

## THE JULY 23, 1988 EXAMINATION

A Brief Introduction to the Max Frei Sticky tape as projected by Studies on the Five Loaned Tapes from Mrs. Frei.

This brief "manual" will touch on three aspects:

- A. A very short listing of the kinds of particles and fibers one can expect to find on the tapes and a suggestion of where these are usually located on the tapes.
- B. An illustration of the three different types of methods used by the 1978 researchers to remove samples.
- C. A listing of the correlation between the written labels on the slides (these are in the handwriting of senior Auralio Ghio who assisted Dr. Frei) and the Barrie M. Schwartz Photographic Collection showing where Dr. Frei actually removed the sample. These here are "worksheets" of the list.

### A. The particles and fibers:

Because the Shroud is composed of linen we can expect to find, first and foremost, flax fibers. These vary in color depending upon where they were taken. If from the image or in the vicinity of a scorch they may be a "straw yellow" color.

During the sample removal Dr. Frei wore cotton gloves which he had borrowed from STURP. Bob Dinegar got a pair for him and he wore these throughout the entire session. Thus there is ample evidence of cotton fibers in the lead of the tape.

There is a red silk backing cloth on the Shroud. Hence, one will often find red silk fibers on the tapes. Blue silk may also be found since there was a blue silk surround on the edges of the cloth.

The burn areas produce scorched flax fibers. And occasionally one will see the long slender reddish-pink "Spandex" fibers which Al Adler has suggested came from some panty hose.

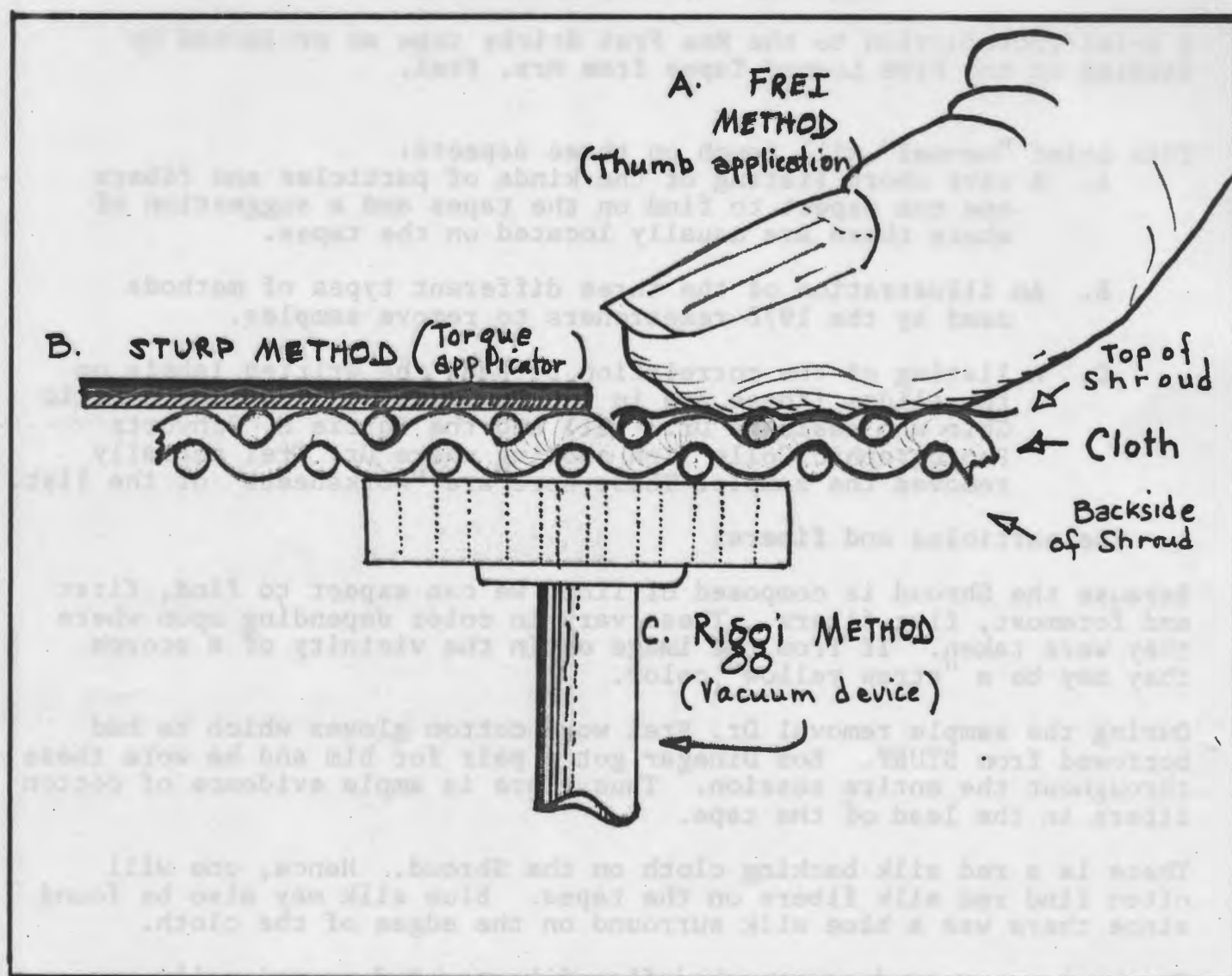
There is also the pollen and these appear mostly in the lead area of the tapes.

There are also reddish or reddish-orange agglomerate particles on some tapes. And occasionally there are flax fibers coated with particulate matter.

### B. The three methods of sample removal compared:

The following illustration will show the differences in the methods. Because many of the particulates are apparently down between the threads, the Frei method obtained more, especially on the leads, than the STURP method. The Riggi method appeared to have obtained a still wider variety than either of the other two methods.

# THREE SAMPLING METHODS USED ON THE SHROUD IN 1978



- A. FREI METHOD: Wearing cotton gloves, Frei pressed the tape onto the cloth surface. The plastic backing of the tape was forced into the spaces between the crowns of the threads, pulling up the dust particles deposited there.
- B. STURP METHOD: Using a "Torque applicator" which limited the pressure of the tape to ca. 60 lbs. per square inch, the tape only touched the crowns of the threads. Loose particles lying on top of the Shroud, and other fibers weakly attached to the cloth came loose.
- C. RIGGI METHOD: A vacuum device was applied to the backside of the Shroud in four main areas: a. behind the bloody feet on the dorsal end, b. behind the feet, leg, buttocks area of the dorsal end, c. behind the face on the frontal end, and d. behind the crossed hands on the frontal end.

SSS="side-strip side"  
Nsss= "non-side-strip side"  
PIP="persons in picture"

C. THE MAX FREI STICKY TAPE MAP: Details of the Barrie M. Schwartz slides.

Sample # <sup>5</sup>~~4~~:

4-M-2: View toward SSS; PIP, L to R=T. D'Muhala (shoulder only)?, A. Ghio, M. Frei; unknown person = Bairna Bellowe.

Location: Dorsal end, on side-strip, below, toward foot near pre-1516 burn. Lead toward frontal end.

Comments: Tape can be seen on cloth.

Sample = 11 A/a

4-M-6: Sample # <sup>6</sup>~~5~~:

View toward SSS; PIP, T.D'Muhala (shoulder only)?, A. Ghio, M. Frei; J. Jackson.

Location: Dorsal end, on side strip, exactly adjacent to upper (frontal) end of pre-1516 burn.

Comments: Frei laying sticky tape down on cloth, head of tape toward head direction of Man of Shroud.

4-M-7: Same view as above; PIP, D'Muhala on L (?), A. Ghio, M. Frei, J. Jackson.

Location: Same as above.

Comments: Tape has now been removed from cloth as <sup>it</sup> is dangling from tape dispenser. This photo appears to show the sample Dr. Ghio has labeled 10/9 A/a.

Sample # <sup>7</sup>~~6~~:

I do not have currently available a photograph showing Dr. Frei applying sticky tape to the Shroud or removing same in this area. The photoslides show a magnetic marker (see, for eg., slide 5-D-9 or 5-E-8) on the side-strip adjacent to the "prong" end of the patches which flank the upper back on the dorsal end.

Sample = 8 ~~7~~ Aa

4-M-8: Sample # <sup>8</sup>~~7~~:

View toward SSS; PIP, A. Ghio to L, M. Frei, J. Jackson to R.

Location: Juncture of Frontal/Dorsal fold on side-strip.

Comments: Removal of tape from Shroud.

Sample = 7/6 Aa

4-M-9: Sample # <sup>9</sup>~~8~~:

View toward SSS; PIP, Frei only in picture.

Location: Frontal end side-strip adjacent to the lower end of the pre-1516 burn.

Comments: Tape is very clear on Shroud, finger on tape-"body" end. Time on watch (on left wrist) appears to be ca. 11:25.

Sample = 4/3 Aa

5-A-1: Sample # <sup>10</sup>~~9~~:

View toward SSS; PIP, Frei, and bare touch of J. Jackson profile on L.

Location: On SSS, near corner patch on Frontal end of Shroud adjacent to mid-shin area.

Comments: Good angle for photograph but because of bright light details around tape a bit washed out. Tape appears to show.

Sample = 2 Aa

5-A-5 : Sample # 2(?):

View toward SSS corner; PIP, Tom D'Muhala at Dorsal end of Shroud, A. Ghio (bare touch of his profile showing) to R.

Location: Dorsal SSS corner of Shroud. T. D'Muhala placing magnetic marker on center rivulet coming from "apex" of left foot blood flow.

Comments: I do not have access presently to a photograph showing Dr. Frei placing tape on Shroud. I conjecture that this was sample # 2 since Frei appears to have begun his sampling at this end of the Shroud.

The first photograph showing Dr. Frei doing any sampling is with sample # 3.

5-A-6: Sample # 10:

View toward SSS; PIP, M. Frei, A. Ghio to R (R. shoulder only visible).

Location: Frei placing tape on lower center of back on dorsal end going from cloth into blood flow across back.

Sample = (?) [8/9 B ???]  
not on G. Frei list of 4/15/06.

5-A-7: Same view, PIP, M. Frei only in picture.

Same location.

Comments: Removal of tape; photo shows cloth coming up with tape; "head" of tape still on cloth.

5-A-8: Sample # 12:

View toward SSS; PIP, unidentified person with camera to L, M. Frei, only A. Ghio's hand shows to R.

Location: Frontal end of Shroud, tape on sample area of burn on SSS of head nearly adjacent to area from tip of nose to bottom of "split" beard.

Comments: Tape clearly shows.

Sample = 6 B/C ???  
[or 6 B/d ?]

5-A-9: Same view, Unidentified photographer to L, M. Frei.

Location: Same.

Comments: Head of tape toward frontal end of Shroud, Removal of tape, R finger on cloth behind tape as tape comes up.

5-A-10: Sample # 12:

View toward SSS, PIP, Rogers to L, M. Frei.

Location: Frei placing tape into what appears to be a "dual" off-image/on-image area on arm on SSS of Shroud below the inner patch of the 1532 fire.

Comments: Rogers watching very closely while Dr. Frei positions tape.

Because Dr. Frei's hands are in way I cannot be certain that Dr. Frei is actually placing tape directly (and totally) on arm area or if he is only in that general area. See next slide.

5-B-1: Same view, PIP, Rogers to L, Frei pulling back from Shroud with tape sample.

Location: Same,

Comments: Rogers placing magnetic marker on the arm area (not in the off-image area). (These two photographs would appear to show the sample in the Frei collection which Ghio has labeled 4 B/d).

5-B-2: Sample # <sup>14</sup>~~13~~:

Sample = 2 Bd

View toward SSS, PIP, Rogers to L, M. Frei.

Location: Frei placing tape on Man of Shroud's left shin on frontal end.

Comments: Head of tape oriented toward foot area on frontal end. Tape very clear on cloth. Watch appears to show ca. 11:37 (?).

5-B-3: View: same. PIP, Rogers shoulder (left), M. Frei.

Location: Same.

Comments: Removal of tape from shin.

5-B-5: Short conference between M. Frei (on left), Dr. L. Gonella, (center), J. Jackson (right).

*Sample 15 is missing from series (?). No photo taken of it??*

5-B-6: Sample # <sup>16</sup>~~14~~:

Sample = 9/10, C/D<sup>7</sup>, a/b

View: Frei now on NSSS of Shroud.

Location: Dorsal end, tape laid on middle burn of the pre-1516 burn.

Comments: Rogers watching over shoulder of Dr. Frei, J. Jackson behind on R, not watching just now.

5-B-7: View: Same. PIP, M. Frei, Ray Rogers watching in background.

Location: Same.

Comments: Frei removing tape from burn area; tape head shows clear on Shroud.

Time on watch appears to be about 11:40 (?).

5-B-8: Sample # <sup>17</sup>~~15~~:

View toward NSSS of Shroud; PIP, J. Jackson's left shoulder & arm visible, A. Ghio in back looking at camera, M. Frei removing sample from beside face. Dr. Gonella in far R. background not watching.

Location: Parallel with warp of cloth adjacent to area from bridge to tip of nose. Lead of tape oriented toward dorsal end of Shroud. (NSSS).

Comments: Tape not clear on Shroud.

Sample = 6 Ca (?)

5-B-9: Sample # ~~18~~:

Sample = 6 Dc

View toward NSSS of Shroud; PIP, J. Jackson to L, watching; M. Frei.

Location: Sticky tape sample is parallel to Sample # ~~17~~ above but located nearly adjacent to same area as above but only several inches from edge of Shroud.

Comments: Watch appears to read 11:43. Frei's R. finger holding cloth down behind tape as he pulls it off cloth.

5-B-10: Sample # ~~19~~: Sample = 4 Db

View toward NSSS of Shroud; PIP, J. Jackson to R, M. Frei, L. Gonella in background (not watching).

Location: On NSSS of Shroud near elbow clot and also very near pre-1516 burn.

Comments: Head of tape oriented toward head of Man of Shroud. Tape clear on cloth. Time on watch appears to be 11:45.

5-C-3 : Sample # <sup>20</sup>~~18~~: *Sample = 3 Cb*  
View: Toward NSSS of Shroud; PIP, M. Frei only in foreground, Dr. Gonella in background (not watching).  
Location: Frontal end of Shroud (NSSS) just above inner 1534 patch. Lead of tape oriented toward dorsal end of Shroud.  
Comments: Dr. Frei's finger on lead of tape; tape on cloth is clearly shown.

5-C-4: Sample # <sup>21</sup>~~19~~: *Sample = [ 1 D ] (Not on G. Frei list of 4/15/86)*  
View: Toward NSSS of Shroud; PIP, A. Ghio to R, M. Frei (note STURP table pivot in foreground.)  
Location: Frontal end of Shroud, NSSS corner just above outer end burn.  
Comments: Head of tape oriented toward NSSS edge diagonally from apex of burn and away from frontal end of Shroud. Tape clear on cloth.

5-C-5: Sample # <sup>22</sup>~~20~~: *Sample = 6 Ca (?) (a 5 Ca by error?)*  
View: Toward NSSS of Shroud; PIP, M. Frei, R. Rogers to R in background looking at notes.  
Location: Near sample # ~~17~~ (see above, p. 3) on NSSS of Shroud frontal head at an angle (ca. 2 o'clock).  
Comments: Tape very clear on cloth. Lead of tape oriented toward dorsal end of Shroud. Note magnetic marker of sample # ~~17~~ nearby.

5-C-6: Sample # ~~23~~:  
View: Toward side-strip side of Shroud; PIP, M. Frei (hands only showing).  
Location: SSS of Shroud, very near sample # ~~12~~ (see p. 2 above), frontal end near head at ca. 9:30 o'clock.  
Comments: Lead of tape oriented toward frontal feet; M. Frei placing sticky tape down on cloth. *Sample = 6 Bd ?*

5-C-7: View: Same orientation, PIP, M. Frei.  
Location: Same.  
Comments: M. Frei removing sample from cloth.

ADDENDUM: For samples 1, 2, and 3 I do not currently have access to photographs showing Dr. Frei taking these samples. For the position of these samples one must use the photoslides showing the magnetic markers. Their locations are as follows: (See slide 5-D-7 and 5-F-1)

Sample # 1:  
Location: Dorsal end on discontinuous blood flow from R. foot heel.

Sample # 2:  
Location: Dorsal end on "central rivulet" flowing from "apex" of blood flow of left foot.

Sample # 3:  
Location: Dorsal end on patch in corner at end of "side-strip", located midways on patch near "side-strip" border with Shroud. This appears to be the sample Dr. Ghio has labeled 12 A/a.