to be better in a well dressed manner? If an elephant be gifted with plumes like a peacock would it be smarter; equally, the peacock would not be looking nicer wagging an elephant's tail – our Byyom will not be superior if he dresses like Sameer, likewise, Sameer, surely would be a misfit here in Byyom's attire.'…" (Bhadrotar adorsho, panchabhut, shravana, 1302). Thus we get to know that fashion-style linguo-cultural 'timelets' do inhabit within time. Clothing is more of a language space, a wrapper, with the layers of Syntax-Morphology-Phonology-Phonemics it makes its way to morphemes-phonemes-phones and rests decoding and encoding the narratives of built up signifiers and signifieds —- own semiotics constructed upon various theories of arts, crafts and social sciences. Saussure, Barthes, and Eco et al have directed different ways to look at the fashion-clothing crossroad. It can also be deciphered through the looking glass of cultureme. We must bring Tagore's lucid clarification from shesher kobita (Farewell Song – Tagore) here. He writes, 'Amit believes, fashion is that mask which veils the style of the facial countenance… one may get exited seeing a professional nautch girl from behind the curtains in a public merry making tent, but the Banarasi veil is a must to appreciate one's bride for the first time. That curtain remains a mere totem called fashion; the Banarasi veil defines the style – seeing the exclusive face through the shadow of an extraordinary hue. … the tales from dakshayajna (Lord Shiva's vigorous dance) exemplifies this quite graphically; Indra, Chandra, Varuna were very fashionable gods and they got invited in each sacrificial ceremony, except Shiva whose style

was so very original, the chanting priests did find him very unusual to present him gifts…"(Shesher Kabita, 1928)

Anga, Vanga and Kalinga

Anga, Vanga and Kalinga are the three siblings along with Pundra and Sumva; According to the tales from Matsa Purana and Adiparva upon the request of Maharaja Bali to an old-blind saint, Rishi Dirghatamaah , Rani Sudeshna gave birth to children who later on coroneted to one Desha each under their respective names. Albeit, these Deshas were declared forbidden – any pilgrim was prohibited to visit these deshas: 'Anga, vanga, kalingeshu sourastre magadheh api cha; tirthayatraam vina gacchan punah samskaramarHati.' If one dare visit these deshas penance will be the only solution. The turbulent Buddhist-Jainist flow in the east could have been a reason for this sanction (Dinesh Chandra Sen). Mostly, because of geo-cultural and linguistic intimacy, these siblings had countless common practices. Apart from food habits, religious and social practices, construction of dwellings and their clothing, various customs from cooking utensils to coiffure pins, from reddening agents of the beetle leaves to the wedding sarees, from ulu (the sacred non-verbal sound made with tongue by married women) to the sacred bell-metals, everywhere the siblings left a common ground to declare their oneness. Albeit, at the present time-space conundrum, imports from urban nuances like neo-aesthetics and amalgamated technology debris have enough 'litter' to deposit in this space. Each day this rural conformist space suffers loss of different crafts, artistic customs, and art making methodologies and so on. This slow ceasing is a truth but at the same time tat is still not very much visible in these distant lands.

The original form of Anga (angeshu gangaataTe bahishchampayah – danDi) could be traced back to the presnt Begusarai, Bhagalpur, Purnia, Munger, Katihar, Jamui, Deoghar of Jharkhand, Godda and Sahebganj in Bihar and northern Dinajpur as Malda of West Bengal. The silk sarees and yardages of Bhagalpur still embrace the natural beauty of the Unrefined and carry their pride as natural produce. On both banks of the Ganges, in Bihar, indigo, muslin and other yardages, turban and sarees that were made here supplied to different places of the subcontinent. A hale and hearty inland business went on in the courses of the Ganges. In 1720 the first factory was built in Patna; Calico and Silk Markets were established. Soon after a decade or so during the 1769-70 epidemic famine ('… all through the stifling summer of 1770 the people went on dying. The husbandmen sold their cattle; they sold their implements of agriculture… sold their sons and daughters … they eat grass of the field…' W.W.Hunter), Company's stern economic policies, more emphasis on the need for co-ordination had stripped off the weaving industry in this vast region. In addition to the weaving, since the Gupta era, the demand for Nezak (who used to tan the clothes first), and the need for Rajak (color artist) were at the peak in this region. Apart from that, till 1900-10 the works of Appliqué on cotton cloth were unique until the import of bilaaiti yarns for this work that had contaminated the entire indigenous technique. The Khadi crafts are still proud of beautiful baonbuti saree (bootidar) of Bihar Sharif at Nalanda that were comprised of decorative motifs of fish, birds, conch, peacock, mosque in the selvedges. Motia, Laldhaye, and Maldehi saree are still produced for different customers with different tastes. Apart from the immense popularity of bufftas (Tasar-cotton), Safta (Malberi-Cotton) and Andi (cotton-satara) sarees, the work of Khatoya Appliqué and Sujni works of great art and are still popular all over the country.

The word 'Vanga' synonymous to Cotton (Bandhyapadhyaya, Haricharan, Bangiya Shabdokosh,) defines the land as fertile with abundant cotton plantations. Anga, Kalinga, and Vanga or the present day's Bihar, Odisha and parts of West Bengal respectively were born to this fertility. The original limit of Vanga (brihat) was that of Gangstrotontaraa (Raghuvanbansham) or Gangaridai as noted by ancient Greco-Roman writers. It is said that it lied between the vast area of the southern basin of the Ganges (from Maldar Bhagirathi to Hooghy in the Bay of Bengal), the Himalayas (Eastern) in the north Sundarbans (Dandbhukti and Harikela) in the south, the Arakan in the east and the Bihar in the west. Nearly after thousands of years, from the days of Ptolemy wrapping Nokshi Kantha and Muslin to most of the Eurpoean travelers and royals, Vanga finds Chandraktugarh, presently in 24 Parganas telling many tales. When we start remembering simple yet intelligent sermons of Khanaa, the great foreseer from Chandraketugarh (8th CE to 12th CE) we get to know that the fertility of the soil, splendor of the alluvial silt by the Ganga deltaic basin gifted the best of Bengal textiles during that time. In addition to cotton, silk, jute, even fabrics from banana leaves and stalks were used for the fabric making – the brilliant hand works of the weavers attracted buyers from all over the world. From 1600 CE onward, with the arrival of the Armenians, Dutch, Portuguese, French and finally English solidified the importance and excellence of fabrics. '…Oriental hyperbole which designates the

Dacca muslins as webs of woven wind (bakt hawa) seems only moderately poetical ... Sir Charles Wilkins brought a specimen of Dacca muslin from India in the year 1786, which was presented to him by the principal of the East India Company's factory at Dacca, as the finest then made there. Robert Orme *[1728–1801]* Historical Fragments of the Mogul Empire*)* The main centres were Dhaka, Sonargaon, Murshidabad, Malda, Dhonekhali, Nadia, Shantipore, Fulia and 'Kalikata' which also had certain to the Paikaars and Gomostha and practice of Dadon and other fatalistic tax systems. Some brilliant artistic patterns found in these sarees and fabrics - dure paars, bhumra paar, pineapple paar, gangajali, thousand beads, watermelon motifs, Begumbahar etc. Apart from Malamal, Jamdani, Baluchari, Swarnachari, Pittambori, Hiramkanthi, Dhupchaya have shown the magic of the silk here. Nakshi Kantha brings back the memory of Sujni and Munger's chain-stitch. Kalinga has owned the weaving livelihood by giving it a name like Vanga. '...Oriental hyperbole which designates the Dacca muslins as webs of woven wind (bakt hawa) seems only moderately poetical ... Sir Charles Wilkins brought a specimen of Dacca muslin from India in the year 1786, which was presented to him by the principal of the East India Company's factory at Dacca, as the finest then made there. Robert Orme [1728–1801] Historical Fragments of the Mogul Empire*)*

The word Kalinga is derived from Tamil 'Klinga' (Textile) and its etymological meaning endorses the textile practices. From the mythic Suvarnarekha to the north of Karnat it had three broad divisions – Trikalinga, Utkalinga and Tailanga or Telinga. Since the Maratha invasion of 1750, the beauty of silk and thread work that were worthy or the lace (gold and silver) got decreased. In today's Sundargarh, Ballangir, Kalahandi, Sambalpur, Mayurbhanj, Puri, Konark, Balasore, millions of artists have been earning their sustenance working in the weaving industry. Textile industry continues to flourish even today in various centres near Puri, Pipli, Nuyapatna, Baragarh, Barpali, Sambalpur, Sanpur. Banda / Bandha (Ikkat / Double Ikkat), Applique, Pittalam, Back-Strap Loom Saree, Gamcha, Chaddar (Shawl), Ikkat Lungi are still woven following that tradition. In 1054, the Maharaja Virkishore appointed many tailors Birbhum to stitch banners and ensigns of the Jagannath Temple.

The moment we look for that Midas touch of the match that had derived from that grand old gene, thousands of information comes alive. Down the history of Aryaavarta – the impacts of Mauryas, the Guptas, and later the Tughlaqs, Lodhis and further through the acumen of Mughal Karkhanas (Large halls are seen in many places, called Kar-kanays or workshops for the artisans. In one hall embroiders are busily employed, superintended my masters In another you see the goldsmiths, in a third painters, ... The artisans repair every morning to their respective Kar-kanays..." Travels in Mughal Empire, Francois Bernier) or even by the domestic Excalibur these millions of offspring had a life circling the triad called – weaving – embroidery – dressing. Like every other Indian provinces, they continued worshiping this form of beauty. There is no break from it even today. Since the ancient times, the continuous artistry of Block, Aazrakh, Kalamakari, 'Parmeshwar, Pochedi, Bandhani, 'Kalahasti', 'Brocade' 'Butidhar, 'Ikkat', 'Patola' ',' Fulkari '', 'Chambba Rumal' Kashmiri needle work are going on tirelessly. This 'weaving-embroidery-dressing' has become one of the most important means of living throughout the world. Since the ancient period of time this practice keeps on telling the rocky civilization about the soft sustenance; tells that 'protection - shame - decoration' is The Meaning. In this very practice lie the seeds of the journey of human life and will be carried out in future. Today, the textile mills are producing finest of the fabrics but in the other side of the spectrum millions of people of Bihar-Bangla-Odisha are now in the working together to continue their kinship in the name of textile akhara.

Reference :

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Press release

Stahl and Lowe Corporation join forces to create a more sustainable leather industry

Lowe Corporation and Stahl share the ambition to make the leather supply chain more transparent and sustainable. To strengthen this commitment they recently entered a partnership agreement linked to the alternative tanning system Stahl EasyWhite Tan™. This tanning system enables New Zealand's Lowe Corporation to create leather with a lower environmental impact, while using significantly less salt. The companies not only focus on extending the of use Stahl EasyWhite Tan™ within Lowe Corporation, but to promote more sustainable solutions in leather production elsewhere.

"We market tanned hides, pelts, skins and rendering material. We process at our tanneries and fellmongery and also own trucking and rendering businesses. Central to our strategy is sustainability. We focus on best practice initiatives to support our operations," says Andy Lowe, Managing Director and second generation at Lowe Corporation. "This is how we learned about Stahl EasyWhite Tan™. We believe that this tanning system is a truly great innovation. As we are progressing to widen our range of environmentally responsible articles, we are convinced that partnering up with Stahl is going to be very beneficial in a number of ways. Through our joint efforts we have shown tanneries in India and Pakistan how high quality leather can be achieved with the Stahl



About Stahl

Stahl is leading in process chemicals for leather products, performance coatings and Polymers. We offer a wide range of solutions to the automotive, apparel & accessories, home furnishing and leisure & lifestyle industry and for industrial applications. With more than 1,800 employees in 24 countries at 13 manufacturing sites and 38 laboratories, Stahl realized in 2016 an annual turnover of over 650 million euro. With its innovation power, expertise and range of technical solutions Stahl is able to deliver best in class solutions and services to respond even better to client needs and secure a more sustainable future.

Waste Audit – Model & Case Study

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Step 8: Accounting for Wastewater

Process Wastewater flows were based on totaling up batch water inputs and making allowances where appropriate for water retention by the hide at each process stage based on percentages reported in technical literature.

Composite samples of the various discharges were also taken for laboratory analysis. The results of this exercise were summarized in Table 6.

Table 6: Average Flows, Strengths and Pollution Loads of Strong Liquors

Unit Operation	Flow			BOD			SS		
	m^3/d	% of total	pH	mg/l	kg/d	% of total	mg/l	kg/d	% of total
Soaking	276	42.1	6.8	2,200	607	19.8	4,400	1,215	30
Unharing	103	15.7	11.5	15,500	1,597	52.0	22,100	2,276	56.1
Retiming	103	15.7	11.7	650	67	2.2	1,650	170	4.2
Delime and Bating	66	10.1	9.5	6,000	396	12.9	2,100	139	3.4
Pickling	37	5.6	2.7	2,900	108	3.5	5,200	192	4.7
Chrome Tan & Press Liquors	33	5.0	3.6	6,500	215	7.0	1,100	36	0.9
Secondary Tanning, Dyeing & Fatliquoring									
1st dump	19	2.9	4.0	2,000	38	1.2	600	11	0.3
2nd dump	19	2.9	3.7	2,200	42	1.4	850	16	0.4
Total	**656**	**100.0**	-	-	**3,070**	**100.0**	-	**4,055**	**100.0**

It was decided that having quantified the main, strong-liquor pollution loads per unit operation, separate quantification of running rinse water pollution loads per unit operation was not justified since this would have meant setting up numerous V-notch weirs and many additional sampling points, thus increasing significantly the time input and analytical work required.

The relatively weak continuous-flow rinse waters were thus monitored using a V-notch weir located in a common drain within the tannery and combining frequent spot samples to give a daily composite for the whole tannery. Total rinse water flow including general floor and plant wash down was estimated to be 1,944 m^3/d with an associated BOD and SS strength of 273 mg/l and 396 mg/l SS. Corresponding pollution loads (flow x strength) were thus 530 kg BOD/d and 770kgSS/d.

The overall wastewater flows and BOD and SS strengths and pollution loads were then tabulated in Table 7.

Table 7: Combined Wastewater Flows, Strengths and Pollution Loads

Wastewater	Flow	BOD		SS	
	m^3/d	mg/l	kg/d	mg/l	kg/d
Strong Liquors	656	4,680 (i)	3,070	6180 (i)	4,055
Rinse Waters/General Washdown	1,944	273	530	396	770
Total	**2,600**	**1,430 (i)**	**3,600**	**1,950 (i)**	**4,825**

(i) Concentrations calculated from flow/pollution load data

Based on an average 40 tonnes of wet-salted hide processed, it was noted that these overall figures equate to 65 m^3 wastewater/tonne, 90 kg BOD/tonne and 121 kg SS/tonne, ie fairly typical unit loads compared with average figures for similar tanneries elsewhere but some 20-25% high in terms of wastewater flow.

An assessment was also made of chromium and sulphide pollution loads based on selected additional wastewater analyses carried out. This yielded pollution loads of 198 kg Cr/d and 412 kg S7d, equivalent to 4.9 kg Cr/tonne and 10.3 kg S'Vtonne. Again, it was noted that these loads were fairly typical in the consultant's experience even for well operated tanneries, although somewhat higher (14% and 21% respectively) with respect to figures reported by WHO, 1982.

A number of other checks were also made. It was noted that while it was difficult to measure combined wastewater flows entering the wastewater treatment system, the final lagoon effluent discharged via a rectangular weir. In order to obtain some cross-check on the combined raw wastewater flow set out in Table 7, the final effluent flow to the nearby watercourse was moni-tored using this weir. An average flow over the study

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period of 2,200 m^3/d was recorded.

A limited number of samples of the lagoon effluent were taken and results compared with the raw wastewater analyses tabulated *in* Table 7. These indicated pollution load reductions averaging 40% BOD and 70% SS. Based on an average sludge concentration of 6% dry solids, calculations indicated that the volume of primary sludge generated averaged 56 m^3/d. The audit team noted that while this sludge was periodically being disposed of on surrounding land, this practice would not be allowed to continue in the future as liquid run-off caused additional pollution problems in the nearby watercourse, particularly during wet weather.

Step 9: Accounting for Gaseous Emissions

It was decided that consideration of atmospheric pollution issues in the context of this project did not justify the need for making use of portable gas detection equipment, such facilities in any case not being readily available. It was also considered that resources required to quantify gaseous emissions would be out of proportion to the extent of the problems occurring. However, various useful observations were made during the site survey.

A strong smell of hydrogen sulphide (H_2S) gas was evident at the primary sedimentation stage of the wastewater treatment plant. H_2S was also evident, although only to a limited extent, within the tannery processing areas where alkaline beamhouse liquors combined with subsequent acidic streams within the internal drainage system.

The plant chemist knew that the hydrogen sulphide was a highly-toxic gas having a threshold limit value (TLV) of 15 mg/m^3 (100 ppm by volume) in air. He also knew that the extent to which H_2S could be released from solution to atmosphere was pH dependent, high pHs favouring the ionised form (HS^-) and hence reduced risk of sulphide stripping. He therefore noted that any future wastewater treatment scheme would be best designed to allow pretreatment of alkaline beamhouse liquors (pH at least 10) before they were allowed to mix with other, acidic waste flows.

No release of ammonia associated with deliming/bating was apparent but it was noted that release of some solvent vapours in the working areas associated with leather finishing could be a potential health risk to production staff. Discussions with the management subsequently revealed that plans were already underway to install forced-ventilation equipment to cater for this problem.

Step 10: Accounting for Off-Site Wastes

The only wastes which were recycled were fleshings which were transported to a local rendering company; these amounted to an average of 9,200 kg/d.

Trimmings and shavings were disposed of to a local municipal landfill site and amounted to 14,600 kg/d.

No sale costs associated with disposal of the fleshings could be readily identified at the time of the waste audit. It was later established that no charge was levied by the tannery in return for the rendering company providing transportation facilities at their cost.

Trimmings and shavings were disposed of at an annual cost of US$14,000.

Step 11: Assembling Input and Output Information for Unit Operations

From the information collected the preliminary material balances were started by assembling the input and output data for the tannery and the wastewater treatment plant. These were tabulated under Step 12.

Step 12: Deriving a Preliminary Material Balance for Unit Operations

A preliminary material balance of data associated with operations within the tannery was first drawn up on an overall input/output materials basis. The information was tabulated as set out below.

Inputs	kg/d
Raw Hide	40,000
Chemicals (other than curing salt present in raw hides)	19,693
Water	2,450,000
Total	2,509,693

↓

Overall Tannery Operations

↓

Outputs	kg/d
Trimmings and Shavings	14,600
Reshings	9,200
Pickled Split Layer	13,500
Finished Leather	5,600
Wastewater	2,600,000
Gaseous Emissions to be a major output	Not quantified but not considered
Total	2,642,900

A material balance was then drawn up on a unit operation basis with specific reference to chro-mium and sulphide. A material balance for the wastewater treatment plant was also compiled.

Inputs	kg/d
	S"
Unhairing	430 (a)
(a) Based on 1,720 kg/d sodium sulphide containing 25% S"	

↓

Unhairing

↓

Outputs	kg/d
	S"
Unhairing Reliming	412 (a)
Delime and Bating Rinse waters	5 (b)
Total	417
Based on 103 m3/d unhairing liquors at 4,000 mg/l S"	
Based on 1,944 m3/d rinse waters containing 2.5 mg/l S"	

Chrome Tanning process :

Inputs	kg/d
	Cr (III)
Chrome Tanning	332 (a)
(a) Based on 2,076 kg/d Tanning agent containing 16% Cr3+	

Outputs	kg/d
	Cr (III)
Chrome Tan & Press Liquors	83 (a)
Chrome Leather	249 (b)
Rinsewaters	3 (c)
Total	335
a) Based on 33 m3/d chrome liquors at 2,500 mg/l Cr3+	
b) Based on 2,076 kg/d Tanning agent containing 16% Cr3+ and 75%	
c) Based on 1,944 m3/d rinse waters containing 1.5 mg/l Cr3+	

Wastewater Treatment Plant :

Inputs	m^3/d
Raw Wastewater	2,600

Outputs	m^3/d
Primary Effluent	2,200
Primary Sludge	56
Total	2,256

Step 13: Evaluating the Material Balance

The waste audit team was confident that they had obtained an adequate material balance (within 5-10%) for the tannery as a whole as well as for the specific chromium and sulphide chemicals used.

The material balance for the wastewater treatment plant was also considered reasonable taking into account that some water seepage was possibly occurring through the base of the crude lagoons, thus contributing to the 13% difference between inflow and total outflows recorded.

Step 14: Refining the Material Balance

It was considered that the material balance information obtained was sufficient to meet immedi-ate requirements but that it would be useful to carry out a further waste audit once any waste reduction measures had been implemented.

Step 15: Examining Obvious Waste Reduction Measures

It was noted that the rinse water usage following unhairing was appreciable, amounting to some l!§% of the total water usage throughout the tannery.

It was considered that significant savings could be achieved at this stage by changing from a 4-hour running rinse to a two-stage batch wash operation, each of 20-25 minutes duration. It was anticipated following a short-term trial that it should be possible to achieve a consistent 60% reduction in rinse water usage, that is, from 440 m^3/d to 176 m/d.

The audit team also realized that considerable water wastage was taking place by tannery staff leaving numerous hoses running in between general floor and equipment wash down operations. On the basis of an average of 15 hoses in continuous use, it was estimated that water passing to drain surplus to actual requirements could be as much as 136 m^3/d, some 5% of the total waste-water flow. Recommendations were therefore made for the fitting of pistol-grip self-closing valves on all hoses in use throughout the tannery.

Thus, it was concluded that total wastewater flows could be reduced from 2,600 m^3/d to 2,200 m^3/d, reducing the wastewater production to a more respectable 55 m /tonne wet-salted hide processed.

Step 16: Targeting and Characterizing Troubling Wastes

a) Sulphide Liquors

As indicated in Step 9, it was evident that pretreatment

of all sulphide-containing liquors was needed before they became mixed with other acidic flows; the possibility also existed of at least partial recycle of fine-screened sulphide liquors in subsequent unhairing operations.

The management favoured a flexible approach with the treatment system designed to handle the total daily sulphide liquor flow if required, conscious that sulphide liquor recycle would probably require a higher level of surveillance of the efficiency of the unhairing operation which might not be readily achieved on a consistent basis in practice.

The audit team then proceeded to draw up design flow and strength data for the pretreatment of sulphide-bearing waste streams; and also for the subsequent combined wastewater treat-ment facility required to meet the government's new discharge requirements.

Sulphide-bearing liquors were taken as being all the process and rinsewaters associated with the unhairing process and all wastewater associated with deliming/ bating other than the final rinse. The resultant average design flow and sulphide load assessed were as shown in Table 8.

Table 8: Characteristics of average Sulphide-Bearing Wastewaters

Parameter	Actual	Design
Flow	590m^3/d *	600m^3/d
Sulphide	412kg/d (700mg/l)	420kg/d(700 mg/l - ave.)
Total (design)		600 kg/d(1,000 mg/l - max.)

* assuming unhairing-stage rinsing carried out on a 2-stage batch basis to reduce water usage (equivalent to 27% of total wastewater flows following instigation of water saving)

An assessment was made of the likely BOD reduction due to oxidation of sulphide. The theoretical oxygen uptake rate due to oxidation of sulphide was taken as 0.75-2.0 kg O_2/kg S" depending on the ratio of the thiosulphate:sulphate oxidation products. Taking an average 1.4 kg O_2/kg S" and a 97% S" reduction (down to 20 mg/l S"), this gave a BOD reduction of 560 kg/d.

With reference to Table 7, the combined wastewater BOD load can be expected to reduce from 3,600 kg/d to 3,040 kg/d, equivalent to 1,380 mg/l BOD in a reduced flow of 2,200 nrVd. Regarding the effect on suspended solids loads as a result of fine-screening of sulphide liquors, actual removals were difficult to predict accurately without further test work. As a conservative approach therefore, it was decided that the calculated total SS load of 4,825 kg/d (Table 7) should be carried forward as a design SS load for sizing and budgetary costing of the combined wastewater treatment plant; this gave a concentration of 2,190 mg/l SS at the predicted future reduced flow.

b) Chrome Liquors

The audit team considered the possibility of recovering chrome from the chrome-bearing liquors by fine screening, addition of sodium carbonate to precipitate chrome hydroxide (at pH 8-8.5), filter-plate pressing of the resultant sludge and then conversion of the chrome precipitate to soluble chromic sulphate using sulphuric acid.

Discussions .with the management revealed that this possibility had been considered in the past but was not favoured on overall technical and cost grounds unless the benefits of economy of scale could be introduced by providing a centralized chrome recovery plant to serve all tanneries in the local area. While some preliminary discussions had been held through the national tannery association, such a scheme was not foreseen at this stage.

It was agreed therefore that for the present, the design of a new wastewater treatment plant should assume that chrome would be precipitated and disposed of off-site as part of the primary sludge generated.

Step 17: Segregation

In order to segregate sulphide Mquors for separate pretreatment, it was decided to divert existing drainage outlets in the unhairing area to a batch treatment plant located within the existing tannery process building.

Treated flows would then be combined with all other wastewaters at a new treatment plant located close to the existing settlement lagoon facility.

Step 18: Developing Long-Term Waste Reduction Options

The waste audit consultant was responsible for drawing up outline proposals for the required new wastewater

treatment facilities.

Consideration was given to available methods of sulphide treatment. These included: acidification to pH 2-3 and aeration, with absorption of the resultant hydrogen sulphide gas in caustic soda solution within packed-tower scrubbers prior to discharge of the resultant liquor to drain or reuse; precipitation with ferrous or ferric salts; oxidation using chlorine or hydrogen peroxide; oxidation using aeration with a manganese catalyst.

The latter method was considered the most technically satisfactory and cost-effective solution following fine screening. This view was supported by reference to available information sources concerning operational experience elsewhere.

It was decided to divert existing drainage outlets in the unhairing area to a mechanical self-cleaning screen (1 mm) located in a modified floor channel, the upper end being designed to convey screenings to an adjacent skip.

Screened flows would then gravitate to a submersible pumping station to lift flows into one of two batch-treatment oxidation tanks, one to be used for treatment and the other to be available for receiving the next batch of liquor. A diffused-air system, using non-clog coarse-bubble diffusers, was selected to provide mixing and aeration in each tank and a facility for dosing a solution of manganese sulphate catalyst was incorporated.

The main treatment plant for pretreated sulphide liquors combined with all other wastewater flows involved the following features :

- flow/pollution load balancing incorporating coarse-bubble aeration/mixing;
- pH correction (if required), chemical flocculation with alum and polyelectrolyte and subse-quent primary settlement;
- extended aeration treatment using low-speed mechanical surface aerators (sized to provide a robust biological system capable of withstanding fluctuating loads);
- batch storage/thickening of mixed primary and surplus secondary sludges prior to pumping to drying beds and subsequent disposal of sludge cake to landfill.

Provision for iron salt dosing to the sludge storage/ thickening tank was incorporated to precipi-tate any sulphide formed as a result of anaerobic activity within the tank and hence to minimise odour problems occurring.

A schematic diagram of the proposed treatment plant was compiled as illustrated in Figure 2.

Step 19: Environmental and Economic Evaluation of Waste Reduction Options

Company B was placed in a position of having to upgrade its wastewater treatment system in order to comply with new discharge standards imposed by the government, part of a new empha-sis on the need to control pollution of the environment.

The new effluent discharge standards laid dowry were 4Q > mg/l BOD and 60 mg/1 SS. Hence, provision of a new treatment facility designed to meet these standards consistently was expected to improve the quality of the local watercourse substantially.

There was a clear need to minimize capital and operating costs of the treatment scheme to ensure the overall financial viability of the company's operations. Therefore, in preparing outline designs' for budgetary purposes, particular attention was paid to providing a plant which would be robust and relatively simple to operate.

The cost of the treatment scheme drawn up was estimated at US$500,000 including contingencies and design/construction supervision fees. This reflected a conservative approach to the sizing of the activated sludge process, particularly in terms of aeration capacity. It also took into account the availability of two redundant water storage vessels suitable for use as sulphide-liquor treat-ment tanks.

This approach was adopted to provide some flexibility over the mode of operation of the plant with a view to minimizing operating costs - it would allow the primary settlement stage to operate without addition of chemical flocculants if desired, with consequent higher strength effluent passing forward to the biological stage; overall sludge yields requiring ultimate disposal off-site would also be minimized. Provision for chemical flocculants at the primary stage was included however since it was felt that their use could enable the required

final effluent quality to be achieved more consistently.

Step 20: Developing and implementing an Action Plan: Reducing Wastes and Increasing Production Efficiency

The consultants engaged to carry out the waste audit/ waste reduction studies presented the results of their findings to Company B's management. The data presented were used as a basis for submitting a planning application to the local government office for approval to design and install the proposed wastewater treatment plant.

During a subsequent meeting with the government concerning timing of the proposed design and construction work, Company B was informed that the introduction of a charging system for borehole abstraction was under consideration for possible implementation the following year. This development emphasized to the tannery management the importance of having carried out the waste audit/waste reduction investigations and the need to be alive to further water-saving possibilities in the future.

The waste audit/waste reduction investigations achieved the following objectives.

- A thorough appreciation of all the sources of waste at the tannery.
- Identification and quantification of the major sources of wastewater including waste-sulphide and chromium contributions.
- Evaluation of processing efficiencies from assembled information on unit operations, raw materials, water usage, products and waste generation.
- Reduction of water usage and associated wastewater disposal problems.
- Identification of problem wastes (ie sulphide liquors) requiring special attention.
- Development of a waste management system which would comply with discharge regulations and result in a much-improved local environment.

Wastewater Flow Measurements

This section describes simple methods of measuring flows in open channels using triangular-notch (V-notch) or rectangular thin-plate weirs.

The discharge over thin-plate weirs is a function of the depth (head) of liquid on the weir, the size and shape of the discharge area, and an experimentally determined coefficient.

Thin-plate weirs should be vertical and perpendicular to the walls of the channel, constructed in steel, wood or similar smooth-surfaced robust material.

The intersection of the weir plate with the walls and floor of the channel should be watertight and firm, putty or other suitable material being used as a sealant as appropriate. Weirs are best installed under no-flow conditions to ensure that a good seal is obtained. Where wastewater flows normally arise 24 hours per day, 7 days per week, this can create problems unless produc-tion can be temporarily stopped. In such circumstances, the weir should at least be installed under low-flow conditions in order to facilitate the installation procedure and to minimize risk of leaks around or under the weir occurring.

In general, the weir should be located in a straight, horizontal, rectangular channel if possible. Ideally the length of the approach channel should not be less than 10 times the width of the jet (nappe) formed by the flow over the weir at maximum head.

The shape and size of the channel downstream from the weir is of no significance, but the level of the water in the downstream channel should be a sufficient vertical distance below the crest to ensure free, fully-ventilated discharges.

V-notch weirs permit the accurate measurement of much lower discharges than do rectangu-lar weirs. Also, the discharge over a V-notch increases more rapidly with the head than in the case of a rectangular weir. Thus, where flow variations over a working day are large, use of a triangular-notch" (V-notch) weir is preferable. For large flows however, a broad-crested rectan-gular weir may be necessary.

Where significant suspended solids are present, care should be taken to ensure that there is no accumulation of floating debris or settled solids behind the weir at the time of water level (head) measurement.

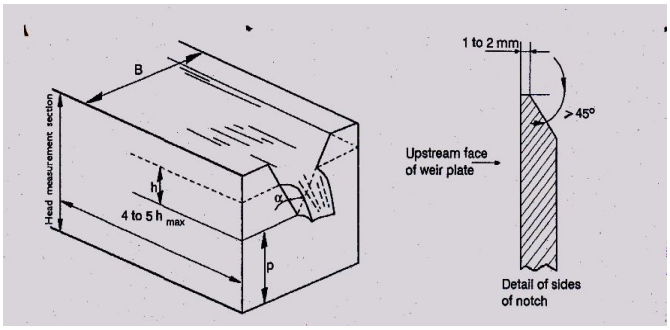
Triangular-Notch (V-notch) Weirs :

The triangular weir consists of a symmetrical V-shaped notch in a vertical thin plate. A dia-grammatic illustration

is shown in Figure A.

The bisector of the notch should be vertical and equidistant from the two walls of the channel.

Figure A: Triangular-notch, thin-plate weir



The plane surfaces of the notch should form sharp edges at their intersection with the upstream face of the weir plate. The width of the notch surfaces, measured perpendicular to the face of the plate, should be 1-2 mm. The downstream edges of the notch should be chamfered if the weir plate is thicker than 2 mm, the maximum allowable width of the notch surface. The surface of the chamfer should make an angle of not less than 45° with the surface of the notch.

An appropriate formula, the Kindsvater-Shen formula, for all notch angles (OC) between 20° and 100° degrees is:
8 ex
$Q = C_e i5V2gtan2h_e^{5/2}$
where Q = wastewater flow in cubic metres per second
C_e = coefficient of discharge (non-dimensional)
g = acceleration due to gravity, = 9.81 metres per second squared
OC = the notch angle included between the sides of the notch, in degrees
h_e = the measured head over the weir, in metres
= h (measured head) + k_h (which compensates for the combined effects of viscosity and surface tension)
Also, p = the height of the weir crest above the upstream channel bed; and B = channel width at the weir section (ref. Figure A).

r
The factor k_h is small and can be ignored for all practical purposes with only minimal loss of accuracy; hence $h_£$ can be assumed to equal h.

C_e is a function of the three variables - h/p, p/B and OC. For most purposes, use of a stand-ard value of 0.6 will give sufficient accuracy. For further information on the small varia-tions of C_e under different weir conditions, reference may be made to the International Stand-ard 'Water Flow Measurement in Open Channels using Weirs and Venturi Flumes', ISO 1438/1, 1980.

The V-notch weir formula can therefore be simplified to :

a
$Q = 1.42 \tan 2\ h^{572}$

For reasons related to measurement-error and lack of experimental data, limitations applicable to the use of this formula are :

h/p limited to the range 0.1-2.0 for a 90° V-notch, and not greater than 3.5 for all other
angles within the range 20°-100°;

p/B limited to 0.1-1.0 for a 90° V-notch, and 0.1-1.5 for other values of OC;
h not less than 0.06 metres;
p not less than 0.09 metres.

In the absence of continuous level recording equipment (which may be of a type which auto-matically records levels as flow for a given weir type and size), weir height readings may be taken using a calibrated dipstick positioned in the centre of the channel upstream of the weir, away from the immediate point of turbulence at the weir. The location of the dipstick will be satisfactory if it is at a distance equal to 4-5 times the maximum anticipated head (4-5 h_{max}) upstream from the weir.

With the bottom of the dipstick in contact with the base of the channel, the depth of immer-sion at any one point in time will equal h + p. Knowing p, h can then be calculated by differ-ence and inserted into the weir formula to obtain the corresponding flow rate (Q).

Alternatively, it is recommended that a calibration curve be drawn up for any one weir size for a range of h values and corresponding Q values. This should be done before commencing flow measurement work so that Q values can be assessed quickly from the graph as soon as values of h are recorded.

Level/flow rate measurements should be taken at least once per hour. More frequent meas-urements may be necessary depending on the pattern of flows experienced. The data can then be assessed to give an

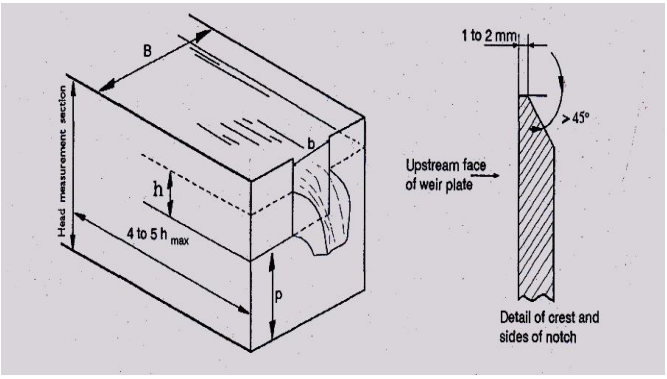
average daily flow (m^3/d) as well as an indication of minimum and maxi-mum instantaneous discharge rates.

Rectangular Weirs

A rectangular thin-plate weir is a general classification in which the rectangular-notch weir is the basic form and the full-width weir is a limiting case.

A diagrammatic illustration is shown in. Figure B with intermediate values of b/B and h/p. When b/B = 1, that is, when the width of the weir (b) is equal to the width of the channel at the weir section (B), the weir is a full-width weir type (also referred to as a 'suppressed' weir, be-cause its nappe lacks side contractions).

Figure B: Rectangular-notch, thin-plate weir



A formula for rectangular weirs (the Kindsvater-Carter formula) is as follows :

$Q = C_e\ 2/3"2g b_e h_e^{3/2}$

where Q = wastewater flow in cubic metres per second, Ce = coefficient of discharge (non-dimensional), g = acceleration due to gravity, = 9.81 metres per second squared, b_e = the effective width in metres = b (measured width) + k_b (which compensates for the combined effects of viscosity and surface tension), h_e = the measured head over the weir, in metres = h (measured head) + k_h (compensating factor similar to k_b)

Also, as for V-notch weirs, p = the height of the weir crest above the upstream chan-nel bed; and B = channel width at the weir section (refer to Figure B).

The factors k_b and k_h are small and can be ignored for all practical purposes with only minimal loss of accuracy; hence b_e and h_e can be assumed to equal b and h respectively.

For rectangular weirs, C is a function of the two variables - h/p, p/B. As for V-notch weirs, use of a standard value of 0.6 will give sufficient accuracy in most cases.

The rectangular weir formula can therefore be simplified to: $Q = 1.77\ b\ h^{3/2}$

For conservative practice, limitations applicable to the use of this formula are :

h/p not greater than 2.5;
h not less than 0.03 metres; -
b not less than 0.15 metres;
p not less than 0.1 metres;
either (B-b)/2 = 0 (weir full width of channel) or
(B-b)/2 is not less than 0.1 metres (concentrated weir).

As in the case of V-notch weirs, the location of the head-measurement section will be satisfactory if it is at a distance equal to 4-5 times the maximum anticipated head (4-5 h_{max}) upstream from the weir.

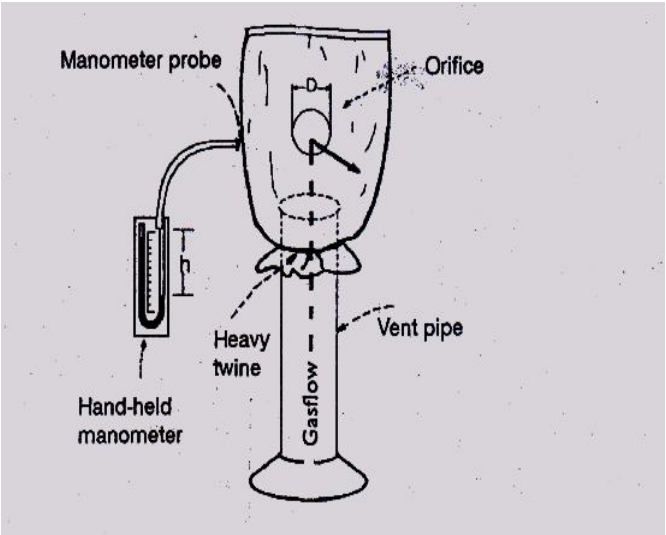
Gas Flow Measurements

In the course of gathering gas flow data for environmental control or a waste audit, flow measur-ing equipment is often lacking, or the velocity of the gaseous emission is too low for measure-ment. Even when the velocity is high* enough for meter methods, the geometry of the system may make the measurement difficult or subject to error. Consequently, a method is needed for a quick and fairly accurate measurement of gas flow, that can be operated without the use of expensive or time-consuming installations.

In most cases the following method will work (or serve as a valid double-check) if only the gas can be made to flow through an accessible open-ended pipe or duct; it has been developed by the Chesapeake Corporation, Virginia, USA.

A plastic bag with a hole cut in it is placed over the end of the pipe or duct, causing a small resistance to the flow, depending on the size of the hole. Hence, a manometer reading of the pressure drop across the bag orifice accomplishes tie purpose of an ordinary orifice. A dia-gram of the bag orifice is shown in Figure C.

Figure C: Measuring Gaseous Emissions Through a Vent Using a Bag Orificel



Since compressibility can be ignored for small pressure drops, the general orifice equation applies :

$Q = KA\sqrt{2gh}$
where Q = gas flow
g = the acceleration due to gravity
A = the orifice area
h = the pressure drop
K = the discharge coefficient
including the velocity-of-approach factor

Where the bag size is large relative to the orifice diameter, the velocity-of-approach factor can be taken as 1.0. Experiments with different bag thicknesses, flow rates and air densities have then shown that the orifice equation can be rewritten, independently of bag thickness.

The simplified formula is as follows :
$Q = 0.00257 D^2 \sqrt{h/p}$
where Q = gas flow in litres per second (to within ±4%)
D= the orifice diameter in millimetres
h= the pressure drop in millimetres
p= the gas density at the gas temperature in grammes per litre

In selecting a suitable orifice size, a pressure drop of 25-100 mm water gauge should be sought. Less than 25 mm is difficult to measure, and greater than 100 mm may make the bag slip off the pipe. If a rough estimate of the gas flow is known, the hole diameter (mm), necessary to produce a pressure drop of 63 mm, is approximately :

$D = 7.65N\sqrt{Q}$

Several features of the design can minimize error. These are as follows.

The position of the manometer probe should project slightly through the bag wall, so that the axes of the vent pipe, the bag orifice and the probe end are all perpendicular (ref. Figure C), and so that a true indication of static pressure can be obtained. The bag should be large enough to minimise the effects of approach velocity and to pre-vent flapping or tearing.

The orifice diameter should be measured during operation, so as to obtain true operating dimensions; if stretching causes an elliptical orifice, the area should be based on the product of the major and minor axes.

Thin-walled bags, high temperatures and high velocities should be avoided since fluting outward of the orifice edges will tend to occur; when pronounced, the effect would be to increase the discharge coefficient as the shape of the orifice approaches that of a nozzle.

Finally, when members of the waste audit team make a bag orifice measurement, it is important to ensure that adequate steps are taken to prevent burns or fumigation.

BOD_5: biochemical oxygen demand; a measure of the quantity of dissolved oxygen consumed by microorganisms as a result of breakdown of biodegradable organic constituents. The standard test is carried out at 20°C over a 5-day period.

By-Product: a secondary or incidental product of a manufacturing process.

Catalyst : a substance that increases the rate of a chemical reaction without itself undergoing any permanent change.

COD : chemical oxygen demand; a measure of the quantity of dissolved oxygen consumed during chemical oxidation of wastewater with potassium dichromate.

Counter-Current Rinsing : the introduction of water or a solvent in the opposite direction to the product flow.

Discharge Points : this term refers to the points of exit

for wastewater leaving the site. A dis-charge point may also refer to the place where an incoming tanker discharges a load.

Drainage : refers to the effluent collection system on a site.

Emission : an emission usually refers to fugitive or waste discharges from a process. Emissions are traditionally associated with atmospheric discharges. All such discharges are termed waste within the context of this discussion.

Energy Audit : a quantitative account of the energy inputs and outputs to and from a unit opera-tion, a process, a plant or an industry.

Gaseous Emissions : gaseous emissions can be classified into several categories; pure gases or vapours, combinations of gases and solids, combinations of gases and liquids and combinations of gases, liquids and solids. The last three categories are considered to be gaseous emissions because the gas is the carrier for the solid or liquid phase.

Material Balance : a precise account of all the inputs and outputs of a process, based on the law of conservation of mass.

Monitoring Programme : a monitoring programme that describes a timetable for regular sam-pling and testing of equipment, pumps, products, wastes and general operations to ensure that any deviations from the norm are noticed and can be rectified before problems result.

Operating Costs : also known as variable or running costs; they refer to costs which vary directly with the rate of output, for example labour costs, raw material costs, fuel, power, etc.

Plant : In the context of this discussion a plant refers to the factory site. A plant may comprise a number of processes, administration buildings, site waste treatment facilities, site storage facilities, etc.

Pollution : The term describes the presence of harmful, hazardous or detrimental constituents in an environment. A polluted environment describes a state that occurs when the assimilative capacity of the environment is exceeded, resulting in undesirable ecological changes.

Process : In the context of this discussion a process is taken to include all operations involved in production. Therefore, a process may begin with receipt of raw materials, storage and handling through process technology to product handling and waste treatment.

Process Flow Diagram (PFD) : An essential tool in developing an organised diagrammatic presen-tation of a process.

Process Inputs : Defined as one half of the material balance equation. Inputs to a process may comprise raw materials, water, energy, etc.

Process Outputs : The second half of the material balance equation. Outputs from a process may include a product, a by-product, wastewater, gaseous, liquid and solid wastes, heat, etc.

Product : The useful material output from a process.

Purchasing Records : Documentation of invoiced purchases.

Raw Material : A material on which a particular manufacturing process is carried out.

Recovery : Waste minimization can be achieved by recovering valuable material from a waste. For example, cleaning solvent can be recovered from waste oil. Recovery often involves advanced technology such as ultrafiltration or reverse osmosis, although simple settlement can separate oil and water solutions.

Recycle : This term represents an important aspect of waste minimization. The recycling of wastes within a process often reduces the fresh material input requirement. For example, a solvent used for cleaning engine parts can often be used twice before its cleansing power is exhausted.

Reuse : This is an important consideration in waste minimization. If a waste cannot be reduced can it be reused? Reuse represents a secondary line of action in a waste reduction plan.

Segregation : the term segregation refers to isolating hazardous and/or strong wastes from less polluting wastes. For example, uncontaminated surface drainage should be collected in a sepa-rate system from contaminated effluents from process areas. If the two wastes are not

segregated the volume of wastewater requiring treatment is greater.

Services : In the context of this discussion the term services is taken to mean supporting facilities such as a power supply.

Stockpile : Refers to solid material such as coal or gravel stored outside on the ground. Stockpiling should comply with legislation to minimise pollution.

Stoichiometric Estimations : Mass or concentration calculations based on the exact molecular relationship between constituent elements, taking into consideration atomic and molecular weights.

Unit Operation : a process will comprise a series of unit operations. A unit operation may be pulping or bark stripping in a pulp and paper mill, or distillation in a chemical manufacturing process. Unit operations may be intermittent such as tank washing and steam cleaning.

Waste : in the context of this discussion waste is taken as a broad term to cover any non-product discharge from a process. Thus, it describes discharges in the gaseous, liquid and solid phases.

Waste Audit : a waste audit is a thorough account of the wastes from an industry, a plant, a process or a unit operation. A waste audit requires the derivation of a material balance for each scale of operation. The waste audit should result in the identification of wastes, their origin, quantity, composition and their potential for reduction.

Waste Reduction Plan : a waste reduction plan should include a series of scheduled actions to be undertaken with the overall aim of reducing the amount of waste generated.

Wastewater : the aqueous effluents from a process that pass to drain or to storage.

Wet Scrubber : pollution control equipment designed to treat off-gases. A wet scrubber will involve water or a chemical solution to strip certain gases from the gaseous phase before dis-charge to atmosphere. The wet component may be a once-through scrub or a re-circulating solution (with a bleed to drain), the solution strength needing to be topped-up either continuously or periodically.

A Different Look back :

Harvard Schools took America Recycles Day to the next level on Nov. 15, choosing to use the day to celebrate the annual Mt. Trashmore tradition. One day every fall, students and staff construct the pile, which represents one day's trash from Harvard Yard. The idea is to educate the Harvard community about the importance of waste reduction and recycling.

This year's Mt. Trashmore was made up of about 300 bags of trash. The heap, about 10 feet high, was constructed by Green '14 students in coordination with the FAS Green Program, Office for Sustainability, and Harvard Recycling. Green'14 is a group of Harvard freshmen dedicated to making the Class of 2014 the greenest ever. They estimated that if it weren't for Harvard's 55% recycling rate, Mt. Trashmore would have been 15 feet tall and more than twice the volume.

Days earlier, Harvard Recycling and students with the FAS Green program conducted Harvard's 13th annual waste audit of undergraduate residences. The results showed that 25% of the trash could have been recycled – the lowest fraction of recyclables in the trash since the waste audits began in 1999. Last year, 32% of the sampled trash was recyclable.

Dressed in protective gowns, dust masks, goggles and gloves, auditors held their gag reflexes in check and separated the refuse into five categories: single-stream recyclables (paper, cardboard, bottles, cans, cups and containers made of plastics 1-7); reusables; compostables; liquids; and other residuals (trash). "Boxes, water bottles, and coffee cups were the most abundant recyclables I saw," said Rob Gogan, recycling and waste services manager for Facilities Maintenance Operations.

The House Reuse Shelves expanded from four pilot Houses last year to all 12 Houses this year. That may be one reason for a reduction in reusables found in the trash, said Brandon Geller, undergraduate REP coordinator for the Office for Sustainability. He gave one example: "PfoHo's Reuse Shelves are extremely active, with lots of clothing coming and going every week."

The waste-audit results showed that Harvard can improve by focusing on recycling beverage containers, said Gogan. For one, coffee cups can now be recycled as part of Harvard's single stream recycling.

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NETT, a network for environmental technology transfer, Ave Louise 207, Box 10, Brussels, Belgium.

....THE END....

FOOTWEAR – MAKER KHADIM INDIA GETS GO-AHEAD FROM SEBI TO FLOAT IPO

New Delhi : Footwear retailer Khadim India has received capital markets regulator SEBI's approval to raise an estimated Rs.550-650 crore through an initial public offering. The company had approached Securities and Exchange Board of India (SEBI) with its draft red herring prospectus in July and received its 'observations' on September 13, which is necessary for any company to launch their public offer.

Khadim India's initial public offer (IPO) comprises fresh issue of equity shares aggregating up to Rs. 50 crore and an offer for sale up to 6,574,093 equity shares by the existing shareholders.

According to sources, the company is expected to garner an estimated Rs. 550-650 crore through the initial share-sale offer. Axis Capital and IDFC Bank are the book running lead managers to the issue.

The company was incorporated in 1981 and for several years it was involved in wholesaling and distribution of basic utility footwear. It entered into the retail business in 1993.

As on March 31, 2017, it has 829 retail store outlets in 24 states, according to khadim India's website. Net proceeds from the issue would be utilized towards payment of loans and for general corporate purposes.

(Source : Asian Age – 18/09/2017)

SQUEEZE IN LEATHER TRADE HITS LIVELIHOODS AND TRADITION

Bareilly : Vinod Kumar Jatav, 40, never went to school and has been skinning dead animals for nearly 30 years to earn a living. With trade in animal parts fraught with risk of lynching by cow protection vigilantes, Jatav has never felt as threatened, insecure and nervous in equal measure, and he is not alone.

Jatav learnt the trade of skinning dead animals from his father. "But for the past year, it has been difficult to earn a living. We are under constant threat when we go out to do it. We have two main sources for work – cattle breeders and the municipal corporation. As soon as an animal dies, they call us for hospital. Ever since the BJP came to power at the Centre and state, cow vigilantes have made us feel like criminals. Now even the police is working with them," he said.

It might be an ancestral trade for him, but Jatav doesn't want his three sons to follow. "I will never teach them anything about this. We get Rs. 300 to carry away dead animals, and Rs. 300 to bury it in the owner's presence. If a cattle breeder wants us to skin a carcass, we get only Rs. 100-150, and maybe Rs. 200 from selling the hide. So burying a dead animal is more profitable than skinning it," he said, adding that vigilante activity had made traders fearful, so they stored hides in very small quantities.

(Source : Times of India – 15/09/2017)

LEATHER INDUSTRY TO NEED RS. 3,000 CRORE MORE CAPITAL

The leather industry with an export turnover of $5.6 billion would require an additional capital requirement of "over Rs. 3,000 crore" following implementation of the Goods and Service Tax, an industry official said today.

"Because of GST, there will be an additional working capital requirement of over Rs. 3,000 crore and since 80 percent of businesses in this industry are small scale, they are finding it difficult..," Council for Leather Exports Chairman Mukhtarul Amin told reporters. Elaborating, he said small and medium enterprises which comprise 80 percent of the sector would be unable to make the capital requirement and "may be forced to shut during coming months." Amin said the Centre's duty drawback scheme announced for leather exporters should be extended till March, 2018 as significant amount of capital for the exporter were already blocked on the account for payment of GST.

"As GST refund mechanism is not yet ready, the full drawback scheme has to be extended up to March, 2018," he said. Amin requested the government to reduce GST from the current 12 percent to 5 percent collected for finished leather goods.

He also said there should be reduction of tax rates from 18 percent to 5 percent on job work to manufacture leather products.

LEATHER EXPORTERS FEEL THE GST BITE

Chennai, September 26 : The Council for Leather Exports (CLE) is hoping the Centre will extend full drawback

benefits up to March 2018 and adjust imbalances in GST rates on leather inputs and goods to help the industry adapt to the new tax regime.

In the present format, CLE estimates that an additional Rs. 3,500 crore in working capital will be needed as funds would be blocked for most exporters. Money is not available in the system as margins are low; exports have been stagnating in recent years, and banks will not make funds available on this scale under the circumstances, according to CLE.

With the government extending the deadline for filing GST returns to November 10 after GST kicked in on July 1, 2017, refunds are bound to be delayed, said Mukhtarul Amin, Chairman, Council of Leather Exports have been stagnating at around $6 billion in recent years, and banks are reluctant to plough in additional working capital, he said.

He said the IGST on import of inputs and raw materials for making export products should be done away with. GST rates on finished leather and composition leather, job work, leather products and CETP services should be slashed, he said.

PR Aqeel Ahmed, Vice Chairman, CLE, said that more than 4.5 million people are employed in an industry that accounts for exports of about $5.6 billion, and is dominated by small players working on single-digit margins. Unless the issue is addressed on an urgent basis, a number of units could shut shop in the coming months.

Leather should be allowed Rebate of State Levies along the lines provided for textile, he said.

Indian leather export is losing out to competition from Bangladesh, Vietnam and Indonesia as costs are rising here. Strong production centres are also coming up in Eastern Europe.

(Source : Businessline – 27/09/2017)

BASF SELLS LEATHER CHEMICALS TO BIZ

Mumbai, October 2 : BASF India, a subsidiary of global chemical company, has closed the deal to sell its leather chemicals business to Stahl India for Rs. 198 crore. The leather chemicals business stands transferred to Stahl India from September 30. As per the deal, BASF received 16 percent of the equity of Stahl and $150 million in cash as consideration for this transaction. Following this acquisition, Stahl will take over all activities of BASF Leather Chemicals business, which includes manufacturing sites globally including that in India.

LEATHER FOOTWEAR EXPORTERS FACE CHALLENGES : ICRA

The appreciation in the value of the rupee against major currencies, weak consumer sentiment in the European Union (EU) and significant drop in the value of the British pound has hit footwear exporters hard and now focusing on domestic market to fare better, said an ICRA report.

Leather and Leather footwear export has been facing significant hurdles due to a challenging internal as well as external environment.

(Source : P T I)

OWHERE TO HIDE

The crackdown also hurt day-workers employed at shoe and garment making units and hit leather supplies, forcing manufacturers to import hides from the United States, Australia, and some European nations, raising the cost of production and squeezing margins. Many tanneries, as a result, have run out of leather.

“My business has come to a standstill because I don’t have any inventory at all. Most large shoemakers are importing hides now,” said a tannery owner, who asked not to be named so as to avoid retaliation from cow vigilante groups.

Nearly a third of the roughly 3 million-strong workforce, mostly lowly-paid casual workers employed in the leather sector, have lost their jobs in the past six months, according to six shoemakers and two tannery owners interviewed by Reuters for this article.

Since most Indian states have outlawed cow slaughter, the supply of leather largely comes from the legal slaughter of buffaloes whose skins are used in many leather goods.

“Everyone must abide by the rule on cow slaughter and respect sentiments, but by choking the supply of other animal hides, we have nearly killed a thriving industry,” said Ahmed of Park Exports.

(Source : Deccan Herald – 03/10/2017)

GLACE KID—ITS DEFINITION AND SELECTION

By

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Summary

The authors have defined the term Glace Kid from its actual performances and the suitability of goat skin in these performances have been discussed.

*

All of us are familiar with glace kid leather but frankly speaking, very few of us have a very clear idea about the difinition of it. The only definition that we have is that glace kid is a glossy fancy chrome upper leather manufactured out of goat skin. There are many other fancy type of glossy leathers made out of these skins and therefore the above cannot be a true definition for glace kid. Then what should be the correct definition ? Before going into details of it we must also know why only goat skins are preferred for this purpose. Goat skins have got a nice grain pattern—this also cannot be the correct reply to this because in that case excessive bating would not come into the picture or is that the natural grains of goat skins are not the true grains for glaced kid but because these grains are shapped by bating to one which fulfills the grains of glace kid, we prefer goat skins. What is then that we want for ? This can be explained in a simpler way. The name is glace kid, naturally, it should have a nice gloss or in other words, it should reflect light following the laws of reflection. The surface of a glace kid should therefore, be smooth like a mirror and it should absorb minimum quantity of light. The maximum quantity of light should reflect from the glace kid surface and enter into an observer's eyes so that he can see image of light source inside the leather. If the surface of a glace kid was just like the surface of a single mirror, the observer would see only one image, but the glace kid surface is quite different from a single mirror surface. If a mirror surface has got hundred of cracks on it in all directions, then each small unit within cracks will behave as a single tiny individual mirror and produce image of the light source. Looking to such a mirror an observer will see several images of a single light source. The same thing happens in the case of a glace kid. The surface of a glace kid acts as an unit of numerous tiny mirrors showing several images of a single source and this, according to authors, seems to be the basis for definition of glace kid.

It is established that unless two objects are separated by a minimum distance 'd', they cannot be seen separately which in the case of a microscope is governed by the equation—

$$d = \frac{0.61\ \lambda}{\mu \text{ Sin } \theta}$$

Where λ is the average wave length of light, μ is the refractive index of the surrounding medium and θ is half the angle of cone of light that can be utilised by the object lens of the microscope. Human eye also have certain resolving power which can differentiate two objects if they subtend an angle greater than one minute. It is a well-known fact that we get the sensation of a single point light when only one cone on ratina gets excited. If the object is very small then its image does not fall on more than one cone at a time and as a result we cannot see the image in details. The distance between two cones on ratina is 0.01 m.m. A ratinal image of this magnitude is formed when two rays from the edges of an object subtend an angle of 1 ′ at the eye lens. This happens when rays from two points, separated by a distance of 0.3 m.m. and placed at a distance of 1 meter, enter the eyes. If this value is less, then, there will be no differentiation between the two objects and if they are widely separated then again there will be scattering effect giving thereby a coarse and harsh look between the images.

Now the question naturally crops up how goat skin fulfills the above requirement ?

To explain the performance of goat skin as glace kid we shall have to take into consideration its architectural built up particularly of the grain surface which is actually the light reflecting area of the leather. Grain surface of goat skin is not a continuous sheet but is frequently perforated by pin-point holes known as 'hair pores'. In goat skins there are two types of pores, some are bigger in diameter while others are very fine and narrow and these two types of pores are arranged in characteristic groups and they all together make up a peculiar pattern known as

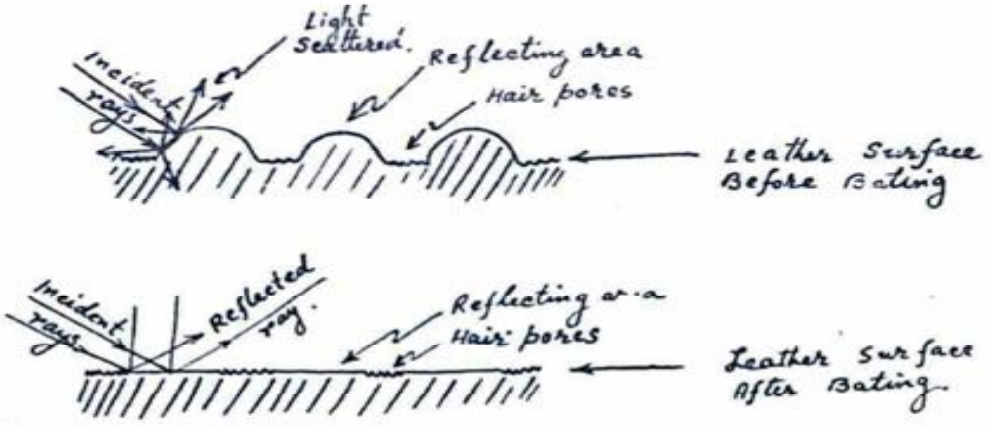

Figure 1

'grain pattern'. In goat skin, each such group is comprised of usually 3 big pores followed by a row of fine hair pores varying 2-5 in number in parallel allignment. These groups actually act as cracks dividing the surface into a large number of minute mirrors because these groups of hair pores reflect light at different angles than that of the remaining portions. The bigger hair pores are actually the light scattering centres owing to their wider diameter and depth while the effect of fine hair pores is much less pronounced. Hence coarse hair groups may be considered as light scattering while the spaces in between hair groups are the light reflecting areas. (Fig 1)

With the above considerations in mind about 200 pieces of different grades of glace kid leather were studied under microscope. The observation was confined on the butt portions, the number of coarse hair pores were counted with the help of net ruled eye-piece micrometer and the average distance between the centres of the reflecting areas were measured. The reults are indicate in the following table.

Quality grade	*No. of coarse hair pores per sq.cm.*	*Average distance between the centres of reflecting areas*
Grade I.	600—900	0.35-0.44 mm.
Grade II.	350—600	0.44-0.57 mm.
Grade III.	250—500	0.57-0.89 mm.

So from the above results, it is quite evident that the distance between the two reflecting centres has got a great bearing on the quality of glace kid leather in its real sen e which in turn is dependant on the density of coarse hair pores. In good quality glace kid, this distance between the centres of two reflecting areas varies between 0.35 and 0.44 mm which is very nearer to the value of 0.3 mm as mentioned earlier, the minimum distance between two reflecting rays by which they can be differentiated from one another and there is a falling in quality as this distance becomes wider. In the skin of very young animal, due to the presence of much greater number of hair pores the above value comes much below the value of 0.3 mm as a result of which it cannot be taken as glace kid leather in its truest sense. The sheep and calf skins have got their own characteristic patterns which are different from those of goat skins and hence they, as it is, cannot fulfil the requirements of ideal glace kid leather but by artificial means if the characteristic hair pores distribution is imparted on them or on any suitable synthetic surface, they may be mistaken as glace kid leather but by nature no skin other than goat can fulfill the requirements of glace kid.

Now let us take the effect of processing on glace kid leather. Of the treatments, bating seems to have a great influe in modifying the grain of the leather The reflecting areas in between the groups of hair pores are usually much elevated than the hair pores. A correct bating operation pulls these regions to the level of hair pores which make them to reflect light in a particular direction otherwise these areas would

scatter light in different directions making the appearance of grain course and uneven.

The views expressed by the authors are based only on the natural grain characteristics. Many other factors which largely affect the leather quality namely fullness of substance, tightness of the grain, fineness of the hair pores, proportion of course and fine hair pores etc. have not been taken into consideration.

Figure 2

Light scattering by hair pores. Grain illuminated at 45° with the surface

Last date for filing GSTR-2, 3 extended by a month

The government on Monday once again extended the deadline for filing the goods and services tax (GST) returns for purchases and input-output transactions for July.

The last date for filing purchase return, or GSTR-2, was extended to November 30, from October 31. That of input-output transactions, or GSTR-3, was put off to December 11, from November 10.

"To facilitate trade, the last date for filing GSTR-2 and GSTR-3 for July 2017 has been extended to November 30 and December 11, respectively," a government tweet said.

Archit Gupta, Chief Executive Officer, Clear Tax, said, "The earlier last date for filing GSTR-2 coincided with the deadline for submission of audited income tax returns and as such was putting a strain on some taxpayers." GSTR-2 is the most important return for GST compliance since the availability of input tax credit depends on it.

M S Mani of Deloitte said that the extension will enable many more taxpayers to file returns. "The challenges faced by some of the taxpayers in dealing with mismatches in GSTR-2 would hopefully get resolved in November," he added.

The GST Council had, in its meeting in September, extended the deadline for filing GST returns by a month, amid technical glitches faced by assesses on the GST Network (GSTN) portal. The extension of deadline will give more time to taxpayers to file input tax credits, take remedial action for mismatches, and enable accurate filing.

The Council constituted a group of ministers (GoM) led by Bihar Deputy Chief Minister Sushil Modi to look into taxpayers' concerns with respect to return filing on the GSTN portal.

The decision to extend the deadline comes after the GoM on GSTN met on October 28 in Bengaluru to review the issues faced during GSTN filings. Tejas Goenka of Tally Solutions said this is the first time everyone is dealing with the invoice matching process.

"This is not going to be easy. It is important to get started on this early despite the extension," he said.

Goenka said most businesses will need to speak with their suppliers to ensure both parties are aligned.

In the coming days, the big challenge for the GST Council and the GoM will be to review the invoice matching functionality of the GST. Infosys has already fixed some bugs, based on feedback from states. The GSTN vendor and software major had won the Rs 1,380-crore contract to implement the GSTN and maintain it for five years in September 2015.

(Business Standard – 31/10/2017)

GST's faulty design has killed jobs and businesses : Manmohan

Former Prime Minister Manmohan Singh on Monday said the GST as implemented has a "faulty design" and that its "complication of compliances" has killed jobs and businesses.

At a meeting on GST at the AICC headquarters, Singh raised concerns over the faulty implemetation of GST.

"While demonetisation was organised loot and legalised plunder, GST has ended up taking away livelihoods of ordinary people besides shutting down businesses," Congress spokesperson Randeep Singh Surjewala quoted Singh as saying.

Surjewala said Singh noted with concern "the fact that the faulty design (of GST), and architecture and complication of compliances have killed jobs and businesses".

The meeting on GST was attended by Manmohan Singh, Congress Vice-President Rahul Gandhi, former Minister P. Chidambaram, Jairam Ramesh, finance ministers of Congress-ruled states, AICC general Secretaries and in-charges of states.

(Business Standard – 30/10/2017)

Make GST inclusion in MRP must so that retailers can't dupe consumers : GoM

Maximum retail price of goods must include the GST component to effectively address consumer complaints that some retailers charge the new indirect tax on MRP of products, a high-level panel of state finance ministers has recommended.

The group of ministers, headed by the Assam Finance Minister Himanta Biswa Sarma, has in its recommendation to the GST Council on easing compliance burden on small and medium enterprises suggested that the government make it amply clear in the present law that MRP is the maximum price of a product to be sold in retail and charging anything above this is an offence.

This rule, sources said, must be applicable to establishments like restaurants, eateries and malls that sell packaged goods such as bottled beverages which already carry an MRP, but at some places, a GST is charged over and above that MRP.

However, businesses while uploading the invoice to the government in filing returns and paying taxes can separately show the GST component and the selling price of the product.

"We have suggested that when businesses issue invoice to consumers, the MRP should be inclusive of GST. The bifurcation in tax collection and sale price can be shown in the invoice while paying taxes to the government," sources told PTI.

In Guwahati on November 10, the GST Council, chaired by Union Finance Minister Arun Jaitley and comprising his state counterparts, is likely to take up the recommendations of the GoM, which was set up earlier this month.

Over half a dozen MSMEs on Sunday made a presentation before the GoM on Sunday, sources added.

Among other things, the GoM also suggested lowering the fees for the delayed filing of returns to Rs 50 a day from Rs 100.

Also, the panel pitched for extending the quarterly filing of returns facility to all taxpayers.

Currently, businesses with a turnover of up to Rs 1.5 crore are allowed to file returns and pay taxes every quarter.

It also suggested further simplification in return filing process, HSN Code and invoice matching.

The major recommendation of the GoM includes slashing tax rate to 1 per cent for manufacturers and restaurants while easing norms for traders opting for it.

Manufacturers and restaurants with a turnover of up to Rs 1 crore pay GST under the composition scheme at 2 per cent and 5 per cent, respectively. The same for traders is 1 percent.

It also suggested doing away with the tax rate distinction between AC and non-AC restaurants, those which are not covered under the composition scheme and tax them at 12 per cent with input credit.

Also, eating out at hotels, which has room tariff of more than Rs 7,500, should attract a uniform18 per cent tax rate instead of any separate category for 5-star hotel, the GoM recommended.

(Business Standard – 30/10/2017)

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Owner: Indian Leather Technologists' Association, ***Printer***: Mr. S. D. Set, ***Publisher***: Mr. S. D. Set, ***Published From***: 'Sanjoy Bhavan', (3rd floor), 44, Shanti Pally, Kasba, Kolkata - 700107, West Bengal, India *AND* ***Printed From***: M/s TAS Associate, 11, Priya Nath Dey Lane, Kolkata- 700036, West Bengal, India, ***Editor***: Dr. Goutam Mukherjee.