

Garn rpt. Height Girth - 22 Oct. '85
Background.

& Variations in height & changes
~~in body position the long axis of the body~~
going from lying ^{down} to standing ^{up} and ~~or. have~~
and ~~during the course of a~~ ^{slowly} decreases in
height from arising through the course of
the day have been appreciated for some
time. () () In ad^{dition} Difficulties &
~~getting~~ some subjects in their space suits
~~fitting~~ in flight & on the moon were
~~so~~ noted. On SL-4 changes in height & ~~w~~
were first documented and ~~then~~ again demonstrated
on ASTP. Variations in height ~~both~~ ^{on earth} & lying
and standing and the time course of
such changes and with varying loads
were investigated by Thornton and others.
A series of inflight changes were also
studied on Shuttle missions. As a result
an inch was added to the suit torso length.
This Results of the studies are consistent
with the view that the intervertebral discs
expand ^{or} and compress & changing load
in a biphasic fashion. There is an
immediate change in height & load

followed by a slower change $\bar{c}$ a time constant of hours.

While the magnitude of such changes is fairly well established for weightlessness their time course was unknown and this was studied as follows.

Procedures and operations - The subject maintained ^{solid to the bare foot} contact with the floor, and ^{by exerting downward} $\bar{c}$ his pressure ~~handles~~ $\bar{c}$ his ~~range~~ back against a wall in a fully erect position.

A ^{square} jig was placed against the wall and $\bar{c}$ its top was just touching the subject's vertex, and an index mark was made on the wall and later measured to $\frac{1}{16}$ inch.

~~Results are tabulated~~ Pre and post flight measurements were made in a similar pattern fashion. A $\bar{c}$

Results & analysis - The data is tabulated in table

1 and plotted in Fig 2. The model

~~Comments~~ proposed by the authors and ~~by~~ independently by Kazarian predicts and exponential increase in height under the circumstance and when plotted ^{on semi logarithmic} all ^{fashion} but one of the points follow such a curve $\bar{c}$ a time constant $\bar{c}$ $\frac{1}{E \bar{K}}$ point) of — hrs.

Comments - This was the first opportunity to follow the time course of ht. changes in $\bar{w}$ & it behaved the results were as were consistent $\bar{c}$ theory of the phenomena. Absolute value of change^{1.5 ins.} was not unusual.

It ~~was~~ ^{be} would seem reasonable to extend this measurement to a population large enough to be statistically significant. Should it ever become necessary to accurately allow for such changes, an ~~so~~ accurate prediction might be achieved by ^{studying the} correlating of in flight ^{to} ~~pre-flight~~ ^g changes seen in the same subject.