and the mechanism of inactivation suggested above appears quite adequate to explain the effects observed.

The limited inactivation near an *insulated* steel block is therefore due to the fact that the cathodic as well as anodic areas will be on the bare steel, so that the above conditions for extensive deposition of rust on the adjacent paint surface do not exist; and inactivation of the antifouling composition will be restricted to the painted area immediately adjacent to the edges of the insulated plate.

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¹ Young and Seagren, *Nature*, **155**, 715 (1945).

² Evans, U. R., "Metallic Corrosion, Passivity and Protection", pp. 164 and 584 (London, 1938).

³ The following paper on work in the United States has arrived in Britain since going to press. Ketchum, B. H., Ferry, J. D., Redfield, A. C., and Burns, A. E., *Ind. Eng. Chem.*, **37**, 456 (1945).

Amino-quinazolines

In a journal which has recently reached us, Dewar¹ reports the preparation of the 2-amino- and 4-amino-quinazolines. In the course of work on the amino-benzadiazines and their sulphonyl derivatives carried out in these laboratories, we had also prepared the amino-quinazolines, but in some respects our results differ from those described by Dewar. Thus we obtained good yields of 2-amino-quinazoline from guanidine nitrate and O-amino-benzaldehyde, a method stated by Dewar to yield only traces of the desired product. The 4-amino-quinazoline we prepared by amination of the corresponding chloro-compound.

Our melting points for the substances are somewhat higher than reported by Dewar, the 2-amino- and 4-amino-quinazolines having melting points of 204° and 272° respectively.

The bases were coupled with sulphonyl chloride to give 2-sulphanilyl-quinazoline (m.p. 286°) and 4-sulphanilyl-quinazoline (m.p. 255.5°), but the compounds are too insoluble to have chemotherapeutic activity.

Full experimental details of the work will be published elsewhere.

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Dewar, *J. Chem. Soc.*, 615 (1944).

Influence of Sulphur Oxides on the Luminosity of Coal Gas Flames

In the course of an investigation into the oxidation of sulphur dioxide in combustion reactions, forming part of a programme of work being carried out for the Boiler Availability Committee, some interesting observations have been made on the luminosity of coal-gas flames to which sulphur oxides had been added.

When sulphur dioxide was added in small quantities to a luminous smoky flame, the luminosity decreased and completely disappeared after about 5 per cent by volume of sulphur dioxide had been added. The

flame showed a purple colour, and when a cooled funnel was held above the flame a yellowish-white deposit collected. Physical and chemical tests showed this to be sulphur. Spectroscopic examination of the flame revealed that a series of bands was present which appeared to be due to S₂ molecules. 5 per cent of sulphur dioxide added to a normally aerated bunsen flame shortened the outer cone and imparted a purple colour to this normally dark-blue region.

The addition of sulphur trioxide, on the other hand, increased the luminosity of coal-gas flames. When the port on the burner was adjusted so as to give an almost luminous flame, the introduction of 0.1–0.2 per cent by volume of sulphur trioxide brought about an immediate increase in luminosity. The same effect is observed in an aerated flame but the amount of trioxide required was of the order of 1 per cent. Whether this increased luminosity is due to emission from carbon particles produced by reactions involving the sulphur trioxide and the hydrocarbons present in the gas or to some other cause has not yet been established.

A detailed account of these results and of the behaviour of sulphur oxides in combustion reactions will be published shortly.

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Distribution of Vanadium, Chromium, Cobalt and Nickel in Eruptive Rocks

THE similarity, pointed out by P. H. Lundegårdh in a recent communication¹, between the amounts of the above trace elements in the normal series of igneous rocks from Eastern Upland, Sweden, and those in the corresponding members of the suite of rocks which we have analysed from the Skaergaard Intrusion, East Greenland², is of considerable interest in view of the differences between the two series of rocks. In describing our results, we offered tentative explanations of the observed variations in the trace constituents, based largely on V. M. Goldschmidt's earlier work, and we shall look forward to Lundegårdh's further treatment of the problem in view of his new data from Sweden.

In the meantime, it may be of interest to record some data, recently obtained, which indicate the actual location of the trace constituents in some of the minerals which make up certain of the Skaergaard rocks. From these data, we select the following for olivines and clino-pyroxenes separated from rocks previously analysed in bulk and quoted by Lundegårdh.

PERCENTAGE OF CERTAIN CONSTITUENTS IN OLIVINES AND CLINO-PYROXENES SEPARATED FROM ROCKS OF THE SKAERGAARD INTRUSION.

	Olivines from:		
	Gabbro picrite	Olivine gabbro	Hortonolite ferrogabbro
V	0.003	—	—
Cr	0.1	—	—
Co	0.01	0.01	0.01
Ni	0.1	0.04	0.001
Fe ₂ SiO ₄	19	37	60
	Clino-pyroxenes from:		
	Olivine gabbro	Middle gabbro	Hortonolite ferrogabbro
V	0.01	0.01	0.003
Cr	0.04	—	—
Co	0.004	0.006	0.004
Ni	0.008	0.005	—
Fe ₂ SiO ₄	19	36	50