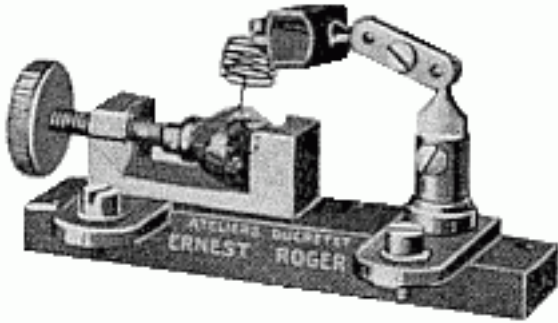


From Crystal Detectors to Point Contact Signal Diodes in Electronics

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Picture 1. "Ernest Roger" Crystal detector

Many of the younger generation never had the pleasure to have, or to even see a real beautiful crystal detector as shown on **Picture 1**. A detector like that was the product of the early 1920's, and it was an expensive, quality, well made product. They were usually hands assembled with machine made components. This particular "**Ernest Roger**" detector device is built on an insulated base, either wood or most likely of Bakelite, the most widely used and only available plastic material at the times.

This excellent detector holder used copper, brass and bronze generously for the crystal holder and for all of the electrodes. The most often used crystal in this and similar detectors - then and now - was [pyrite](#) or galena as shown in the 1925 listing in a table in the [table in the "American Mineralogist" publication](#), that has a listing of thirty three minerals catalogued with rectifying detector properties.

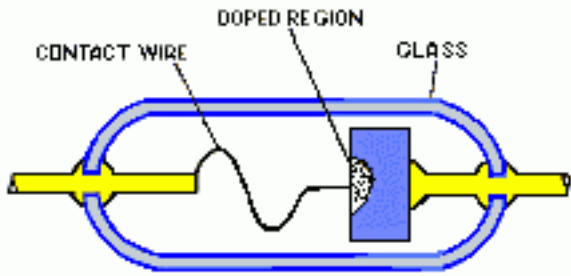
Among the very **first commercially produced diodes is the 1N21B** shown on **Picture 2**. It is more than curious, that this "diode" is enclosed in a case on which there is a slotted screw-head is just visible on the wide side (lower right). That screw is connected to a fine "cats whisker" steel wire, a few turns of a spring-like device, terminating in a point that is in touch of the germanium semiconductor material connected to the top left diode terminal.



Picture 2. Early point contact diode with adjustable screw

The arrangement is much smaller, and more diode like, than the detector on **Picture 1.**, but it made in a very similar arrangement, which has become known as the point contact diode. From these and similar germanium diodes, evolutionary progress leads us to current PN junction Silicon, Gallium Arsenide or other more exotic semiconductor materials which are the achievement of the latest scientific age and many years of steady experimentation, research and development.

Picture 3 shows the cross section of a hermetically glass enclosed, point contact diode. If the left side, point contact terminal would be attached to a screw and a short spring, and the glass envelope would



Picture 3. Point contact diode

designer keeps it simple, and don't use a local oscillator, such radar detectors are not even detectable by the police.

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