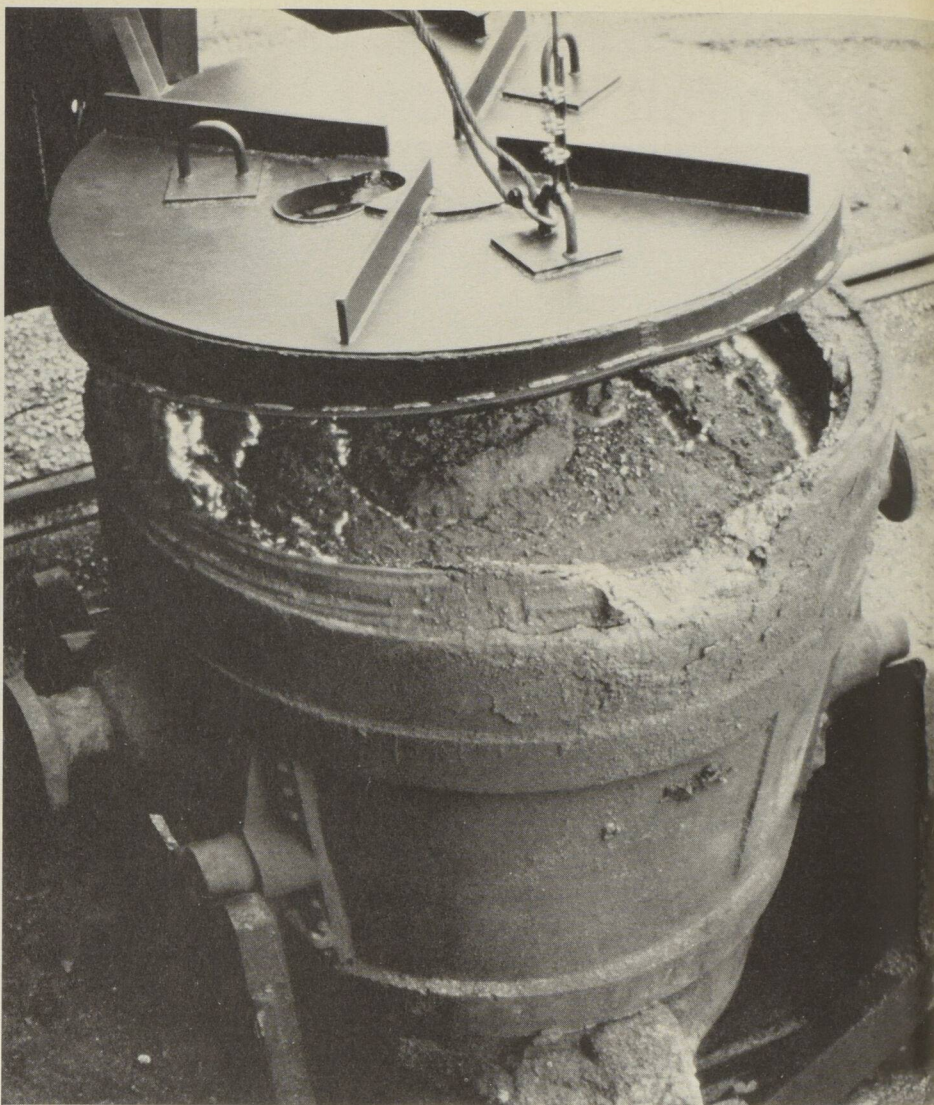


ments and universities, it did not fit within the normal framework of many sponsoring bodies. An eleven part research proposal on the problem of sulfur in steel was assembled and the National Research Council agreed to finance the salary portion of it through a three year, \$500,000 grant to Sydney Steel within the framework of the Industrial Research Assistance Program (IRAP). The steel company agreed to administer the grant, with the work being done there, at the Atlantic Regional Laboratory, the Nova Scotia Technical College and the Nova Scotia Research Foundation. In addition to the NRC contribution, which covered the salaries of the people in the project, AGRIM was able to obtain funds from the Cape Breton Development Corporation for operating supplies.

One of the original members of AGRIM and a prime force behind its creation was SYSCO's Bernie Britten. As Britten explains it, "the whole idea of AGRIM was conceived three years ago, at a time when we were looking for a way to pool the human resources of the Maritimes in order to solve some of our pressing technical problems. The problem of sulfur in steel was chosen as a test for this idea of joining the efforts of a number of people with diversified talents and backgrounds. By including in our society people from the region's universities and research centres, and very practical-oriented people like us, at Sydney Steel, we achieved a highly original and fruitful collaboration."

At present, Dr. Herb Hancock from the Nova Scotia Technical College is the chairman of AGRIM, with Dr. Stirling Whiteway from NRC's Atlantic Regional Laboratory as the Secretary. Each of the organizations associated with AGRIM contributes in its own way to the overall research project. "Our battle against the sulfur problem is waged on many fronts, at various stages in the steelmaking process," says Dr. Hancock. "We try to remove it from the coal itself, we try to reduce it in the coke formed from the coal, and we try to get at it in the blast furnace stage; there is also a step intermediate between the blast furnace and the steelmaking operation, the object of pilot plant work at the Sidney Steel Corporation — whereby various materials are injected into the hot metal in an attempt to remove the sulfur as a slag in the ladle. There may also be the possibility of adding substances to the steel itself, not to remove the sulfur but to change the nature of the sulfide inclusions so that they are less harmful."

Other technological approaches to the sulfur problem have also been



Bruce Kane, NRC/CNRC

**A crust of hot slag covers the molten steel in this large ladle in SYSCO's plant in Sydney, Cape Breton Island. SYSCO is investigating the possibility of using various additives to remove sulfur from steel in the slag.**

**Une couche de scories brûlantes recouvre le métal en fusion dans cette poche de coulée à l'usine de la SYSCO à Sydney, dans l'Île du Cap Breton. La SYSCO envisage la possibilité d'enlever avec les scories le soufre contenu dans l'acier, au moyen de certains additifs.**

considered within the AGRIM program: some involve using leaching solutions on the coal or the coke to "wash away" the sulfur-containing impurities; others involve the use of powerful magnets to pluck sulfur-containing minerals out of the pulverized coal.

More than ten specific projects covering a wide range of possible technical solutions to the sulfur problem have been sponsored by AGRIM and they are being progressively narrowed down to four or five of the most promising ones. The next step will be to evaluate the economic viability of the best techniques in close collaboration with the steel industry.

According to Dr. Hancock, the AGRIM concept has proved to be a very successful approach, and can be applied to many of the other metallur-

gical problems of the Atlantic provinces. One of these is corrosion, a serious problem in the Maritimes because of the high salt and moisture content of the air and, of course the ocean itself. An interesting potential application of corrosion research involves the proposed tidal power stations in the Bay of Fundy. For metallurgists, the problems of corrosion to turbine blades in salt water (as well as erosion due to the high silt content of the Bay) will be of particular interest. Concludes Dr. Hancock: "Through the AGRIM organization, the public and private sector of the Maritimes have teamed up to provide an important contribution to the regional economy. Fundamental and practical science have been applied to a vital dollars and cents problem." □

**Michel Brochu**