Outstanding Success

P/M '84 wowed the national and international P/M community. Attendance soared to more than 1,800 from 33 countries. Raw materials and equipment suppliers were happy to see so many customers under one roof. The technical-minded were sated by the papers and discussions and the business-minded saw opportunities for new products and markets.

The conference was opened by R. William Rosenquest, MPIF president, who urged the P/M industry to increase its marketing efforts on a worldwide basis and share technology. The future growth of P/M will depend on the blending and cooperation of technology and marketing, he stressed.

MPIF President R. W. Rosenquest opens conference.

Conference Chairman Kempton H. Roll helped to fan the flames of optimism in his global perspective report: “Iron powder shipments should increase 27% in 1984 and the compound annual growth rate for iron powder should reach at least 10% in 1985.” To achieve this he urged the industry not to sink into complacency but to continue to cooperate and innovate.

Roll optimistic on P/M’s future but sounds warnings about apathy.

Lothar Albano-Müller of Sintermetallwerk Krebsöge, GmbH, reviewed P/M developments in West Germany. He said the automotive market dominates the P/M parts industry with the average weight of P/M parts per car 2.5 kg in 1982. He estimated that West German production of iron base P/M parts for automotive applications exceeded 18,000 tons in 1983.

In his review of the P/M industry in the United Kingdom, Dennis A. Barrow of Manganese Bronze Ltd. reported that business was improving after it had fallen sharply since 1979. He said the average weight of ferrous P/M parts made in the U.K. had increased to 37 g. There is interest in the production and consolidation of aluminum and ferrous alloy rapidly solidified powders in the U.K.

Hiroyoshi Kurata, president of Hitachi Powdered Metals Company, Ltd., said that the P/M industry will continue to grow in Japan as closer cooperation between users and P/M parts manufacturers is being established to achieve good design by taking advantage of the characteristics of powder metallurgy. P/M trends in Japan include higher density parts, larger parts, more complex shapes, and higher precision, strength and wear resistance. New markets include the aircraft, aerospace, atomic energy and ocean development fields.

R. G. DeCristofaro, president and chairman of the board of Merisinter S.p.A., said that the Italian P/M industry should concentrate more on research and development of new P/M products and determine customer needs more effectively.

See other section of this newsletter for a photo wrap-up of P/M '84 events and people.

Hausner and Lenel Honored

Henry H. Hausner and Fritz V. Lenel received Powder Metallurgy Pioneer Awards from the Federation during P/M '84 in Toronto. They both were recognized for their pioneering contributions to teaching, research and consulting. The awards were presented by Walter V. Knopp, chairman of the MPIF Awards Committee.

Fritz V. Lenel (left) and Henry H. Hausner (right) receive MPIF Powder Metallurgy Pioneer Awards.

Knopp said, “The Committee’s decision was unanimous. Henry Hausner and Fritz Lenel have surprisingly similar backgrounds. They have been involved in P/M not only in research and development for industry and government, but also in teaching our science to a great number of people in our industry. Both men have been and continue to be very prolific in the writing of books, articles and technical papers. They have lectured in many foreign countries and received many awards.”

Knopp said the philosophy of Dr. Hausner can be summed up: “It is not important how much we know but how we learn to analyze our non-knowledge and to define P/M problems that are still unsolved. A negative result is as important as a positive result. In a philosophical way, something and nothing are both part of reality.”

With his background of 15 years in industry, Dr. Lenel set up the P/M laboratory at Rensselaer Poly-
technic Institute and guided more than 50 students at RPI in masters and doctoral programs, who are working in the P/M industry around the world. In his acceptance speech, he said, “My students and I have contributed to a better understanding of the mechanisms of liquid phase sintering, solid-state sintering and dispersion strengthening.”

Both men are still active as lecturers and consultants and Dr. Hauser is editor-in-chief of the Institute’s International Journal of Powder Metallurgy & Powder Technology.

Competition Winners

Winners of the 1984 Powder Metallurgy Part-of-the-Year Design Competition illustrate that P/M is replacing ductile iron, investment cast and machined parts because of its cost savings, special properties and reliability under demanding conditions.

Winners received awards in ferrous, nonferrous, stainless steel, other P/M materials and overseas categories. Eighty entries were submitted by 36 companies from six countries.

Grand Prizes

The grand prize in the ferrous category was given to the Powder Metal Products division of Imperial Clevite, Inc., Salem, Indiana, for a P/M nickel-steel swash plate used in a six-cylinder auto air conditioning compressor. The part was made for the Climate Control division of Ford Motor Company by Dearborn, Michigan. Previously a ductile iron casting, the P/M swash plate eliminated four machining operations and allowed a 50% increase in heat treating productivity.

A P/M aluminum-copper diskette pusher used in a computer disk drive unit, won the grand prize in the nonferrous category. The part is made by ASCO Sintering Company, Commerce, California, for Micro Peripherals, Inc., Chatsworth, California.

Crucible Compaction Metals Operation, Oakdale, Pennsylvania, won the grand prize in the stainless steel category for a 2,100 pound valve body clad with a P/M alloy 625. The part is made for McEvoy Oilfield Equipment Company, Houston, Texas. Made to 100% density, the part is HIP clad to a low alloy steel body.

Sintermetallwerk Krebsöge GmbH, Radevormwald, West Germany, won the grand prize in the overseas category for a P/M copper-steel fan wheel hub and cone belt drive for the electric generator in an air-cooled six-cylinder engine for the Porsche 911.


Awards of Distinction

A P/M nickel-steel tail cam and cage for an electric guitar tremolo won an award of distinction in the ferrous category. The part is made by Ceromet, Inc., Anaheim, California, for American Precision Metalworks in Anaheim.

Another award of distinction in the ferrous category went to Dixon Sintaloy, Inc., Stamford, Connecticut and the Borg & Beck div. of Borg-Warner Corp., Sterling Heights, Michigan, for a clutch hub used in automotive standard transmissions.

A copper-infiltrated steel plate-detent and guide for a five-speed manual transmission in rear wheel drive specialty cars also won an award of distinction. The part is made by Michigan Powdered Metal Products, Livonia, Michigan, for Warner Gear div. of Borg-Warner Corp., Muncie, Indiana.

A P/M copper EDM capsulated electrode used to cut vane configurations in jet engine restart motors won the nonferrous award of distinction. The part is made by Metal Powder Products, Inc., Logan, Ohio, for Sunstrand Advanced Technology Operations, Denver, Colorado.

An award of distinction in the stainless steel category went to a 316L isostatically pressed hyperfiltration tube that functions as a pressure vessel and membrane support in a reverse osmosis filtration system used in a textile dyeing plant. The part is made by Newmet Products, Inc., Terryville, Connecticut, for CARRE, Inc., Seneca, South Carolina.

Four 316 P/M parts used in an instrument test gauge valve also won an award of distinction. The parts are made by Precision Powdered Metal Parts, Inc., El Monte, California, for Air Dry Corporation of America, Northridge, California.

A P/M copper-steel connecting rod for a small refrigeration compressor won an award of distinction in the overseas category. The part is made by Merisinter, S.p.A., Arzanzo, Naples, Italy, for Aspera, Torino, Italy.

Another award of distinction in the overseas category was given for a P/M aluminum-copper heat dissipator and support for iron P/M electro-magnet cores used in a printing head for business machines. The parts are made by TECSINTER S.p.A., Ivrea, Italy, for OPE S.p.A. (Olivetti Group), S. Bernardo, D’Ivrea.

Award of Achievement

A P/M rocker washer made from a 17-4PH alloy used in a wind turbine won the special award of achievement in the other P/M materials category. The part is made by the Valform div. of GTE/Valeron Corp., Monument, Colorado, for Jacobs Wind Electric Company, Minneapolis, Minnesota.

Award of distinction and award of achievement winners. Foreground, left to right: stainless steel award of distinction, 316 handle, handle key, plate lock and flange bonnet; copper-steel connecting rod, overseas award of distinction; aluminum-copper heat dissipator and support, overseas award of distinction; copper capsulated electrode, nonferrous award of distinction. Background, left to right: 316L hyper-filtration tube, stainless steel award of distinction; 17-4PH rocker washer, other P/M materials, award of achievement; copper-infiltrated plate-detent and guide, ferrous award of distinction; clutch hub, ferrous award of distinction; and nickel-steel tail cam and cage, ferrous award of distinction.
Dr. Ed Aqua, program co-chairman.

Left to right: R. W. Rosenquest, K. H. Roll and David Thomas, welcoming luncheon speaker.

Dr. Charles Whitman, program co-chairman.

P/M Part-of-the-Year Competition winners show off plaques.

APMI President Robert Van Valkenburg welcomes audience to 25th anniversary luncheon.

Beginning of opening ceremony.

MPIF/APMI staff members Stacy Wszolek and Jill Stoner selling publications and signing up new members.

P/M '84 Events and Personalities

Exhibitors explain equipment and products.
More complete descriptions of these parts will be published in the October issue of the International Journal of Powder Metallurgy.

In addition, Tom Sullivan, chairman of the MPIF Public Relations Council, presented a $1000 check in the name of the winning companies to the Hennepin County P/M Educational Program.

Drexel Studies Copper P/M Parts for Electrical Applications

Drexel University and AMAX Base Metals R&D Company will study how to improve P/M copper-base materials for electrical applications in a program sponsored by the International Copper Research Association. The project will address excessive shrinkage and low sintered densities in copper P/M parts, which have limited P/M’s penetration of electrical markets. The study will attempt to determine how to avoid center porosity in copper P/M parts, minimize shrinkage and optimize ductility and fatigue life without adversely affecting conductivity and shrinkage. It is hoped that the program will encourage use of copper P/M parts in place of cast aluminum in fractional horsepower motors.

Diran Apelian and Alan Lawley of Drexel and Pierre Taubenblat of AMAX are the co-principal investigators. Marilyn Dombroski, a 1983 materials engineering graduate at Drexel, will work on the program toward an advanced degree.

Sunbeam Equipment Sold

SECO/Warwick Corp., a newly-formed company, has bought Sunbeam Equipment Corp., of Meadville, Pennsylvania and its Warwick Furnace Company division of Wheeling, Illinois, from Allegheny International, Inc. Sunbeam makes atmosphere and vacuum sintering furnaces for carbides and P/M parts and Warwick builds melting furnaces for the aluminum industry, die casting furnaces and lime kilns.

The address of SECO/Warwick is 180 Mercer Street, Meadville, Pennsylvania 16335.

P/M Brazing Alloy

P/M Engineering & Consulting is marketing the SKC-72 brazing material (a copper-nickel-manganese alloy) for P/M structural parts. This material is finding increasing usage in Japan, the company reports. It is available in different forms such as compacting powder, paste, preforms and rod. For information contact Walter Knopp, P/M Engineering & Consulting, Ridgeview Acres, Box 1287, Columbus, North Carolina 28722; (704) 894-3805.

25 Years of Progress

APMI’s growth has matched the growth of the P/M industry and is 25 years old. This milestone was celebrated at P/M ’84 with a special 25th anniversary luncheon honoring APMI and 148 charter members.

A brief history of APMI was given at the luncheon and a personalized souvenir was presented to APMI President, Robert R. Van Valkenburg, to each of the 40 charter members present.

MPSF Celebrates 40th Anniversary

The Federation will celebrate its 40th anniversary at the Homestead in Hot Springs, Virginia, on September 9-12. The Fall Management Conference and 40th Annual Meeting will feature talks by the Automotive Industry Action Group, Michael Brose, president of the Technology Consulting Group and General Richard G. Stilwell, deputy undersecretary of defense. The program will also include special reports on current industry business conditions, association business meetings and a review of the Industry Development Committee’s marketing program.

Attendance at the meeting is limited to employees of APMI member companies and their spouses.

APMI Golf Outings

The New York and Philadelphia Sections will hold their sixth annual golf tournament on September 20 at the Forsgate Country Club in Jamesburg, New Jersey. Tee off times begin at 12 noon. The entrance fee of $49 includes greens fee, dinner and prizes. For information contact Joe Truncale at APMI headquarters (609) 452-7700.

The Dayton Section will hold its annual golf outing on September 27 at the Hueston Woods State Park Golf Course in Oxford, Ohio. Tee off times will run from 9:30 a.m. to 12 noon. The entry fee of $30 covers greens fee and dinner at the park lodge. Sleeping rooms have been reserved for out of town people at the lodge. To register contact Don Gustafson at Imperial Clevite (812) 883-3381.

Defense Technology Seminar

APMI will sponsor a seminar on Powder Metallurgy in Defense Technology on September 24-26 at the Picatinny Arsenal in Dover, New
Dispersion Strengthened Aluminum Alloys for Elevated Temperature Applications
Aluminum-Base Alloys and Composites Made by Mechanical Alloying
Fully Dense P/M Shapes for Defense Applications
"Ceracon Joining" - The New Alternative
High Tungsten Content Heavy Alloys
Applications for Porous Metal
The Plasma Melting and Rapid Solidification of Metal and Composite Powders
P/M Fabrication of Thermoelectric Materials
New Powder Technologies for Molybdenum Alloy Gun Barrel Liners
Improved Iron-base Alloys Made Via Rapid Solidification Technology
Powder Metallurgy in Defense Applications
An Assessment of the Potential to Develop High Strength Copper-Nickel Alloys for Marine Applications

The seminar will begin on Monday evening, September 24 and conclude at noon on Wednesday, September 26. For registration information contact Joe Truncale at MPIF headquarters. Attendance is restricted to U.S. citizens.

P/M Design Clinic
MPIF will sponsor a one-day P/M parts design clinic on October 16 at the Cleveland Marriott Inn/Airport in Cleveland, Ohio. The clinic is aimed at helping design/materials engineers and other specifiers of metal components understand the benefits of powder metallurgy.

Design guidelines will be stressed and illustrated by applications from different end-markets. Specifying guidelines will be given in addition to cost savings advantages of P/M.

The one-day clinic costs $75 and includes a luncheon and technical literature. For registration information contact Robin Dow at MPIF headquarters.

P/M '86 in Europe
Plans were announced at P/M '84 for the 1986 International Powder Metallurgy Conference & Exhibition to be held in Dusseldorf, West Germany on July 7-11, 1986.

Proposed subjects to be covered are:
New powders and their processing
Powder Characterization
New shaping processes
Further processing of P/M products
Compounding, bonding and coating techniques
Production of semi-finished P/M products
New materials

Technical paper abstracts should be sent to the conference organizers by October 1, 1985. For information on the technical program and exhibition, contact Nowea, Dusseldorfer Messen, Postfach 32 02 03, D-4000 Dusseldorf 30, West Germany; Telex - 8 584 853 mes d.

Less Costly Fully Dense P/M Parts
Gorham International has filed an invention disclosure on a new process called Pressure-Assisted Sintering (PAS). The company says the process promises to produce fully dense P/M parts less costly than sintering or sintering plus HIP.

"We discovered PAS while searching for ways to cut HIP P/M costs," said Andrew C. Nyce, vice president. "We found that a number of alloys can be fully densified using isostatic pressures far lower than those customarily required in HIP. Mechanical properties compare favorably with those of forgings, castings, and wrought-machined parts."

Gorham is seeking funding through a multiclient program to complete commercialization of the process. For information contact Andrew C. Nyce, Gorham International, P.O. Box 8, Gorham, Maine 04038; (207) 892-2216, Telex - 94-4479.

New Mechanical Withdrawal Die-Set Press
The Sharples-Stokes div. of Pennwalt Corp. has introduced a new 20-ton Japanese-made Summit mechanical withdrawal die-set press for close tolerance compacting.

"The Summit 20 is well suited to meet the increasingly close tolerances and complex shapes called for in the auto industry," said Joseph Mallee, marketing manager.

Pressure is exerted by movement of the upper punch and controlled motion of the die table. For ejection, the die table moves down over the lower punch.

Maximum compact diameter is 75 mm and maximum die fill is 100mm. Speed range is 10 to 40 strokes per minute. Overall press height is 100 inches, width 46 inches and depth 60 inches. The press is available with either a single or multi-level die set.

For information contact Sharples-Stokes div., Pennwalt Corp., 955 Mearns Road, Warminster, Pennsylvania 18974.

PEOPLE IN THE NEWS

Dario Passigli, vice president-manufacturing, MD-Both Industries, died after a lengthy illness. He was 55 and joined Both in 1973.

Donald E. Haase has been named plant manager of Chrysler's Ampex operations. He is responsible for the Ampex plant in Van Wert, Ohio and Perth Metal Industries in Stratford, Ontario. He succeeds E. A. Lucarelli who has assumed new responsibilities on Chrysler's diversified operations staff.

Stephen H. Clinch has been promoted to president and chief operating officer of Advanced Products Corp. He joined the company in 1978 as operations manager.

Thomas E. Carroll has been appointed president and general manager of MG Industries' gas products division.

Patricia A. Morton has been promoted to research associate metallurgist at AMAX Materials Research Center. Dr. Evan J. Vineberg and Dr. Abraham Poznansky have been promoted to senior research metallurgist.

Robert J. Engstrom has been named general manager-industrial products for USS Agri-Chemicals, a division of U.S. Steel. He will be responsible for sales, service and operations of the industrial products department.

Alan J. Moses has been named director of commercial and technical development for specialty metals operations, part of the Pfizer Minerals, Pigments and Metals division. Formerly plant manager of the Wallingford, Connecticut operation, Moses will be responsible for quality assurance, technical development and commercialization of new products.
Alan Lawley, professor of materials engineering, Drexel University, received the Delaware Valley Metals 1984 Man of the Year Award. It is the highest award given by the Philadelphia chapter of the American Society for Metals.

A. Craig Hood was elected to the Fastener Hall of Fame. He is president of ACH Technologies, a management consulting and engineering firm.

### DATES TO REMEMBER

**1984**

**September 9-12**
- MPIF Fall Management Conference
- 40th Annual Meeting
- The Homestead
- Hot Springs, Virginia

**September 24-26**
- P/M in Defense Technology Seminar
- Picatinny Arsenal
- Dover, New Jersey

**October 16**
- P/M Design Clinic
- Cleveland Airport Marriott
- Cleveland, Ohio

**November 7-8**
- IPPMA/PMIA Clinic
- Brunswick Corp. Technetics div.
- Deland, Florida

**November 27-29**
- Sintering Seminar
- Hershey Philadelphia Hotel
- Philadelphia, Pennsylvania

**1985**

**February 11-13**
- Short Course on High Density P/M Materials for High Performance Applications
- Marriott Hotel
- Newport Beach, California

**July 14-17**
- 1985 Annual P/M Conference and Exhibition
- The Fairmont Hotel
- San Francisco, California