MATERIALS AND METHODS

Toe and Sole prints were obtained from school going boys and girls ranging in age from 7-15 years, from Mansa, a district of Punjab during 1995-96. Sex and Castewise distribution of subjects examined for dermatoglyphic features is given below:

<table>
<thead>
<tr>
<th>Caste Group</th>
<th>No. of Individuals</th>
<th>Total (M+F)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (M)</td>
<td>Female (F)</td>
</tr>
<tr>
<td>Jat Sikh</td>
<td>120</td>
<td>104</td>
</tr>
<tr>
<td>Bania</td>
<td>102</td>
<td>139</td>
</tr>
<tr>
<td>Chimba</td>
<td>117</td>
<td>121</td>
</tr>
<tr>
<td>Ramdasi</td>
<td>124</td>
<td>119</td>
</tr>
<tr>
<td>Balmik</td>
<td>122</td>
<td>109</td>
</tr>
<tr>
<td>Total</td>
<td>585</td>
<td>592</td>
</tr>
</tbody>
</table>

The prints were collected by using the transparent adhesive tape and printer’s black ink. To overcome practical difficulties involved in getting complete prints, toe prints were transferred on paper with the help of transparent adhesive tape. For sole prints a hump like wooden board has been especially designed to obtain good impressions. Thin drawing sheets were used to get print of entire foot and the
sides of the foot, instead of heavy duty wide transparent
tape (4") as suggested by Fox & Plato (1987). As this tape
is not sufficiently broad for getting complete sole
impressions, special care was taken in obtaining
interdigital triradii which constitute important reference
points for ridge counting. Zygodactylus triradii could not
be traced due to technical difficulties in printing.

The prints were evaluated following the standard
methodology of Cummins & Midlo. No known blood relatives
have been included in the present sample. The subjects,
selected, were normal healthy individuals belonging to
different endogamous groups. The data were processed for
statistical analysis in the computer.

The following statistical parameters were used for the
data analysis:

1) Mean
2) Standard deviation
3) 'X^2' - test
4) 't' - test

The frequencies of the various dermatoglyphic features
have been computed separately for males and females of each
group. The different dermatoglyphic features analysed
include toe and plantar pattern types, ridge counts on toes,
hallucal and interdigital areas, mainline terminations and
pattern intensity index.
Fig. 1: Topography of eight plantar configurational areas
Fig. 2: The plan of plantar triradii: triradii in the distal and proximal areas have been designated h' and h'' respectively. Triradii occurring in calcar (heel) and thenar proximal are labelled j and i, respectively.
Fig. 3: Hallucal loops formed independently by e triradius. A single count from the triradius to core is made.

Fig. 4: Hallucal loops formed independently by e, f and p triradii. In each case a single count from the triradius to core is made.
Fig. 5: A hallucal loop formed jointly by e and f triradii; two counts one from each triradius to core are scored.

Fig. 6: A hallucal whorl formed jointly by e, f and p triradii; three counts one from each triradius to core are scored.
Fig. 7: A loop in the distal hypothenar area. One count from triradius to the core is made.

Fig. 8: A distal hypothenar loop formed by triradii d and h; triradius h is extralimital. Two counts one from each of the triradius to the core are made.
Fig. 9: A loop in the distal hypothenar area formed by an extralimital hypothenar triradius. The potential site of the extralimital triradius is located by extending the ridges. One count from triradius to the core is scored.
Fig. 10: It shows a loop in the calcar area
Fig. 11: It shows a loop in the thenar proximal area.
TOE PATTERN TYPES

Toe prints were analysed using the scheme described by Cummins & Midlo (1961) for classification. All composite patterns including twin loops, lateral pocket loops, Central pocket loops and the accidentals were combined in the whorl category. Tibial loops and fibular loops were counted separately as well as jointly. The arch class includes both simple and tented arches.

PLANTAR CONFIGURATIONAL AREAS

There are eight plantar configurational areas. Four of these are situated in the distal area of the sole; hallucal area representing the distal thenar and first interdigital area combined and the II, III and IV interdigital areas. The other areas of sole where pattern may occur are the proximal thenar, the distal and proximal hypothenar and the calcar areas (Malhotra, Vijay Kumar and Kamarkar, 1982).

TRIRADIAL POINTS

On the distal sole there are usually five digital triradii, one under each toe. The triradii under digits II, III, IV and V are labelled a, b, c and d respectively. The fifth triradius designated 'e' is located at the base of digit I (big toe); often a triradius on the tibial border of the foot, nearer to the proximal end of the hallucal
eminence, may occur; it is designated as 'f'. One or more triradii labelled 'p' are observed, proximal to the hallucal and interdigital region, near the junction of the hallucal and II interdigital areas. Symbols 'p' and p" are used to designate a degree of deviation of the 'p' triradius towards the fibular side of the distal sole.

Triradius occurring in hypothenar area is labelled 'h'
(h_d for distal and h_p for proximal and those witnessed in calcar and thenar proximal areas are designated as 'j' and 'i' respectively.

RIDGE COUNTS

The ridge counting for the plantar patterns is done along a straight line connecting the triradial point to the point of the core; the ridges containing the point of the core and the triradial point are both excluded from the count.

Ridge count on the toes is done in the same manner as prescribed for the finger balls of the hand and for plantar region; Ridge counting has been done following the procedure given by Malhotra et. al, (1982). Total ridge count (TRC), as done in the present study, is the sum of the single ridge counts (higher of the two or three counts) and the absolute ridge count (ARC) is taken as the sum of the double or triple counts (in case of composites & whorls)
TERMINATION OF MAIN LINES

The proximal radiant of the five digital triradii i.e., a, b, c, d, e and a triradius on the tibial border of the foot, nearer to the proximal end of the hallucal eminence i.e., 'f' may be considered as main lines and traced on sole prints in accord with the rules outlined for the palm.