





Infant weighing Machine Birmingham, England, 1870-1910



A metal weight in the shape of Lion -8th Century B.C. Weighing 3 Minas, from Assyrian city - in British Museum



Chinese Market Scale
This aluminum balance scale is sold and used widely in China. This scale can be held by larger ring beneath the user right hand to produce leverage for heavier loads

King asked his minister to weigh his Elephant, and the answer was with a boatman = put the Elephant in a boat and mark the water level — nour fill the boat with Sand till that mark.— weight of the Sand is = weight of the Elephant

Weighing an Elephant Yesterday & Today





# NITIRAJ ENGINEERS LTD.

Published by Swati Samant for Nitiraj Engineers Ltd. at Nitiraj House, Dhule.

HEAD OFFICE: BEHIND GURUDWARA, MUMBAI AGRA ROAD, DHULE - 424 001 (M.S.) INDIA. TEL: + 91-2562-239080, 239331. FAX: + 91-2562-239332,239781,239470. E-mail: response@ntiraj.net. Web site: www.ntiraj.net



PHOENIX . VOL- 15 ISSUE - 11

> Weights & Measures Part - 1

a pivotal role in trading worldwide from old civilizations like Mesopotamia, Indus Valley, Egyptian & Chinese



NITIRAJ ENGINEERS LTD. **News Letter** February - 2016



Dear Friends,

It's human nature that can't stop at one place until fully convinced that there is no way ahead.

People have always starved and continue to starve for Accuracy. They expect more and more accurate and fast weighing instruments and systems for Trading, Research & Industrial purpose.







Cubical weights in gradation size from Harappa, Indus Kalley, These weights conform to the standard Harappan binary weight system that was used in all of the settlements. The smallest weight in this series is 0.856 grams and the most common weight is approximately 17.7 Grams, which is in the 16th ratio.

Duck shaped brass weights ancient Burmese Hinta weights of 15th century



# Weights & Measures a Short History

Salvi P K

# Indus Valley Civilization

Like most ancient civilization, the Indus valley people developed a system of weight and measures. With this trade became easier, and also that goods could be valued for tax purpose.

The oldest evidence of the weighing scales dates back to 5400 - 1800 ac in Indius Valley. Uniform polished stones were used as weight setting standard. In Egypt scales can be traced around 1878 BC. Carved stones bearing marks denoting weight and Egyptian hieroglyphic symbol for Gold have been discovered, which suggest that Egyptian merchants were using an established system of weight & measurements to catalogue gold shipment from gold mines.

Weighing has first started in Mesopotamia (modern Iraq) some 4500 years agont of Silver. Since then weighed amount of Silver. Since then weighed amount of metal such as Gold, Silver, Copper and other metal have been used as money in many places world wide. Weighing was as old as Coin Currency & Trading.

Hieroglyphic symbols - a system of writing that was used in ancient Egypt



## FIVE TOP BRANCHES

Jeypore. Balangir Raigarh Sambalpur Dhule-Mktg.

# TOP ZONAL MANAGER

Dillip Kumar Panigrahi - Jeypore, Sambalpur & Balangir

# TOP RM / AREA SALES MANAGER

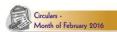
Dileshwar Majhi (RM), - Berhampur Branch

## TOP FIVE SALES EXECUTIVE

| Sales Executive       | Branch      |
|-----------------------|-------------|
| Chaudhari Ravindra P. | Buldhana    |
| Praveen Soni          | Raigarh     |
| Dharmaraj Mishra      | Jeypore     |
| Yudhistir Badgichhia  | Balangir    |
| Ranmale Rajesh N.     | Dhule-Mktg. |

## TOP SERVICE ENGINEERS

| Ser. Engineers         | Branch   |
|------------------------|----------|
| Singh Santosh Rajendra | Bilaspur |
| Koli Santosh Totaram   | Jalgaon  |
| Bhanu Pratap Choudhari | Raigarh  |
|                        |          |



| Date | Subject |
|------|---------|
|      |         |

Circular No.11 Service Revenue Incentive Scheme 1/2/2016 for the Period 01/02/2016 To 29/02/2016.



- Mr. Gujrathi Shamkumar Chandrakant Joined as Jr. Engineer Dept.:Research and Development
- Mr. Bharti Shashikant Ramesh Joined as Sales Executive POS Software at Akola
   Mr. Patil Kunal Bapurao
- Joined as Jr. Engineer POS Software at Head Office Mrs. Bagul Madhri Ramesh
- Joined as Jr. Officer POS Software at Head Office

# Dealer Desk

- TBS Publishers Distributers Calicat (Kerla)
   Atharva Solutions (CCM) Parbhani (M.S.)
   Gadia Brothers Chirwa (Rajasthan)

- Cache Technologies (KOP) Pvt. Ltd.
  Belgaum (Karnataka)
  Shree Sai Sales and Services Mapusa (Goa)

- Shri Ganapati Traders (CCM) Motihari (Bihar)
  Shri Ganapati Traders (CCM) Motihari (Bihar)
  Seth Traders Udhampur (JSK)
  Balaji Electronics Solapur (M.S.)
  Modi Enterprise Jamnagar (Gujarat)
  Micronet Marketing (CCM) Billimora (Gujarat)
- Renuka Electronics Pune (M.S.)
  Limra Instruments Vasai (M.S.)
  Girdhari Enterprise Tungidighi (W.B.)



# Focus of the Month - February - 2016

Blue Tooth Interface
We have developed an application for Blue Tooth data transfer.
We do the data can be transferred to Smart phone with
Blue tooth and Tablet with Blue Tooth.
Further Weighing scale data on Smart phone or Tablet can be
transferred to Computer.

**GSM Interface**We have incorporated GSM facility in weighing scale. Weight data can be sent to any mobile as SMS

Above updated application can be used for any of our weighing scales. Let us bring this innovative concept in the market!!

# Dealers Training

5

4

# Weights Measures a short History

# Nature, the weighing master

However the first weight was not fashioned by man but by 'Nature.' In order to weigh small amount precisely, small objects that can be easily obtained and of consistent size were needed. So grain and seed of plants were chosen for their elegant uniformity. The grain of Wheat, Mustard seeds were used to weigh gold in India. The seeds of 'Liquorice' plant and of 'Carob' tree were also used. The Carob gave us 'Carats,' steel used today to express the value of gold and Diamonds, although now it's metric Carat.







# Late Middle Age

Depictions of equal arm balances is found in the art of Ajantha Caves No.17 in Maharashtra. Beams of steelyard balances have been unearthed from the 8th Century at Sirpur and Arang archaeological sites.

Ma Huan (1413-51), a Chinese merchant also was ruan (1415-31), a Chinese merchant also visited port (1y0 f Occhin, says that Gold Coin Fanam issued in Cochin and weighed a total of one "Fen" and One 1'L' According to Chinese standard, were of fine quality and could be exchanged for 15 silver coins of four Li weight each. This weighing was accepted by Chinese traders

## Weighing in Indian subcontinent

Before the introduction of Metric system, Indian weighing system one may divide in

1) Indian Regional period system, 2) Akbar period system, 3) British colonial period system.



This clay tablet contains a price list from Mesopotamia in 19th Century BC. express prices in terms of Shakels and Minas; the standard weight of that time. One shakel of silver would but unbede minas of wood, or ten minas of bronze, or three measures of barley or three measures of barley or three measures of secone oil.



Pounds and Ton for commodities and Foot, Furlong and Mile for length. Under British rule Government of India passed a Standard of weight Act in 1939, that came into effect from 1942 allowing co-existence of Tola, Ser, Man and Pound, Ton system Punjab Weight & Measurement Act of 1941

provided some uniformity. There after in 1956 Government of India passed Weight & Measurement Act to introduce Metric system and it was made mandatory by April 1962.



In old regional period, weighing system differs

from region to region, commodity to commodity also from rural to urban. These systems were based on weight of various seeds, particularly Wheat, Barley & Ratti.

Lengths were based on the length of arms

Since early times the adoption of weight and measurement has reflected in country's architectural, folk and metallurgical artifacts.

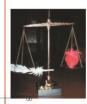
The system of weighing was very complex in Mouryan period (332 - 185 BC). Later in Mogul empire (1526 - 1851), they used regional system to determine land holding

and collection as a part of Mogul land reforms. Akbar realized the need of uniform weight  $\mathcal E$  measurement system to encourage

trading and smooth operation in tax collection. He appointed Raja Todar Mal, his finance minister and some Sardar to decide

the system, but it did not worked out.

and width of fingers.



A page from

Balances have a strong symbolic significance in many civilizations. Here is a balance

Egyptian Book of the Dead

is a modern name of an

person against the feather of the truth and decide whether he can enter the Heaven
ancient Kemetic Text
(1550 - 50 B.C.)

