CLA 9/7

Scopin-Broncho-Boy II

by Prof. Dr. med. John A. Nakhosteen.

www.cla.de

CLA 9/7

Scopin-Broncho-Boy II

Universal Bronchoscopy and Anesthesiology Trainer produced in co-operation with Prof. Dr. J. A. Nakhosteen. Life-sized, in plastic.

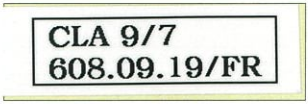
While retaining the life-like anatomical features of the original, the Broncho-Boy II incorporates a number of innovations enabling its use in a variety of training settings, including:

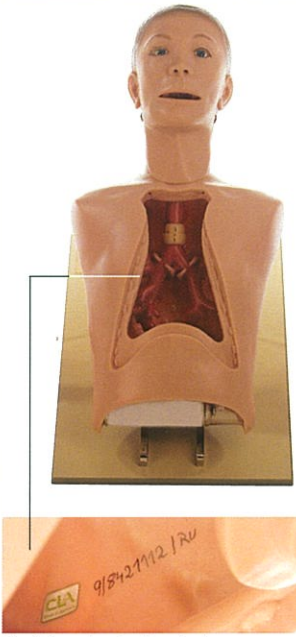
Components:

1. SCOPIN Broncho Boy II CLA 9/7 with head in movable assembly.
2. Warning signal emitter in upper jaw, nasopharynx, tracheobronchial tree with twist lock.
3. Trunk with elastic supports and auscultation membranes, mounted on wooden base with folding hinge.
4. Removable healthy and fluorescent bronchial tree, with twist lock.
5. Removable pulmonary alveoli with membrane connection with twist lock.
6. Alarm tone generator.
7. Intubation tube
8. Silicone oil, 250 ml pressure spray bottle
9. Instructions for use

CLA 9/7, opened

Each CLA SCOPIN model recieves a serial number, which may be found inside the thorax on the right side. Please always quote this number in full when re-ordering or in case of complaint.





Serial number in the chest (right inside)

CLA reserves the right to modify models as required by technical and scientifical developments.

Special equipment on request:

Aluminium transport and storage case CLA 9/2-Z

Construction
A specially developed casting process has enabled exact reproduction of internal structures and contours of mucous membranes. Anatomical landmarks, this cast, aid the trainee bronchoscopist in mastering problems of endoscopic orientation. For those experienced with the rigid bronchoscope and wishing to learn flexible endoscopy, practicing with the SCOPIN model will greatly ease the switch.

The following characteristics typify this unique training model:

1. Retroflexion and left-right rotation of the head for laryngoscopic, orotracheal and bronchoscopic intubation.

2. Acoustic warning signal if excessive pressure exerted on upper teeth by rigid tube or laryngoscope

3. Slightly widened and softer nasal passages for fibre-optic guided, naso-tracheal intubation; reduced danger of damage to sheath.

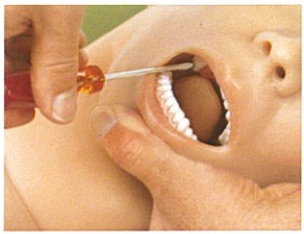
4. Interchangeable, membrane-connected bladders (Broncho-Boy II AN) enabling stethoscopic confirmation of ET-tube placement.

5. New, spring-based supports for tracheo-bronchial tree, increasing pliability, reducing likelihood of bronchoscope damage.

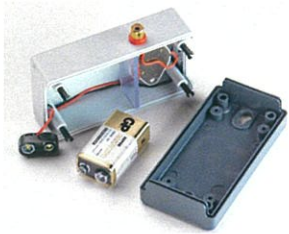
6. Exchangeable fluorescent tracheo-bronchial system with »cold« areas of reduced fluorescence for practising autofluorescent bronchoscopy.

Adjusting incisor acoustic trigger device
Excessive force on the upper incisors by laryngoscope or rigid bronchoscope activates an **acoustic signal,** the trigger-sensitivity of which is adjustable. The adjusting screw is located next to the right upper molars. **Turning to the right,** i.e., tightening, **reduces** sensitivity. **Turning to the left,** i.e., loosening the screw, **increases sensitivity.** (A second screw in the center of the palate secures the upper jaw).

The housing for the signal-device, located within the thorax at the lower right, also contains an **alkaline battery** with a service life of about one year. To replace the battery, push the entire housing downward, remove it and disconnect the two snap connections. This gives access to the battery, which can now be replaced.



Adjusting the sensitivity of the switch, which triggers off the acoustic signal.



Alarm tone generator, dismantled

Intubating the Bronchofiberscope

It is recommended that beginners spend 10 hours practising with the Nakhosteen Bronchoscopy Model.

Preparing for use

1. Removal of sternal window: **begin** at lower end
2. Undo the transportation lock and turn knurled nut upwards, as far as it will go.
3. Removing the Silicon lubricant aerosol
4. Spraying the oral and pharyngeal area
5. Spraying the nasal passage
6. Connecting the healthy or the fluorescent lower part of the bronchial tree with the upper part
7. Replacing sternal window: begin with **upper** end

Before each intubation, the interior of the nose, pharynx and the fiberscope are to be slightly moistened with silicone oil. Never use paraffin spray!

A semi-reclining position is preferred so that the SCOPIN is facing the examiner. The SCOPIN is laid flat in order to enable the examiner to intubate from the head end of the model. If the student is already familiar with the rigid bronchoscope, placement from the head end of the model will pose less difficulty.

There are basically two types of fiberscope intubation: trans-nasal and trans-oral. Trans-oral access should be performed by way of a bite block or intubation tube. The student should become acquainted with both methods. Trans-nasal intubation is more comfortable for the patient, so if there is no specific indication for it to be conducted by the oral route, nasal insertion is preferred.

The intubation may proceed either transnasally or transorally, and the transoral approach must be either through a gag or ring (to prevent damage through biting), or through a flexible endotracheal tube. The trainee should gain proficiency in all these approaches. As far as the patient is concerned, however, the transnasal route is best tolerated, so unless there is a special indication for an alternative transnasal intubation should be used.

The smallest diameter of both nasal passages of the Nakhosteen Bronchoscopy Model is 6,5 mm, so that every currently available bronchofiberscope can be passed through the nose. In such narrow spaces, however, the widest passage must be sought and found by careful manipulation of the scope. In principle, passage of the instrument should be possible either above or below the inferior turbinate bones, but it may well be - as is often the case with patients - that one of these routes is better. These variations formed a major part of the developmental concept of the SCOPIN model.

Since light can enetrate the SCOPIN tracheobronchial tree, the position of the endoscope can be checked at will, simply be removing the sternum. Please note that in opening the sternal window the lower end is removed first, and in closing the window the lower end is replaced last.

Access to the lingula bronchus was purposely made somewhat more difficult. Firstly, in patients the lingula is sometimes quite difficult to reach; and secondly, practicing here may be considered useful for the mire advanced trainee.

Some general hints for training in bronchofiberscopy using the Nakhosteen Bronchoscopy Model, SCOPIN

Guidance

It is improtant that the trainee practicing with the SCOPIN Model have a thorough knowledge of the more important anatomical landmarks of the nose, throat, and the tracheo-bronchial tree.

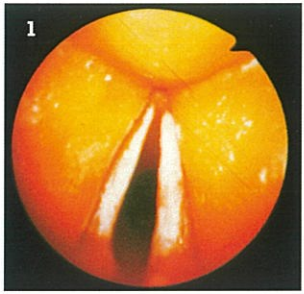
Seen from the ventral aspect, the epiglottis is "like a small tongue stretched toward the examiner".

The vocal cords are like "the tip of an arrow pointing ventrally".

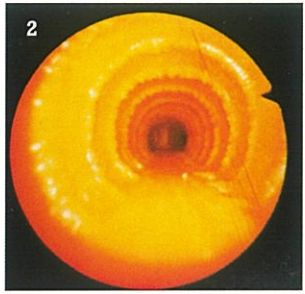
The fibrous membrane (pars membranacea) coursing longitudinally in the tracheobronchial system is **dorsal,** and the horse-shoe shaped cartilagenous tracheal rings are **ventral** and **lateral**.

Both the hand and the eye must be conditioned in this training process: the scope, and the eye in recognizing anatomical landmarks. The two hand movements constantly interacting with one another are axial rotation and bending and extending the tip of the instrument.

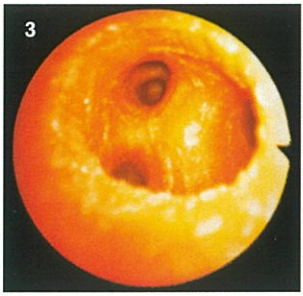
Use extreme care in maneuvering the flexible bronchoscope; any forceful manipulation may lead to damage and costly repairs.



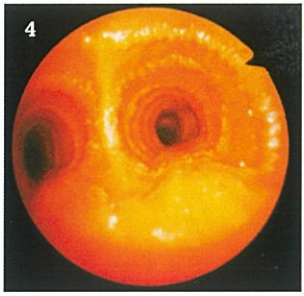
ill. 1
Vocal cords and ventral commissure



ill. 2
Trachea; main bifurcation distally



ill. 3
Right upper lobe bronchus; subsegments of RB 3 visible



ill. 4
Main stem bronchi; branchings to right upper lobe and middle lobe bronchi visible

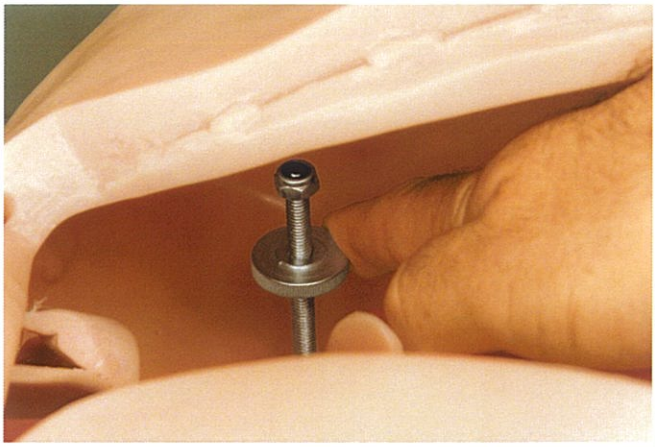
Care

The inner and outer surface of the SCOPIN-Model requires no special care. When dirty, simply clean with water or soap solution.

Treatment of the nasal, oral and pharyngeal cavity, as well as the oesophagus and bronchial tree, must be carried out in the same way. However, after each cleaning, it is desirable to spray on a very fine layer of silicone oil, which is included, to achieve better insertion.

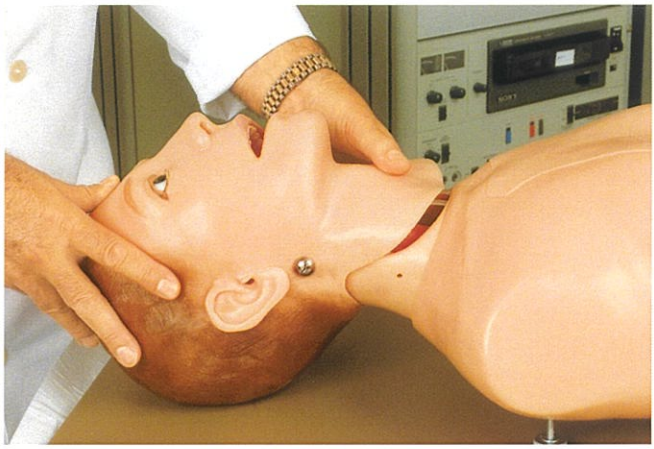
Tape residues are removed with petroleum ether.

If markings are to be made, use only pencil. Traces of crayons, pens, markers, and other coloured solutions, cannot be removed.



before intubation always...

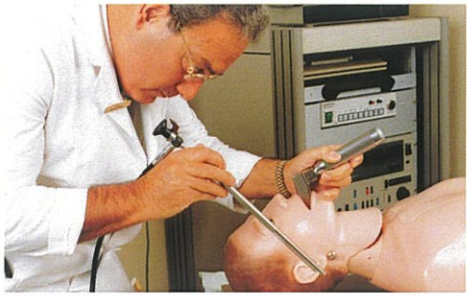
Fully unscrew the two nuts inside the trainer, so what...



... The head can be retroflected. And ...

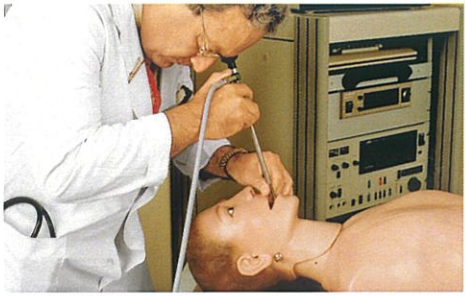
... Coat instrument surfaces with silicone oil or liquid prior to intubation

Laryngoscopic Intubation



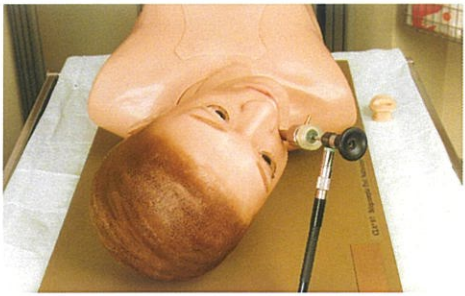
Laryngoscope is used to visualize the vocal cords, then the bronchoscope intubated

Direct Intubation



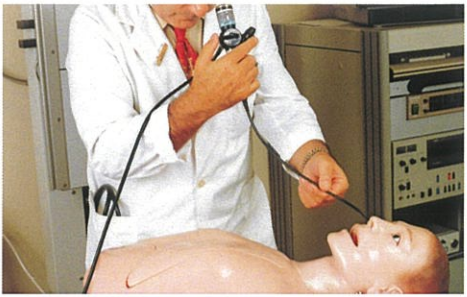
The epiglottis, visualized in the mid-line, is gently levered upward with the tip of bronchoscope, examiner´s thumb acting as fulcrum

Once vocal cords come into view, the bronchoscope is carefully advanced into trachea

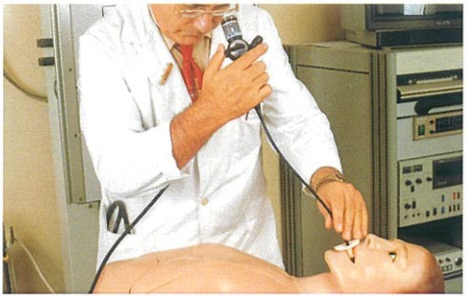


Intubated open-tube bronchoscope, trainer´s head can be rotated 45° left or right as needed

Flexible Fiberoptic Bronchoscopy (FFB)

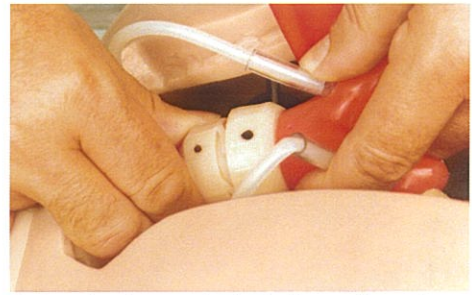


Trans-nasal Flexible Fiberoptic Bronchoscopy



Trans-oral Flexible Fiberoptic Bronchoscopy

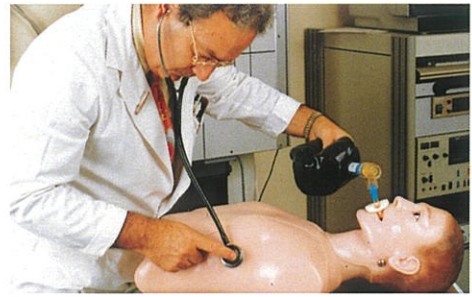
Fluorescent tracheal bronchial tree and exchangeable lung bags with membrane connection



Exchanging the auscultation bellows with tracheobronchial tree "Dot do Dot" 90° clock-wise turn

Laryngoscopic Intubation

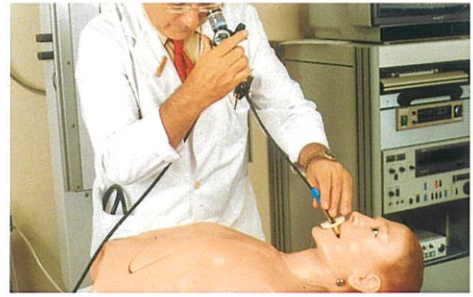
Laryngoscopic intubation of endotracheal tube



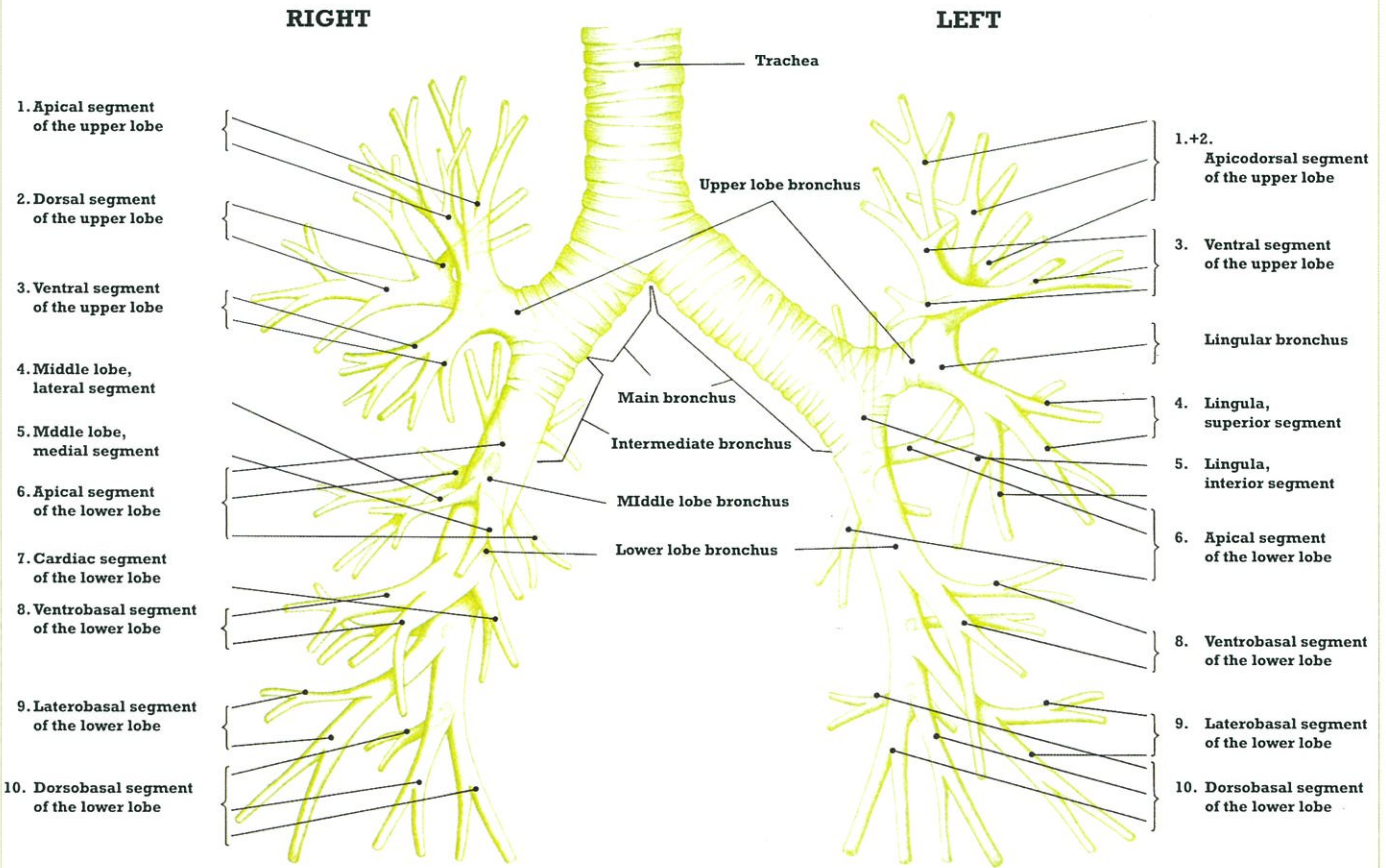
Auscultation following laryngoscopic intubation

Flexible Fiberoptic-guided Intubation

Flexible fiberoptic-guided naso-tracheal intubation



Flexible fiberoptic-guided oro-tracheal intubation


RIGHT
LEFT
Trachea
Upper lobe bronchus
Main bronchus
Intermediate bronchus
MIddle lobe bronchus
Lower lobe bronchus
1. Apical segment of the upper lobe
2. Dorsal segment of the upper lobe
3. Ventral segment of the upper lobe
4. Middle lobe, lateral segment
5. Mddle lobe, medial segment
6. Apical segment of the lower lobe
7. Cardiac segment of the lower lobe
8. Ventrobasal segment of the lower lobe
9. Laterobasal segment of the lower lobe
10. Dorsobasal segment of the lower lobe
1.+2. Apicodorsal segment of the upper lobe
3. Ventral segment of the upper lobe
Lingular bronchus
4. Lingula, superior segment
5. Lingula, interior segment
6. Apical segment of the lower lobe
8. Ventrobasal segment of the lower lobe
9. Laterobasal segment of the lower lobe
10. Dorsobasal segment of the lower lobe

Accessories and spare parts list for CLA 9/7

CLA 97100
Head with upper part of the bronchial tree, exchangeable eyes, set of teeth with signalling device, cable with connecting plug for tone generator, 2 fastening screws with self-locking nut

CLA 97110
1 pair of eyes with lids

CLA 97111
Eyelids (1 pair)

CLA 97112
Eyelids, on the right

CLA 97113
Eyelids, on the left

CLA 97114
Glass eyes (1 pair)

CLA 97120
Healthy bronchial tree, lower part

CLA 97140
Fastening screws (1 pair) with lock nuts M 6

CLA 97200
Thorax with flexible neck, chest wall, fixing hinge, suppport for the bronchial tree, tone generator plate, 2 membranes for auscultation areas, cable clips and screwdriver retainer

CLA 97210
Support for the bronchial tree

CLA 97230
Chest cover

CLA 97240
Sound generator with housing, connection jack and battery

CLA 97262
Screwdriver 2,5 mm

CLA 97270
Base plate (670 x 380 x 10 mm) with 2 guide bars, knurked nut and drill holes for the fixing hinge, with rounded corners and bevelled edges

CLA 97300
Bronchial tree connector piece with lungs and connecting tubes for intubation and venitation

CLA 97310
Bronchial tree connector piece

CLA 97320
Lung bags, 1 pair

CLA 97321
Lung bag, right

CLA 97322
Lung bag, left

CLA 97330
2 connection tubes from the bronchial branch to the membranes

CLA 97700
Operations instructions, german

CLA 97702
Operations instructions, english

CLA 97704
Operations instructions, french

CLA 97708
Operations instructions, spanish

CLA 800/1
Silicon separating spray, 250 ml net contents (pressure spray bottle)

CLA 9/8
Fluorescing Tracheo-Bronchial Tree with regions of reduced Fluorescence

Special equipment on request:

CLA 9/2-Z
Aluminium transport case with foam rubber
Height: 28 cm, width: 76 cm, depth: 44 cm, weight: 6,0 kg.

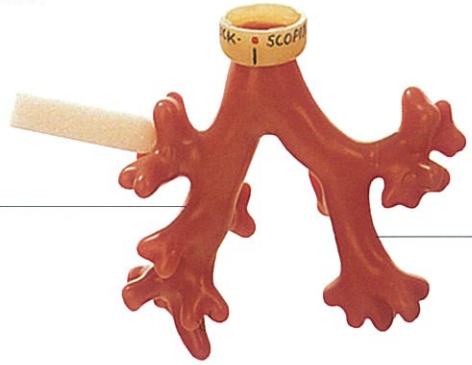
CLA 97130
Sick bronchial tree, lower part

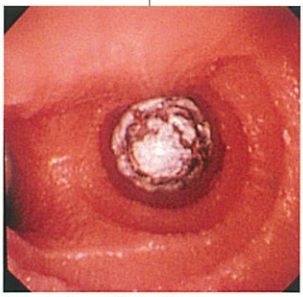
CLA 9 /7
SCOPIN-Broncho-Boy II
disassembled, with a note containing order numbers for accessories and spare parts

Special equipment on request:

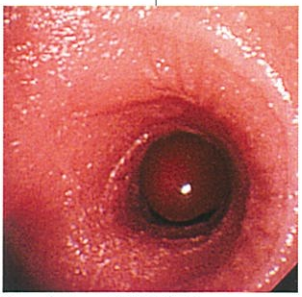
CLA 9/2-Z
Aluminium transport case with foam rubber
Height: 28 cm, width: 76 cm, depth: 44 cm, weight: 6,0 kg.

CLA 97130
Sick bronchial tree, lower part





Detail from CLA 97130
Tumor occluding bronchus intermedius; right upper lobe displays substance for biopsy (not shown).



Detail from CLA 97130
Adenoma occluding left lower lobe bronchus. Left upper lobe bronchus partially, LB 6 wholly, visible.

CLA 9/8
Fluorescing Tracheo-Bronchial Tree with regions of reduced Fluorescence

Produced in co-operation with Prof. Dr. J. A. Nakhosteen,

In keeping with the 20-year-old tradition of up-dating the Nakhosteen Broncho Boy Bronchoscopy Teaching Model, the latest innovation is the auto-fluorescing endoscopic systems for use with the Light Imaging Fluorescence Endoscope (LIFE ® Xillix/Olympus), or SAFE (1000 Pentax).

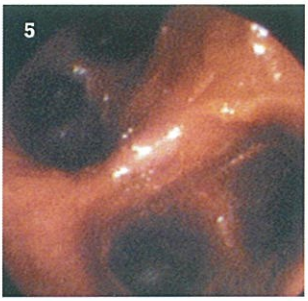
CLA 9/8

The bronchial mucosa appears normal with conventional (white light) bronchoscopy, but on being illuminated in the fluorescent mode, emits a green image identical to that of normal mucosa.

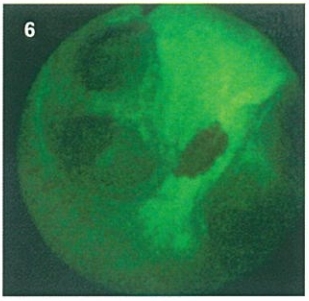
The trachea and left-sided bronchial branches appear normal in the fluorescence mode, but distinct areas of reduced fluorescence can be observed on the right-sided bronchial tree (upper lobe spur, middle lobe spur, right main bronchus and RB 9/10 spur).

Endoscopists using to the LIFE-System or SAFE 1000 for the first time can practice switching from white light to fluorencent mode, and in the latter mode, learn <gain> (light intensity) adjustment, in addition to recognizing areas of reduced fluorescence.

The Fluorescent Tracheo-Bronchial Tree can be added to each CLA Broncho Boy with the order numbers CLA 9 to CLA 9/7 or can be supplied additionally as the interchangeable lower part of the tracheo-bronchial tree. Easy to interchange, thanks to bayonet fixing



Ill. 5
White light appearance of fluorescing bronchial tree: RB 9/10 spur with normal features



Ill. 6
Fluorescence bronchoscopic appearance of same spur as in Fig. 5 (RB 9/10): in the middle is a cold spot corresponding to a Carcinoma in situ, visible only in fluorescence mode