

KOPF CARRIER

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Welcome to the home of Kopf Instruments! Taking the bit of Editorial freedom firmly between the teeth, the Editor has dedicated this issue of the Carrier to bring you a tour of the place where Kopf Instruments are created. There is no separate Editor's column, but the Editor does appear in one of the pictures of the plant. It is the hope that this pictorial tour of the facility will give you an appreciation of how the instruments which have become so familiar to the neuro-science community are designed and manufactured.



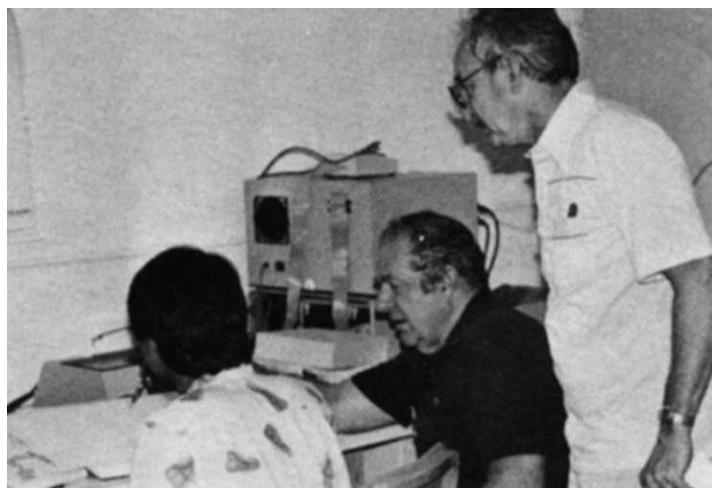
Pictured above is the front of the main building of the Kopf plant. Front row from left are Bob (Comptroller); Carol Kopf (one of the founders and owner); Joicie (receptionist); Dawn (Customer Service Representative); David Kopf (the other founder and owner). Back row from left, Margie (Accounting); Bobbie (Manager, Customer Service).

At Shipping/Receiving are from the left, Douglas (Purchasing); Scott (Expediting); Ed (Shipping/Receiving). These people make up the first and last stages of the Kopf operation. What occurs in between



is the story of the manufacture of the instruments on which we have come to rely.

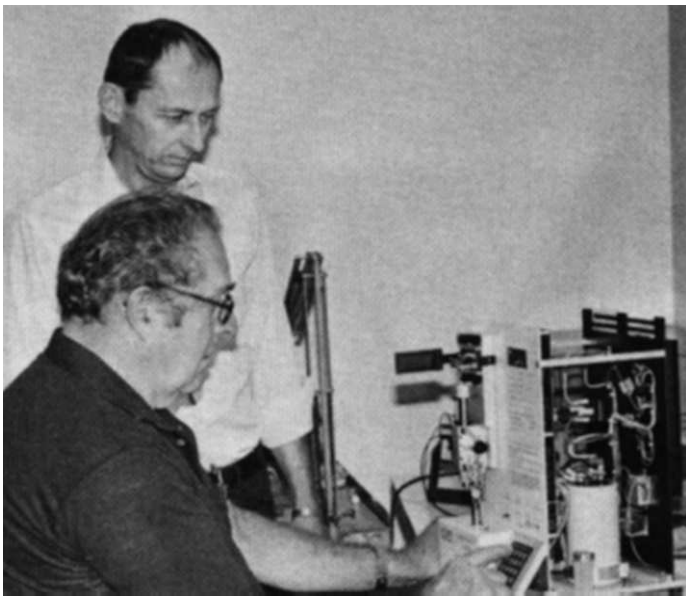
David Kopf founded Kopf Instruments 26 years ago, in 1958, in response to a perceived need for precision instruments in the study of the brain. Kopf had a long background in precision machining and the ability to design equipment for many applications. From a start in a garage, Kopf Instruments now employs 32 people in a series of buildings. In addition to equipment for the neuro-sciences and related fields, Kopf has also manufactured dialysis and vitrectomy instruments in the past. In the following pictures, some but not by any means all of the Kopf manufacturing family are shown.



Inside the plant, new instruments are designed and

improvements made on existing equipment in the Engineering Department. Here David, Bert and Lito (at CAD Console) discuss a new part that was just plotted on our new CAD System. This team is the first step in producing new equipment and in modifying existing equipment. Many such chances come from users as suggestions of ways to make the equipment more efficient or easier to use.

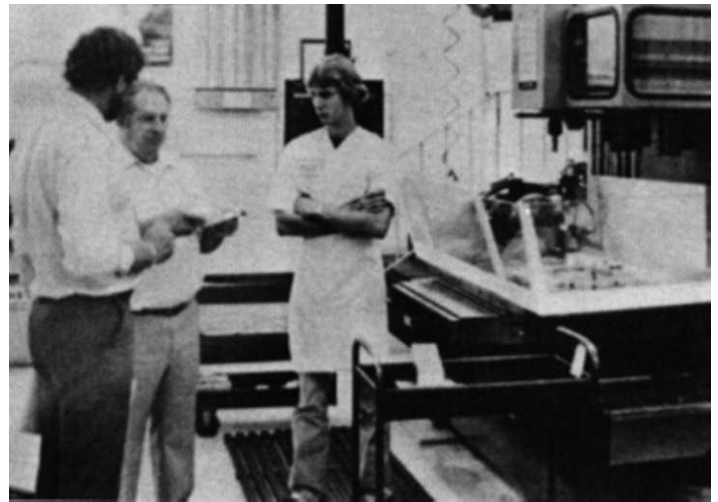
Equipment goes from engineering to development. In this shot, Chuck Wright and David Kopf are shown working on a prototype of the new 750 Needle and Electrode Puller. Chuck is a designer and developer who has set up much of the circuitry and firmware for the 750 developed by Kopf. The introduction of high-tech instruments will be a feature



of the Kopf line of new equipment. The 750 incorporates many new features such as filament temperature sensing and program storage which are unique to the machine.



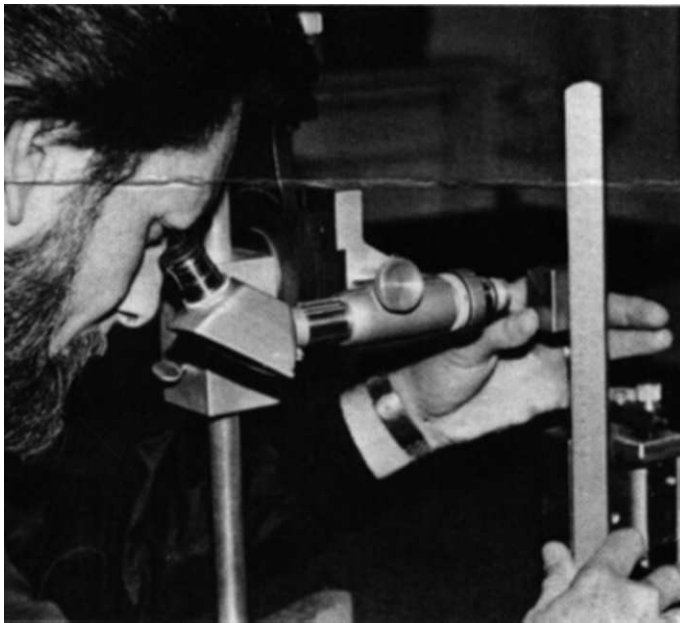
Precision machining is an integral part of the manufacture of Kopf equipment. Here, Rudy, one of the development and precision machining staff, works at a mill in the precision machining room of the Kopf plant. Rudy manufactures special tools for use in other sections of the plant and makes those pieces of the equipment which must be held to especially close tolerances to insure the accuracy and reliability expected of Kopf equipment. One aspect of the plant which was striking during the Editor's visit was the cleanliness evident here and in all areas of the plant.



Computers are making inroads everywhere. One of the 2 new Brown and Sharpe computer controlled mills is shown here. Mike, David Kopf and an unidentified spectator look at a 1730 series crossbar which has just been produced by the new mill. This machine and its twin, each have 24 machine tools mounted in the carousel visible in the upper right. The machine is programmed to perform multiple operations on various pieces mounted on the movable bed. The 1730 crossbar takes 26 separate milling operations, all of which must be within extremely close tolerances. The addition of the new milling machines will allow the production of certain parts more efficiently and easily, thus holding costs down. Mike has been an apprentice instrument maker for the past 4 years and won first place in the local chapter of the National Tool and Die Association's Apprentice contest.



Production inspection is done on every part. Bob Jones, inspector and Mark Neumann, Shop Foreman, are shown performing one of the several inspections on a 1460 series swivel. This type of care in manufacture is given to the many separate pieces, separate assemblies and subassemblies in the current Kopf line. In addition to these parts, many new parts are added to the inventory each month as new products are developed.



The final assembly is no less important than the other steps. Here, Ed is shown putting the ear bar holder on a 1730 frame bar. The ear bar holder is positioned very precisely before being fastened in place. The Editor had previously thought that ear bar holders could be taken off with no problem. However, it is evident that to maintain the original precision of the equipment, the holders must not be loosened.

It is such attention to fine detail evident throughout the manufacture and assembly phases of the operation that was most impressive to the Editor in the tour of the plant. Certainly, holding tolerances of the equipment to about a micron over the length of the assembly is more precise than we can hold when we implant an electrode; but at least we don't have to worry about the accuracy of the equipment.

The opportunity to see the Kopf operation was a very enjoyable experience for the Editor. Carol and David Kopf have asked me to extend an invitation to Carrier readers to stop at the plant if you happen to be in the Southern California area and can get to Tujunga. Just give them a call or drop a note, and they will be happy to show you around the plant. If you have any suggestions for the Carrier or would like to write an article, please contact the Editor at this address:

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