(51) International Patent Classification 3: A61B 10/00

(11) International Publication Number: WO 83/02220

(21) International Application Number: PCT/US82/01783

(22) International Filing Date: 22 December 1982 (22.12.82)

(31) Priority Application Number: 334,427

(32) Priority Date: 24 December 1981 (24.12.81)

(33) Priority Country: US

(71) Applicant: CREATIVE RESEARCH AND MANUFACTURING INC. [US/US]; 5520 Dell Lane, Minnetonka, MN 55345 (US).

(72) Inventor: MEHL, Donald, N.; 5520 Dell Lane, Minnetonka, MN 55345 (US).

(74) Agent: JAEGGER, Hugh, D.; 3209 West 76th Street, Suite 207, Minneapolis, MN 55435 (US).

(81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), FR (European patent), GB (European patent), LU (European patent), NL (European patent), SE (European patent).

(54) Title: BONE MARROW ASPIRATION NEEDLE

(57) Abstract

Needle (10) for bone marrow biopsies at the sternum or iliac of the body or the like including a cannula (17), a cannula housing (20) supporting the cannula (17) including a partially threaded lower member (32), a stylet (34) including a stylet cap (40) supporting the stylet (34) and a threaded depth stop (16) for engaging over the cannula (17) wherein the stylet (34) engages into the cannula (17) in a predetermined relationship, the stylet cap (40) interlocks to the cannula housing (20), and the threaded member (32) determines the depth of penetration of the needle. The sternum needle is constructed to be either disposable or reusable depending upon the cannula housing and stylet cap material. The cannula housing (20) includes vertical wings (22, 24) extending outwardly from the housing for engagement with the palm of a physician’s hand, a cannula clip (58) having ends which are soldered onto the cannula and secure into the cannula housing, and an elongated button (28) extending outwardly from the top of the cannula housing (20) for detent locking with the stylet cap (40) providing for alignment of the stylet (34) to the cannula of the sternum needle. One end (38) of the stylet (34) is bent and molded into the stylet cap where the stylet cap includes a spring detent locking groove (42) for interlocking with the button (28) of the cannula housing (20). The stylet (34) inserts into the cannula (12) and with a twist locks about the top of the cannula. The needle (10) can be used with or without the depth stop as desired.
**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

<table>
<thead>
<tr>
<th>Code</th>
<th>Country Name</th>
<th>Code</th>
<th>Country Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Austria</td>
<td>LI</td>
<td>Liechtenstein</td>
</tr>
<tr>
<td>AU</td>
<td>Australia</td>
<td>LK</td>
<td>Sri Lanka</td>
</tr>
<tr>
<td>BE</td>
<td>Belgium</td>
<td>LU</td>
<td>Luxembourg</td>
</tr>
<tr>
<td>BR</td>
<td>Brazil</td>
<td>MC</td>
<td>Monaco</td>
</tr>
<tr>
<td>CF</td>
<td>Central African Republic</td>
<td>MG</td>
<td>Madagascar</td>
</tr>
<tr>
<td>CG</td>
<td>Congo</td>
<td>MR</td>
<td>Mauritania</td>
</tr>
<tr>
<td>CH</td>
<td>Switzerland</td>
<td>MW</td>
<td>Malawi</td>
</tr>
<tr>
<td>CM</td>
<td>Cameroon</td>
<td>NL</td>
<td>Netherlands</td>
</tr>
<tr>
<td>DE</td>
<td>Germany, Federal Republic of</td>
<td>NO</td>
<td>Norway</td>
</tr>
<tr>
<td>DK</td>
<td>Denmark</td>
<td>RO</td>
<td>Romania</td>
</tr>
<tr>
<td>FI</td>
<td>Finland</td>
<td>SE</td>
<td>Sweden</td>
</tr>
<tr>
<td>FR</td>
<td>France</td>
<td>SN</td>
<td>Senegal</td>
</tr>
<tr>
<td>GA</td>
<td>Gabon</td>
<td>SU</td>
<td>Soviet Union</td>
</tr>
<tr>
<td>GB</td>
<td>United Kingdom</td>
<td>TD</td>
<td>Chad</td>
</tr>
<tr>
<td>HU</td>
<td>Hungary</td>
<td>TG</td>
<td>Togo</td>
</tr>
<tr>
<td>JP</td>
<td>Japan</td>
<td>US</td>
<td>United States of America</td>
</tr>
<tr>
<td>KP</td>
<td>Democratic People's Republic of Korea</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
BONE MARROW ASPIRATION NEEDLE

CROSS REFERENCES TO CO-PENDING APPLICATIONS

None.

BACKGROUND OF THE INVENTION

1. Field of the Invention -- The present invention pertains to a surgical instrument and, more particularly, pertains to a biopsy needle which can either be disposable or reusable.

2. Description of Prior Art -- The prior art biopsy needles have all presented some type of drawbacks when used by the physician or surgeon, and which are particularly less than desirable. Some prior art instruments are disposable and cast with very few structural details attended to, with the result that the interlocking between the stylet and the cannula provides for considerable play and the instrument can come apart in the user's hands, resulting in injury not only to the patient but more so to the user by the sharp metal edges poking upwards into the physician's hands. Other prior art devices have some form of interlocking structure but the interlocking structure is not positive, resulting in play between the cannula and stylet during the process of incision into the patient resulting in considerable
discomfort. Other types of prior art structures have numerous components which during surgery are not practical in utilization by the user due to the screwing and unscrewing of the fittings.

More importantly, all of the prior art devices have grips which do not really fit into the physician's hand to provide for positive gripping by the physician but have grips which are required to be engaged by the physician in a negative way making the process of biopsy as uncomfortable to the physician/surgeon using the sternum needle as to the patient. The prior art has failed to recognize that the handles of a biopsy needle must securely engage into the physician's or surgeon's palm for optimum control of the instrument during a biopsy. It is also necessary that the stylet and cannula be engaged to each other during the biopsy process for providing total control to the physician or surgeon.

The present invention overcomes the disadvantages of prior art references by providing a biopsy needle having a winged handle, detent locking between the stylet and cannula, and an adjustable threaded depth stop.

**SUMMARY OF THE INVENTION**

The general purpose of the present invention is to provide a biopsy needle having a cannula and a stylet, both of which engage and interlock with respect to each other, and which can be conveniently grasped by the physician or surgeon in the palm of
the hand to provide secure control during the biopsy process with an adjustable depth stop on a threaded portion of the cannula.

According to one embodiment of the present invention, there is provided a biopsy needle having a cannula member and a stylet member which interlock with respect to each other, the cannula member including a cannula clip of a partial cylinder having two opposing formed members extending perpendicularly outward on an upper portion of the cannula, the end having a hollow-ground, beveled angle providing a knife-sharp edge in the range of 20°-30°, a molded housing formed thereabout of said cannula and about a portion of the clip, two vertical hand wings extending from an upper portion and a threaded lower portion, a button extending outwardly from an upward vertical member of reduced diameter with respect to the housing, and an internal bore of decreasing diameter extending through the housing to the top of the cannula for accepting a syringe for drawing of marrow during the biopsy, a stylet including one angled end for securing into a stylet cap and another end having a hollow-ground beveled end in the range of 20°-30° and buffed to a polish having a knife-sharp edge about the tip, the stylet cap secured about the angled end of the stylet and having a spring detent locking groove for engaging under and about the button of the cannula in a detent-locking fashion, and an interior bore of a height to mate with the vertical member of the cannula and engage on the rim of the cannula formed between the housing and the vertical member and a threaded depth stop including a knurled
circumference and a plurality of digitory sockets, a threaded interior bore to engage with the threaded lower portion of the molded housing whereby the stylet is engaged into the cannula housing and detent locks between the button on the cannula housing and the detent locking groove in the stylet cap providing for proper engagement between the knife-sharp edges of the cannula and the stylet and the depth stop is adjustable on the cannula about the threads, thereby providing for proper instrumentation during biopsy.

A significant aspect and feature of the present invention is a biopsy needle having wing-shaped handles facilitating gripping and engagement by the physician/surgeon used.

Another significant aspect and feature of the present invention is an interlocking stylet and cannula providing for not only interlocking of the structural members in a positive detent fashion but also predetermined orientation between the knife-sharp edges of the cannula and the stylet. The interlocking structure also positions the stylet at a proper distance from the cannula, providing for consistent and secure biopsy surgery.

A further significant aspect and feature of the present invention is a biopsy needle which can be constructed either as a disposable instrument or as a reusable instrument depending upon the type of molded material chosen for the cannula and stylet housings.
An additional significant aspect and feature of the present invention is a biopsy needle which can be constructed in different sizes for different sized individuals or for different applications.

Having described one embodiment of the present invention, it is the principal object hereof to provide a sternum or iliac needle including a cannula and stylet which interlock with each other and a threaded adjustable depth stop. The disclosure also applies to needle structure per se, and is not to be construed as being limited only to biopsy needles, as other applications are inherent within the scope of this disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, in which like reference numerals designate like parts throughout the figures thereof and wherein:

Figure 1 illustrates an engaged front view of a sternum or iliac needle, the present invention, including a stylet, adjustable depth stop, and a cannula;

Figure 2 illustrates a front view of the stylet;

Figure 3 illustrates a sectional view of the stylet;

Figure 4 illustrates a sectional view of the cannula;

Figure 5 illustrates a sectional view of the cannula, depth stop and stylet all engaged with respect to each other;
Figure 6 illustrates a sectional view taken along line 6-6 of Figure 5; and Figure 7 illustrates a sectional view taken on line 7-7 of Figure 5.

DESCRIPTION OF PREFERRED EMBODIMENTS

Figure 1 illustrates a front view of a sternum or iliac needle 10 having engageable components of a cannula member 12, a stylet member 14, and a depth stop 16. The cannula member 12 includes a longitudinal cannula 17 having a knife-sharp edge 18 which has been ground, buffed and polished outwardly at an angular tubular relationship and a molded housing 20 of ABS material or the like having the shape as illustrated in the figure. The housing 20 includes molded thereto left-hand wing 22 and right-hand wing 24, a vertical member 26 extending upwardly, an elongated button 28 extending outwardly in Figure 4, an angled chamber 30 running vertically downward from the top of member 26 and a threaded lower portion 32. The stylet member 14 includes a metal stylet 34 having a sharp edge 36 which has been ground, buffed and polished, a bent end 38 of Figure 3 for securing into a rounded molded cap 40, a detent locking groove 42 having an inherent spring member 44 including positive locking member 46. A downward extending boss 48 of Figure 3 extends downwardly internal to the cap 40 for engagement with a rim 28a of the cannula housing 20. A knurled circumference 50 is provided about the cap for engagement by physician/surgeon user. The edges 18 and 36 are hollow ground flush with each other, with a hollow beveled angle in the range of 15°-40°, preferably 25°.
The depth stop 16 includes an upper knurled outer circumference 68, a threaded inner portion 70 as illustrated in Figure 5, an outer flared lower portion 72 between the upper knurled portion 68 and a rounded edge 74, and a plurality of digitory sockets 76a-76d spaced about the edge 74 as also illustrated in Figure 7.

Figure 2 illustrates a front view of the stylet 14 where all numerals correspond to those elements previously described. Attention is drawn to the lock groove 42 and the knife edge 36.

Figure 3 illustrates a sectional view of the stylet member 14 where all numerals correspond to those elements previously described. The end of the stylet has an angle of 25° to the vertical while the angle may be in the range of 20°-30°. The tip is ground, buffed, and polished to maintain a knife-sharp edge. The upper end 38 of the stylet 34 is angled for securing into the rounded cap 40 during molding.

Figure 4, which illustrates a sectional view of the cannula member 12, shows the particular detail of a cannula clip 50 securing the cannula 17 into the housing 20 about the angled chamber 30. The angled chamber 30 decreases from a large diameter 52 to a small diameter 54 in a luer taper, then to a chamfer 56, of a diameter which is slightly greater than the internal diameter of the cannula 16 so that a syringe can be inserted into the angled chamber 30 to draw bone marrow up into the cannula. A probe can be utilized to freely push the bone marrow out
through the beveled end of the cannula and onto a slide, without damaging or distorting the bone marrow. The detent button 28 and the rim 28a provide for engagement of the stylet member 14 in proper predetermined orientation. The cannula clip 50 is silver soldered to the cannula 17 at an upper mid portion and is molded into the housing 20. The clip as also illustrated in Figure 6 includes a partial circular portion 58 and two wings 60 and 62 extending outwardly therefrom. A lower portion 64 of the housing 20 includes a plurality of threads 66.

Figure 5 illustrates a sectional enlarged view of elements engaged with respect to each other for use as a biopsy needle in a medical biopsy procedure. All numerals correspond to those elements previously described. Particular distinction is drawn to the movability of the depth stop 16 with respect to the housing 20 in relation of the threads 70 of the depth stop 16 to the threads 66 of the cannula member 12. The cannula clip is a silver soldered to cannula 17 of the cannula member thereby securing it in place. The cannula 17 with the cannula clip 50 and the wing is molded into the housing 20, thereby securing the cannula 17 with respect to the housing 20. The threads 66 are likewise molded into the lower portion of the cannula housing.

Figure 6, which illustrates a sectional view taken along line 6-6 of Figure 5, shows the cannula clip 50 with respect to the cannula 17 and the cannula housing 20. The particular angle between the ears 60 and 62 is preferably in the range of 60°-120° and in this instance 90°.
Figure 7 illustrates a sectional view taken on line 7-7 of Figure 5 and shows particularly the digitory sockets 76a-76d spaced about the edge 74 of the depth stop 16. The knurled circumference 68 is also illustrated accordingly as well as that of the knurled skirt 74 which provide for grasp while the digitory sockets provide for transfer of digitory pressure.

**MODE OF OPERATION**

Figure 1 best illustrates the biopsy needle 10 for biopsies, the present invention, where the stylet 14 is engaged and interlocked with respect to the cannula member 12. The depth stop 16 is appropriately screwed and adjusted to a point as determined by the physician/surgeon depending upon the depth of penetration of the needle for the particular physical size of the individual and the particular placement of the needle in the body with respect to fatty tissue and the marrow in the bone.

The detent button 28 provides for interlocking and interengagement of the members 12 and 14 together through engagement of the groove 42, up and over the spring member 44, and into the positive locking detent 46. The spring member 44 provides a positive sensory digital feedback signal indicating that the members 12 and 14 are engaged when button 28 resides within the chamber area of the positive locking chamber 46. The button 28 and the positive locking chamber 46 always indicate that the hollow-ground beveled angle of 25° of each of the knife edges 18 and 36 of the members are always oriented with respect to each other, as illustrated in Figures 1 and 5.
The depth stop 16 seats the sternum needle onto the individual's skin at the proper predetermined distance and provides for proper penetration of the knife edges. The knife-sharp edges arranged at the hollow beveled angle and flush to each other provides for the proper cutting action through the skin, tissue and bone due to the wedge action of the tips. The particular angles of the wedges and orientation with respect to each other is one of the important factors in obtaining a suitable bone marrow sample from the sternum during the biopsy process, as well as determining the proper distance without exceeding or being short in obtaining the sample. The threaded engagement of the depth stop 16 about the threaded member 64 to the lower portion of the cannula housing 20 provides for predetermining that particular distance and the digital sockets 76a-76d provide for adjustment by the physician/surgeon during the biopsy as well as the knurled portion 68.

The contour of the handles 22 and 24 provides a wing configuration feedback positive feel to the physician/surgeon during the biopsy as well as the digitory pads 76a-76d as adjustment is required. The knurled portions 68 and 50 of the depth stop 16 and the rounded stylet handle 14 provide the final digital grasping members of the needle 10 along with the knurled skirt 74 along with the sockets 76a-76d. The fingers of the physician/surgeon can apply pressure through the sockets as well as the rounded head, and can grasp any of the knurled portions for a secure grasp during biopsy.
The depth stop is 16 can be carefully adjusted during a sternum biopsy so that the needle does not protrude through the sternum, especially through the other side of the sternum and through the aorta. Depending upon the size of the individual, the depth stop 16 may be removed from the cannula member-stylet member to reach the iliac, and hence, would not be used. The considerations are made by the physician/surgeon at the time of the biopsy, and are also dependent upon the individual's own size.

Various modifications can be made to the present invention without departing from the apparent scope thereof. The wings or ears of the cannula member can take any desired shape as well as any angle between the wings or ears. The clip can also be positioned anywhere within the mold body of the cannula housing 20 so as to be molded therein.

Having thus described the invention, what is claimed is:
1. Needle comprising:
   a. means for supporting a sample, said sample means including hand means for supporting said sample means, means for interlocking above said hand means, and threaded means below said hand means, molded body means supporting all of said means;
   b. means engaging into said sample means and protruding forward of said sample means for piercing through skin, flesh, muscle and bone, and including means having positive detent interlocking for engaging with said interlocking means of said sample means; and,
   c. means for adjusting depth of penetration of said sample and protruding means including a threaded inner diameter whereby said sample means and said protruding means engage in predetermined oriented relationship by said interlocking means thereby providing a positive detent interlocking between said sample and said protruding means and said adjusting means is threadable along a portion of said supporting means thereby varying depth of penetration during biopsy.

2. Needle of claim 1 wherein said sample means comprises a cannula supported in said body means.

3. Needle of claim 1 wherein said handle means includes a plurality of vertically oriented means for grasping said sample means.

4. Needle of claim 1 wherein an end of said cannula includes a hollow-ground beveled angle.

5. Needle of claim 4 wherein said edge is 25° plus or minus 5° with respect to vertical.
6. Needle of claim 1 wherein said protruding means is a stylet and a stylet cap having rounded top for supporting said stylet.

7. Needle of claim 6 wherein said stylet includes a hollow-ground beveled edge.

8. Needle of claim 6 wherein said stylet includes an angled end for securing into a stylet cap.

9. Needle of claim 2 wherein said cannula includes a cannula clip soldered about a portion thereof in said body means.

10. Needle of claim 9 comprising at least one outwardly extending ear of said cannula clip.

11. Needle of claim 1 wherein said positive detent interlocking means comprises a button extending outwardly from said cannula of said supporting means and a detent locking groove in said engaging means.

12. Needle of claim 11 wherein said button is elongated.

13. Needle of claim 11 wherein said locking groove includes biasing means.

14. Needle of claim 10 wherein said ears comprise two at an angle in the range of 60°-120°.

15. Needle of claim 1 wherein said depth stop means is adjusted during a sternum biopsy.

16. Needle of claim 1 wherein said depth stop means can be removed during a iliac biopsy.

17. Needle comprising a cannula member, the cannula member including a tubular cannula, a cannula clip silver soldered on an upper portion thereon.
and having two opposing form members extending substantially perpendicularly outward therefrom, the end having a hollow-ground beveled angle of substantially 25°, a molded housing formed thereabout on an upper portion and about said clip, two vertical hand wings extending from said upper portion of said molded housing and a threaded lower portion of said molded housing, a button extending outwardly from an upwardly extending member of reduced diameter with respect to the molded housing, and an internal bore extending through the housing to the top of the cannula, stylet member including a stylet having one angled end for securing into a stylet cap and the other end including a hollow-ground beveled angle of 25°, a stylet cap molded about the angled end of the stylet and including a spring detent locking groove for engaging under and about said button of said cannula in a detent locking fashion, an interior bore of a height to engage with the vertical member of said cannula and engaging on a rim of the cannula formed between the housing and the vertical member, and a threaded depth stop including a knurled circumference, a plurality of digitory sockets formed about an edge of the knurled circumference, and a threaded interior for threadably engaging over the lower threaded portion of the cannula whereby said stylet is engaged into said cannula housing and said detent locks between said button on said cannula housing and said detent locking groove in said stylet cap providing for proper engagement for said knife-sharp edges of said cannula and said stylet and said depth stop is adjustable on said cannula about said threaded members, thereby providing for proper penetration of said cannula and said stylet during biopsy of a sternum or iliac.
18. Needle of claim 17 wherein said depth stop is adjusted during sternum biopsy.

19. Needle of claim 17 wherein said depth stop can be removed during iliac biopsy.

20. Needle of claim 17 wherein said molded housing and molded cap is made from ABS material.

21. Needle comprising:
   a. means for supporting a sample, said sample means including hand means for supporting said sample means, means for interlocking above said hand means, molded body means supporting all of said means, means including a winged clip soldered to said sample means and molded into said body means; and,
   b. means engaging into said sample means and protruding forward of said sample means for piercing through skin, flesh, muscle and bone, and including means having positive detent interlocking for engaging with said interlocking means of said sample means whereby said sample means and said protruding means engage in predetermined oriented relationship by said interlocking means thereby providing a positive detent interlocking between said sample and said protruding means.
# INTERNATIONAL SEARCH REPORT

**INTERNATIONAL APPLICATION No** PCT/US82/01783

## I. CLASSIFICATION OF SUBJECT MATTER

According to International Patent Classification (IPC) or to both National Classification and IPC

<table>
<thead>
<tr>
<th>INT. Cl.</th>
<th>U.S. Cl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A61B 10/00</td>
<td>128/754</td>
</tr>
</tbody>
</table>

## II. FIELDS SEARCHED

Minimum Documentation Searched

<table>
<thead>
<tr>
<th>Classification System</th>
<th>Classification Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>128/749, 751-755</td>
</tr>
<tr>
<td></td>
<td>604/117, 264,272</td>
</tr>
<tr>
<td></td>
<td>145/61C</td>
</tr>
</tbody>
</table>

Documentation Searched other than Minimum Documentation to the extent that such Documents are Included in the Fields Searched

## III. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of Document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to Claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US, A, 4,258,722 Published 31 March 1981 Sessions et al.</td>
<td>1-21</td>
</tr>
<tr>
<td>Y</td>
<td>US, A, 3,585,986 Published 22 June 1971 Krug</td>
<td>8,17</td>
</tr>
<tr>
<td>Y</td>
<td>US, A, 3,955,451 Published 11 May 1976 Lohness</td>
<td>9,10,14,17, 21</td>
</tr>
<tr>
<td>Y</td>
<td>US, A, 3,470,604 Published 07 October 1969 Zenick</td>
<td>9,10,14,17, 21</td>
</tr>
<tr>
<td>Y,P</td>
<td>US, A, 4,314,565 Published 09 February 1982 Lee</td>
<td>9,10,14,17, 21</td>
</tr>
<tr>
<td>Y</td>
<td>US, A, 4,290,465 Published 22 September 1981 Fee et al.</td>
<td>9,10,14,17, 21</td>
</tr>
<tr>
<td>A</td>
<td>US, A, 4,266,555 Published 12 May 1981 Jamshidi</td>
<td>1-4,6-7</td>
</tr>
<tr>
<td>A,P</td>
<td>US, A, 4,356,828 Published 02 November 1982 Jamshidi</td>
<td>1-4,6-7</td>
</tr>
</tbody>
</table>

* Special categories of cited documents:
  - "A" document defining the general state of the art which is not considered to be of particular relevance
  - "E" earlier document but published on or after the international filing date
  - "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
  - "O" document referring to an oral disclosure, use, exhibition or other means
  - "P" document published prior to the international filing date but later than the priority date claimed
  - "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
  - "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step
  - "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
  - "A" document member of the same patent family

## IV. CERTIFICATION

Date of the Actual Completion of the International Search 3

28 February 1983

Date of Mailing of this International Search Report 5

06 APR 1983

International Searching Authority

TSA/US

Signature of Authorized Officer 10

C.A. Fukushima

*Form PCT/ISA/210 (second sheet) (October 1981)*