----- ARTICLES -----

"a more difficult test"	./morediff/morediff.stb
"Faint Object Camera"	./faintobk/faintobk.stb
"Faint Object Camera - exploded view"	./focexplo/focexplo.stb
"Faint Object Spectrograph"	./faintobj/faintobj.stb
"Faint Object Spectrograph - Exploded view"	./fosexplo/fosexplo.stb
"Fine Guidance Sensors"	./fineguid/fineguid.stb
"Goddard Space Flight Center/STOCC"	./goddards/goddards.stb
"High Resolution Spectrograph"	./highreso/highreso.stb
"High Resolution Spectrograph - exploded view"	./hrsexplo/hrsexplo.stb
"High Speed Photometer"	./highspee/highspee.stb
"High Speed Photometer - exploded view"	./hspexplo/hspexplo.stb
"Hubble Space Telescope - Main View"	./spacetel/spacetel.stb
"Optical Telescope Assembly"	./opticalt/opticalt.stb
"Optical Telescope Assembly - diagram"	./otadiagr/otadiagr.stb
"Participating Organizations"	./particip/particip.stb
"Project Responsibilities"	./projectr/projectr.stb
"Scientific Instruments"	./scientif/scientif.stb
"Space Telescope Science Institute"	./spacetem/spacetem.stb
"Support Systems Module"	./supports/supports.stb
"Support Systems Module - Exploded View"	./ssmexplo/ssmexplo.stb
"test"	./test/test.stb
"The Space Telescope in Orbit"	./orbview/orbview.stb
"Why the Hubble Space Telescope?" "Introduction article"	./introduc/introduc.stb
"Wide Field/Planetary Camera"	./widefiel/widefiel.stb
"Wide Field/Planetary Camera - exploded view"	./wfpcexpl/wfpcexpl.stb

----- PICTURES -----

"orbital view"	./orbview/orbview.pid
"Faint Object Spectrograph - exploded view"	mostpic.pid 5
"Optical Telescope Assembly - diagram"	mostpic.pid 1
"Wide Field and Planetary Camera - diagram"	mostpic.pid 2
"telescope - main view"	mostpic.pid 4
"Project responsibilities"	mostpic.pid 3

How can we make the touchable coordinates in the touchable file relative to the position of their corresponding picture? (or absolute, i.e. relative to entire frame)?

----- TARGETS -----

parent — touchable ID

"orbital view" - "word diagram"	./orbview/orbview.tid 2
"orbital view" - "shape telescope "	./orbview/orbview.tid 1
"orbital view" - "word introduction"	./orbview/orbview.tid 3
"OTA" - "word radial S.I."	./otadiagr/otadiagr.tid 3
"OTA" - "word axial S.I."	./otadiagr/otadiagr.tid 2
"OTA" - "word fine guidance"	./otadiagr/otadiagr.tid 1

"Project responsibilities"

"resp. - "word support system"	./projectr/projectr.tid 6
"resp. - "word optical telescope assembly"	./projectr/projectr.tid 4
resp. - "word fine guidance"	./projectr/projectr.tid 1

Offsets are part of the touchable objects. We list their parents in the story board file.

```
"resp. - word faint object camera"                    ./projectr/projectr.tid 2
"resp. - word goddard "                               ./projectr/projectr.tid 3
 resp. - word Scientific instrument"                  ./projectr/projectr.tid 5


"Main view -  word Faint Object Spectrograph"          ./spacetel/spacetel.tid 3
"Main view -  word High Resolution Spectrograph"       ./spacetel/spacetel.tid 1
"Main view -  word High Speed Photometer"             ./spacetel/spacetel.tid 4
"Main view -  word Fine Guidance Sensors"             ./spacetel/spacetel.tid 6
"Main view -  word Faint Object Camera"               ./spacetel/spacetel.tid 5
"Main view -  word Wide Field Planetary Camera"       ./spacetel/spacetel.tid 2
"Main view -  shape HRS"                              ./spacetel/spacetel.tid 7
"Main view -  shape WFPC"                             ./spacetel/spacetel.tid 8
"Main view -  shape FOC"                              ./spacetel/spacetel.tid 9
"Main view -  shape OTA"                              ./spacetel/spacetel.tid 10
"Main view -  shape FOS"                              ./spacetel/spacetel.tid 11
"Main view -  shape SSM"                              ./spacetel/spacetel.tid 12
```

logical index
into tid
file

----
faintobj/faintobj.stb

.title
Faint Object Spectrograph
.description
An instrument capable of analyzing the wavelength distribution, from ultraviolet through visible, of light from faint sources
.contents

The Faint Object Spectrograph ~(fig. 2)~ is a versatile instrument that can obtain the spectra of extremely faint astronomical objects in the ultraviolet and visible wavebands. A spectrum is a distribution of colors, or wavelengths, created by passing a beam of light through a prism.

A spectrum reveals the nature of the source we are viewing. We can tell whether it is hot or cold, dense or rarified, and even its chemical composition. Analysis of the spectrum also yield the remoteness and relative velocity of the object being studied.

The spectrograph works by picking up the image of a star, galaxy, interstellar dust cloud or other object that appears on the ~telescope's~ focal plane as a point of light. Then, via a system of ~optical mirrors~ and ~gratings~ that work like prisms, the light beam is spread out, from ultraviolet through the visible.

The fanned-out beam is recorded on an imaging device called a ~digicon detector~, which counts the photons of light in each region of the beam. The resulting spectrogram is then transmitted to Earth for study.

----
faintobk/faintobk.stb

.title
Faint Object Camera
.description
An extremely sensitive camera capable of pinpointing and electronically intensifying dim objects.
.contents

This instrument, being built by the ~European Space Agency~, uses the spatial resolution of the ~telescope~ to capture images of very faint objects in the universe ~(fig. 1)~.

It is expected to be able to detect stars as faint as the 28th magnitude and will easily pick out stars of magnitude 24, which is about the best a large ground observatory can now do. Magnitude is a designation of brightness - the lower the number, the brighter the object. The dimmest star the average person can see with the naked eye are magnitude 6. The planet Venus is magnitude -4.

The Faint Object Camera has a basic focal ratio of f/96 and is capable of observing faint objects or extended structures near bright sources. This device will have four ~filter wheels~, each containing a variety of filters in 12 positions, which can be inserted in the optical path.

The system works by gathering and focusing incoming feeble starlight on an electronic image intensifier. The intensifier's output is scanned by a vidicon camera tube and an image consisting of 250,000 picture elements is obtained. Exposure times for very faint objects could run as long as ten hours.

An f/48 focal ratio camera system will permit the camera to operate in a ~spectrographic~ mode which is ideal for studying the structure and dynamics of the center regions of galaxies, the area where black holes are thought to occur. Thus the Faint Object Camera serves as a third, general-purpose spectrograph. This mode of operation will employ fourteen insertable filters.

```
-------------------
fineguid/fineguid.stb
-------------------
.title
Fine Guidance Sensors
.description
Instruments used to locate and lock on to a target object, maintaining
position of the telescope relative to the target.
.contents
```

Because of the very high spatial reolution of the Space Telescope great pointing stability is required. Two of the fine guidance sensors will be used to locate and lock on to a target while the third is free to view and precisely measure the relative positions of other stars in the vicinity.

The three fine guidance sensors are expected to produce distance measurements ten times more accurate than those done from Earth. The sensors work through a complex system of mirrors and light detectors to locate the position of a star against a background of other stars. In measuring the distance to a star, ~ground controllers~ will focus the sensors on a foreground star to transmit its position relative to the stars in the background. Similar measurements are made about six months later. Changes will indicate the distance of the star from the earth.

The precise measurement of star positions is called astrometry. Information provided by the fine guidance sensors will assist in resolving the open-versus-closed universe question.

```
-------------------
focexplo/focexplo.stb
-------------------
.title
Faint Object Camera - exploded view
.description
A diagram of the Faint Object Camera with labeled components.
.contents
        .picture "Exploded view of the Faint Object Camera"
        .rem ----------   but the picture doesn't exist.... ----------------
```

----
fosexplo/fosexplo.stb

.title
Faint Object Spectrograph - Exploded view
.description
A diagram of the Faint Object Spectrograph with labeled components.
.contents
.picture "Faint Object Spectrograph - exploded view"
.rem --- no target ----

----
goddards/goddards.stb

.title
Goddard Space Flight Center/STOCC
.description
NASA center in Greenbelt, MD which will operate the Hubble Space Telescope once it is in orbit.
.contents

Once the Space Shuttle carries the ~Hubble Space Telescope~ into orbit, project personnel at Goddard will operate the satellite through the Space Telescope Operations Control Center (STOCC), located at Goddard.

The STOCC is the largest and most complex control center for a scientific satellite to date, and will enable astronomers to utlilize the ~Hubble Space Telescope~ much like a ground observatory. The astronomers typically will work at the ~Space Telescope Science Institute~ in Baltimore. They will send their observing requests to the STOCC where the Hubble Space Telescope's controllers will program the observations. The data and images obtained by the Telescope's instruments then will be transmitted to the STOCC and on to the ~Space Telescope Science Institute~, where astronomers will study the information and present their findings to the world community.

It is expected that the STOCC will operate 24 hours per day and provide a schedule of 3,500 hours of observing time annually. By comparison, ground observatories, which can operate only during the night, offer just 2000 hours of observing time per year.

----
highreso/highreso.stb

.title
High Resolution Spectrograph
.description
An instrument capable of obtaining the ultraviolet spectra of individual objects in crowded fields.
.contents

The High Resolution Spectrograph ~(fig. 3)~ will be able to use the full resolving capability of the ~telescope~ to see much dimmer objects than previous space-born instruments. Although it performs in much the same way as the ~Faint Object Spectrograph~, it will be much more accurate because it will be using more light and resolving it into much finer increments.

The High Resolution Spectrograph will be looking at only the ultraviolet region of the spectrum, wavelengths that do not reach Earth. This ultraviolet region should provide the most detailed chemical composition information yet obtained on objects in space.

The instrument's extremely fine resolution will enable it to pick out individual stars in crowded fields. In addition, binary stars that cannot be differentiated optically will be resolved so that each star can be studied separately.

The ~spectrograph~ will be able to study such objects as supernovae, active galaxies, bright quasars, and even phenomena in our own solar system such as planetary atmospheres, auroral activity, and the presence of deuterium in comets. Deuterium, thought to have been manufactured during the Big Bang, occurs throughout the universe. If found in comets, it will reveal more about the relation of our solar system to the original cataclysmic explosion.

----
highspee/highspee.stb

.title
High Speed Photometer
.description
Measures the brightness of an object, either within a particular wavelength or throughout the entire spectrum; detects fluctuations.
.contents
The High Speed Photometer ~(fig. 4)~ is designed to provide accurate observatons of the total light from an object in space, note any fluctuations in brightness on a time scale down to microseconds, and to detail any fine shapes or structures associated with the light source. These measurements are made over a wide spectral interval, including the ultraviolet.

It is the simplest instrument of the group, containing no moving parts, and relies entirely on the pinpoint accuracy of the spacecraft's ~fine guidance sensors~ to accomplish its work. After the light of a star or other source is received, a ~detector~ can measure either the total brightness or the intensity of light within a particular portion of the spectrum.

The High Speed Photometer, in addition, will transmit accurate information on fluctuation in brightness over time. Detection of rapidly spinning neutron or other compact stars will be possible, as well as detailed data on the shape and structure of the fine spikes or flares often associated with such compact objects.

The instrument will also be of special value to astronomers in establishing calibration standards for faint stellar objects.

----
hrsexplo/hrsexplo.stb

.title
High Resolution Spectrograph - exploded view
.description
A diagram of the High Resolution Spectrograph with labeled components.
.contents
        .picture "An exploded view of the High Resolution Spectrograph"

----
hspexplo/hspexplo.stb

.title
High Speed Photometer - exploded view
.description
A diagram of the High Speed Photometer with components labeled.
.contents
        .picture "An exploded view of the High Speed Photometer"

----
introduc/introduc.stb

.title
Why the Hubble Space Telescope?

.synonyms
Introduction article

.description
A short description of the telescope and its purpose.

.contents

Imagine trying to see the clouds from the bottom of a muddy pond. That is how astronomers describe their view of the stars and planets through the Earth's atmosphere. As advanced as astronomical technology has become, our capabilities will be forever limited by the turbulence and brightness of our atmosphere. Even the finest ground observatories, such as the one at Mt. Palomar, California, are restricted by these conditions. In addition, the selective absorption of the atmosphere, which lets in visible light and radio waves emitted by stars and planets, but excludes most other forms of energy, limits our knowledge of celestial bodies.

To open the universe to observation in infrared, ultraviolet, x-ray, gamma-ray, and cosmic ray energies, NASA launched numerous satellites, each helping to explain different processes behind astronomical phenomena. But, to date, the value of these orbiting observatories has been limited by their relatively small size and limited spectral capability.

Now, for the first time, a ground-sized observatory will be placed in orbit to view the universe in visible and ultraviolet light unobscured by Earth's atmosphere.

Called the ~Edwin P. Hubble Space Telescope~, the new observatory is a NASA-wide and international ~cooperative effort~. Its name honors Edwin P. Hubble (1889-1953), who discovered that the universe extends far beyond the Milky Way galaxy.

The ~Hubble Space Telescope~ will weigh about 25,000 pounds (11,300 kg) and will have a length of 43 feet (13.1 m) and a diameter of 14 feet (4.26 m). Its major components are an ~optical telescope assembly~, five ~scientific instruments~, and a ~support systems module~.

----
opticalt/opticalt.stb

.title
Optical Telescope Assembly
.description
The central component of the Hubble Space Telescope, consisting of a 94 inch (2.4 m) reflecting Cassegrain telescope and supporting structures.
.contents

The Optical Telescope Assembly ~(fig. 5)~ will mount a 94-inch (2.4 m) reflecting cassegrain-type telescope, consisting of a paraboloidal primary mirror and a hyperboloidal secondary mirror. The optical effect is the same as that of a telephoto lens. Light beams enter the open end of the telescope and strike the ~primary mirror~ at the rear. The parabolic shape of the primary mirror causes the beams to converge upon the ~secondary mirror~. The secondary mirror's hyperbolic shape aligns the beams in parallel and bounces them back through a hole in the center of the primary mirror. The ~scientific instruments~ are positioned behind the primary mirror where they can be moved into the path of the reflected light.

The ~primary mirror~ is made of ultra-low expansion titanium silicate glass with an aluminum-magnesium fluoride coating. To reduce weight, the front and back plates are fused to a honeycomb core. The mirror will be heated during operation to 70 degrees F to minimize variations from its original accuracy. This heat will come from electrical strip heaters, powered by the ~solar arrays~, which will radiate to the back of the mirror.

The ~orientation~ and ~stabilization control~ system of the telescope can point with an accuracy of 0.01 arc second and can hold onto a target for extended periods within 0.007 arc-second. This angle would translate into a distance slightly larger than the diameter of a dime if the telescope were 500 miles away. Such accuracy is necessary in order to study very faint objects, some of which require exposures of 10 hours or more. The telescope can be turned and changed from one direction to another at a rate of 90 degrees in 20 minutes.

----
orbview/orbview.stb

.title

```
The Space Telescope in Orbit
.description
An artist's conception of the space telescope in orbit.
.contents
    .picture "orbital view"
        .target "orbital view - word diagram"
                = ~Hubble Space Telescope - Main View~
        .target "orbital view - shape telescope"
                = ~Hubble Space Telescope - Main View~
        .target "orbital view - word introduction"
                = ~Introduction article~

-------------------
otadiagr/otadiagr.stb
-------------------
.title
Optical Telescope Assembly - diagram

.description
A diagram of the Optical Telescope Assembly.

.contents
     .picture "Optical Telescope Assembly - diagram"
        .target "OTA - word radial S.I."        = ~Scientific Instruments~
        .target "OTA - word axial S.I."         = ~Scientific Instruments~
        .target "OTA - word fine guidance"      = ~Fine Guidance Sensors~

-------------------
particip/particip.stb
-------------------
.title
Participating Organizations
.description
For a description of the participating organizations and their
responsibilities, see article.
.contents
     The ~Hubble Space Telescope~ is truly a cooperative effort
~(fig. 6)~.  Each of the following organizations has distinct
responsibilities:

     - NASA's Office of Space Science and Applications,
       Washington, DC, is responsible for overall direction
       of the Hubble Space Telescope Program.

     - Marshall Space Flight Center, Huntsville, AL, is the
       leading NASA center for the Hubble Space Telescope,
       providing day-to-day management of the project.
       Marshall also directs the construction and
       integration of the telescope and spacecraft systems.

     - ~Goddard Space Flight Center~ in Greenbelt, MD, is
       responsible for development of the Telescope's four
       American-contributed ~scientific instruments~, the
       development of the ground system, and Telescope
       operations once in orbit.
```

- European Space Agency (ESA), a consortium of eleven western European nations, is responsible for developing the ~Faint Object Camera~, one of five ~scientific instruments~ aboard the Hubble Space Telescope. ESA is also developing the ~solar arrays~ which power the spacecraft and will provide a small resident staff to help operate the ~Space Telescope Science Institute~ in Baltimore.

  The ESA's principal members include: Belgium, Denmark, France, West Germany, Ireland, Italy, the Netherlands, Spain, Sweden, Switzerland, and the United Kingdom. Associate members include Austria and Norway.

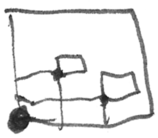
- Johnson Space Center in Houston, Texas, will launch the Hubble Space Telescope using the Space Shuttle.

- Kennedy Space Center, Florida, is also involved in Space Shuttle launch operations.

- The Association of Universities for Research in Astronomy (AURA) has responsibility for operating the ~Space Telescope Science Institute~ in Baltimore, MD, under contract to NASA's ~Goddard Space Flight Center~. implicit target-id = round-rec
  AURA includes: University of Arizona, California ref-id
  Institute of Technology, University of California at Berkeley, University of Chicago, University of Colorado, Harvard, University of Hawaii, University of Illinois, Indiana University, Johns Hopkins University, Massachusetts Institute of Technology, University of Michigan, Ohio State, Princeton, University of Texas at Austin, University of Wisconsin, and Yale.

```
-------------------
projectr/projectr.stb
-------------------
.title
Project Responsibilities

.description
A chart illustrating the organizations working on the Hubble Space
Telescope and their responsibilities.

.contents
   .picture "Project responsibilities"  target-id   ref-id
        .target "resp. - word support system" = ~Support Systems Module~
        .target "resp. - word optical telescope assembly
                = ~Optical Telescope Assembly~
        .target "resp. - word fine guidance" =  ~Fine Guidance Sensors~
        .target "resp. - word faint object camera" = ~Faint Object Camera~
        .target "resp. - word goddard " = ~Goddard Space Flight Center/STOCC~
        .target "resp. - word Scientific instrument" = ~Scientific Instruments~

.notes
        Eh oui on peut meme ecrire des petites notes ici et la...
```

```
-------------------
scientif/scientif.stb
-------------------
.title
Scientific Instruments
.description
The wide field/planetary and faint object cameras, the faint object
and high resolution spectrographs, and the high-speed photometer.
.contents
     The five scientific instruments, four American and one European,
are located behind the primary mirror, at the focal plane, where they
can pick up light reflected from the telescope.  They are the ~wide
field/planetary camera~, the ~faint object spectrograph~, the ~high
resolution spectrograph~, the ~high speed photometer~, and the ~faint
object camera~, the latter provided by the ~European Space Agency~.

     In addition, the ~fine guidance sensors~, part of the ~support
systems module~, because of their ability to accurately locate stars,
could be considered a sixth scientific instrument.

     Each instrument is housed in a separate module and will draw 110 to
150 watts of power.  All are exchangeable during maintenance visits by
the Space Shuttle.
```



```
-------------------
spacetel/spacetel.stb
-------------------
.title
Hubble Space Telescope - Main View
.description
A diagram of the telescope with major components labelled.
.contents
    .picture "telescope - main view"
        .target "Main view -  word Faint Object Spectrograph"
                = ~Faint Object Spectrograph~
        .target "Main view -  word High Resolution Spectrograph"
                = ~High Resolution Spectrograph~
        .target "Main view -  word High Speed Photometer"
                = ~High Speed Photometer~
        .target "Main view -  word Fine Guidance Sensors"
                = ~Fine Guidance Sensors~
        .target "Main view -  word Faint Object Camera"
                = ~Faint Object Camera~
        .target "Main view -  word Wide Field Planetary Camera"
                = ~Wide Field Planetary Camera~

        .target "Main view -  shape HRS"
                = ~High Resolution Spectrograph - exploded view"
        .target "Main view -  shape WFPC"
                = ~Wide Field/Planetary Camera - exploded view~
        .target "Main view -  shape FOC"
                = ~"Faint Object Camera - exploded view~
        .target "Main view -  shape OTA"
                = ~Optical Telescope Assembly - diagram~
```

```
        .target "Main view -  shape FOS"
                = ~Faint Object Spectrograph - Exploded view~
        .target "Main view -  shape HSP"
                = ~"High Speed Photometer - exploded view~
```

```
-------------------
spacetem/spacetem.stb
-------------------
```

.title
Space Telescope Science Institute
.description
The center for scientific activities associated with the Hubble Space Telescope.
.contents

The Space Telescope Science institute, opened in 1983 and operated under contract to ~Goddard Space Flight Center~, will be the center for all aspects of science activities associated with the observatory. The Space Telescope Science Institute will manage the planning and implementation of research projects, provide a facility for astronomers using the Hubble Space Telescope, and collect, analyze, and disseminate the data obtained.

Following a nationwide competition, management responsibility for the Space Telescope Science Institute was given to the assoication of Universities for Research in Astronomy ~(AURA)~, a federation of 17 major U.S. universities. Under this arrangement, the Institute is operated by an independent agent outside of NASA which is directly responsible to the community of current and potential users. ~AURA~ also manages major observatories at Kitt Peak in Arizona, Sacramento Peak in New Mexico, and Cerro Tololo in Chile.

```
-------------------
ssmexplo/ssmexplo.stb
-------------------
```

.title
Support Systems Module - Exploded View
.description
A diagram of the Support Systems Module with components labeled.
.contents

```
        .picture "A diagram of the Support Systems Module"
```

```
-------------------
supports/supports.stb
-------------------
```

.title
Support Systems Module
.description
The structures and equipment which provide power, communications, orientation, and control to the Space Telescope.
.contents

The Support Systems Module ~(fig. 7)~ will enclose the ~Optical Telescope Assembly~ and ~scientific instruments~ and will provide all interfaces with the Shuttle orbiter.

The module has four main sections: the light shield, the forward shell, the equipment section, and the aft shroud. These four pieces fit together like stacked cannisters to enclose the telescope assembly and scientific instruments.

The ~aperture door~, which also serves as a light shield, is located at the front of the Support Systems Module. The telescope must be shielded from the Sun, Earth, and Moon so that the scientific instruments are not damaged by a flood of light. While in operation, the telescope will not be turned to within 50 degrees of the Sun, precluding observations of the planet Mercury. Internal ~baffles~ in the Support Systems Module door and just below the ~secondary mirror~ prevent scattered light from degrading the focal plane image.

Just behind the light shield and the forward shell is the equipment section of the spacecraft. This doughnut-shaped section is made up of 10 compartments that house the electronic and control modules. Access to many of these modules will be easy as most compartments open from the outside via a hatch or access door. An astronaut can open a hatch, disconnect a module from its plug-in compartment, and insert a new module, all without disturbing the other instruments in the spacecraft.

The ~aft~ shroud fits over the section containing the ~scientific instruments~ and the ~fine guidance sensors~. Access covers on this shroud enable astronauts to get at the instruments and sensors for removal or maintenance.

Handrails and portable foot restraints are fixed on the external surface to permit astronauts to perform their maintenance and refurbishment tasks. Four ~magnetic torquers~, also located on the shroud exterior, work with four reaction wheels within the Support Systems Module equipment section to control the spacecraft's orientation in space. The magnetic torquers are magnetized metal rods controlled by an onboard computer. A change in their position causes the spacecraft to re-align itself in relation to the Earth`s magnetic field.

Electrical power is supplied by onboard batteries, which are charged by the two ~solar arrays~ during the sunlit portion of the telescope's orbit. An average of 2.4 kw is needed to operate the spacecraft and its instruments.

```
-------------------
wfpcexpl/wfpcexpl.stb
-------------------
.title
Wide Field/Planetary Camera - exploded view

.description
A diagram of the Wide Field and Planetary Camera with components
labeled.

.contents
        .picture "Wide Field and Planetary Camera - diagram"
```

----
widefiel/widefiel.stb

.title
Wide Field/Planetary Camera
.description
A camera that can take photographs either in "wide-field" or "planetary" mode. The resulting images are transmitted by radio to Earth.
.contents

This instrument ~(fig. 8)~ can operate in one of two modes. In "wide field" mode, its focal ratio of f/12.9 will permit examination of large areas of space, leading to more accurate plotting of the spatial relationships of distant objects such as galaxies and quasars. High-resolution images of planets within our solar system can be obtained by the planetary camera, which has a focal ratio of f/30.

Images telemetered to Earth by radio will be far better than pictures produced by ground-based cameras. Pictures of Jupiter, for example, will be comparable to those taken by the two Voyager spacecraft in 1979. Pictures of more distant planets will not be as clear as those taken by Voyager, but will be far superior to those taken from Earth.

The camera consists of a complex system of instruments and mirrors. The field of view is split by a ~pyramidal mirror~ into four separate areas which are focused onto four ~charge-coupled devices~. These devices have been designed to receive light of low intensity at very high resolution. A portion of the image is received on each target plate and is subdivided into 640,000 picture elements (pixels). The light intensities of each pixel are transmitted to Earth via telemetry signals for assembly into images for study. Images can be created from different spectral bands by directing the light through any one of 50 spectral filters within the camera.

.TITLE
a more difficult test

.SYNONYM
a pretty difficult test
another example

.TOPIC
formatting examples

.DESCRIPTION
An article with more formatting examples

.CONTENTS

Blend text. It will be formatted with all the parameters set in the Compiler.sty (our default favorite values) and the Database.sty (style of the database, chosen by the author).

.left-margin 10mm

Now on everything in this article will have a left-margin of 10mm. We should provide different units.

.font Roman 10 <

.italic < Here the brackets delimit what text is concerned by a command. This is the kind of things we will do after .ref<test>. Notice the reference to "test". Nevertheless we will keep the compatibility with the tildas. This is a test article to have an example of composite article including .underline <text and graphic> at the same time. This text should be on top of a picture of the spacetelescope in orbit.>

.picture-right-justify <
.picture "Optical Telescope Assembly - diagram"

ahjkdjadjladsj
l;'wdl' More text text talk and chat. More text text talk and chat. More text text the next picture will be right justify too.

.picture "Main view"
>

Now, because I hate typing, I included a text that you will probably recognize as being part of the introduction article. I also thought of including here all kind of strange things just to check if anybody would actually read thoses lines...

>

In addition, the selective absorption of the atmosphere, which lets in visible light and radio waves emitted by stars and planets, but excludes most other forms of energy, limits our knowledge of celestial bodies.

```
    If there is not enough space the picture will be displayed on top
of the next page and the rest of this page will be empty...

   .picture "Optical Telescope Assembly - diagram"

   .font Roman 8 <
This command will affect this text component only...
To open the universe to observation in infrared, ultraviolet,
x-ray, gamma-ray, and cosmic ray energies, NASA launched numerous
satellites, each helping to explain different processes behind
astronomical phenomena.  But, to date, the value of these orbiting
observatories has been limited by their relatively small size and
limited spectral capability.
    >

     Called the ~Edwin P. Hubble Space Telescope~, the new observatory is
a NASA-wide and international ~cooperative effort~.  Its name honors
Edwin P. Hubble (1889-1953), who discovered that the universe extends
far beyond the Milky Way galaxy.

   .literal <
        et hop une table:
        un              one
        deux            .ital<two>
        trois           three
        quatre          four

        Yes but how do you display two in italic...
        so far the commands could always be at the beginning of a line.
        but there it would work...
   >

.NOTES
        notice that at the beginning  the "left margin 10" doesn't have
        any brackets... It implies that it concerns the whole contents.
        of course you can put the brackets if you like.
        blabla et voila.
```

SUN BITMAP
'Optical Telescope Assembly - diagram"
./otadiagr/otadiagr.img byteoffset length xoffset ~~yoffset~~ width height

SUN BITMAP
"Wide Field and Planetary Camera - diagram"
./wfpcexpl/wfpcexpl.img

SUN BITMAP
"Project responsibilities"
./projectr/projectr.img

SUN BITMAP
"telescope - main view"
./spacetel/spacetel.img

{500 500 circle}
{20 20 circle}

SUN BITMAP
"Faint Object Spectrograph - exploded view"
./fosexplo/fosexplo.img 1

PC PAINT 2
"hdajhdasjk" 3
./jaksjka.pic

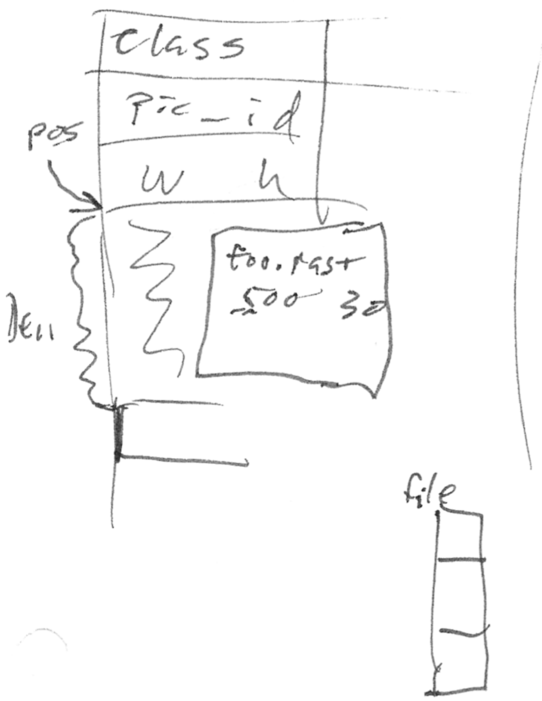
-1 = whole file

<type>
"<name>"
<file> <byte offset> <length> <xoffset> <~~yoffset~~> <width> <height> gl in object

PID 0 -1
file

Master index

pic_id file pos - len



foo.PSP:

{ .5 .5 .5 < 360 arc }

#

#

SUN BITMAP
"Main view - word High Resolution Spectrograph"
./spacetel/spacetel.tgt 1

-1 = whole file

len, (x, y), (w, h)

byte offset

SUN BITMAP
"Main view - word Wide Field Planetary Camera"
./spacetel/spacetel.tgt 2

This is redundant, is it checked by the compiler? also in master index. Could they be specified by either number or name (omiting the other) in the master index?

SUN BITMAP
"Main view - word Faint Object Spectrograph"
./spacetel/spacetel.tgt 3

SUN BITMAP
"Main view - word High Speed Photometer"
./spacetel/spacetel.tgt 4 3

SUN BITMAP
"Main view - word Faint Object Camera"
./spacetel/spacetel.tgt 5

Are these #'s optional? What's the format of a file with more than 1 entry? counted? index w/ (offset, len) pairs at front? No extra info at all? (reader knows how to tell and reads them all into a cache for fast reference?) Can we have a file w/ just one item in it, w/out the indexing info?

SUN BITMAP
"Main view - word Fine Guidance Sensors"
./spacetel/spacetel.tgt 6

POSTSCRIPT PATH
"Half a peace sign"
./hands/bird.psp

SUN BITMAP
"Main view - shape HRS"
./spacetel/spacetel.tgt 700

X Y on the image

UN BITMAP
"Main view - shape WFPC"
./spacetel/spacetel.tgt 8

(offset, len)

SUN BITMAP
"Main view - shape FOC"
./spacetel/spacetel.tgt 9

SUN BITMAP
"Main view - shape OTA"
./spacetel/spacetel.tgt 10

blk line

picture "foo"

SUN BITMAP
"Main view - shape FOS"
./spacetel/spacetel.tgt 11

SUN BITMAP
"Main view - shape SSM"
./spacetel/spacetel.tgt 12

tag derived from name

-1 = whole file

<type>
"<name>"
<file> <byte offset> <length> <xoffset> <yoffset> <width> <height>