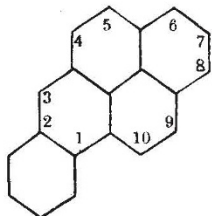derivatives of anthraquinone. Each of the anthraquinone dihydroazines has affinity, but the property is most developed in indanthrone (*trans-bisang.* configuration).

The 1 : 2-benzpyrene nucleus appears to be equally potent whether regarded as a carcinogenic structure or as a unit in the structure of vat dyes. 1 : 2-Benzpyrene itself is a much more powerful carcinogenic agent than is either 1 : 2-benzanthracene or 1 : 2 : 5 : 6-dibenzanthracene. Similarly, 1 : 2 : 6 : 7-dibenzpyrene-3 : 8-quinone (*trans*) is a much more effective dye than is 1 : 2-benzanthraquinone. The *cis-* configuration (2 : 3 : 6 : 7-dibenzpyrene-1 : 8-quinone) has weaker affinity than the *trans-* form.

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[1] Cook, Hieger, Kennaway and Mayneord, *Proc. Roy. Soc.*, B, **111**, 455 (1932). Cook, *ibid.*, 485. Barry, Cook, Haslewood, Hewitt, Hieger and Kennaway, *ibid.*, B, **117**, 318 (1935).

Stability of Emulsions

EMULSIONS of one liquid or gaseous phase in another usually collapse, returning to the initial state, that of two co-existing phases in bulk. Stabilisation, however, may be obtained by adding an 'emulsifyer', capable of forming films around the particles which inhibit the exchange of molecules between the internal and the external phase.

The stability of the emulsion, therefore, depends on the stability and impermeability of the film.

Since the film is in equilibrium with the adjacent phases, the thermodynamic potential of the emulsifying agent is the same through the whole system. This quantity is affected by the capillary pressure exerted upon the internal phase, and may be written in the form :

$$\mu_r = \mu_0 + \frac{2\sigma}{r(D_{\text{in}} - D_{\text{ex}})}.$$

Here μ and μ_0 designate the potential of the curved and the plane film respectively, σ the interfacial tension, r, the radius of the particle, D_{in} and D_{ex} the density of the emulsifying substance in the internal and the external phase respectively.

Since the film is stable only if $\mu_r < \mu_0$, it follows that D_{ex} must be larger than D_{in}. This is the well established rule of Bancroft, governing the inversion of emulsions. The thermodynamic theory also accounts for the fact that the stability will be increased by 'homogenisation', that is, by decreasing the radius.

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A New Cleavage Product of Guanine

BY heating guanine in an autoclave with acid, about 20 per cent of the purine is converted to a base of the composition $C_4H_7N_5$, from analysis of the two salts $C_4H_7N_5.H_2SO_4$ and $C_4H_7N_5.2HCl$. By oxidation with bromine, guanidine picrate has been obtained from the base, and by oxidation with potassium permanganate a yield of approximately 47 per cent of guanidine has been obtained by colorimetric estimation. After boiling with barium hydroxide, the resulting acidified solution yielded a blue colour when made alkaline, or when treated with a small amount of potassium permanganate ; it gave a deep red nitroprusside test in alkaline solution ; after treatment with nitrous acid solution gave a deep brown colour when mixed with a solution of β-naphthol in sodium hydroxide : all of which tests are probably given by 4- (or 5-) aminoglyoxaline[1]. This acidified solution when allowed to stand in contact with air also yields a marked ninhydrin test, which is highly probably traceable to glycine, since this amino acid was found amongst the autoclaved guanine products.

Fargher[2] isolated glycine from the reduction products of 4- (or 5-) nitroglyoxaline, and its appearance here can be regarded as further evidence for the existence of a glyoxaline nucleus in the new base. The base itself gives an intense green colour with diazotised sulphanilic acid in sodium carbonate solution, and if sodium hydroxide is added soon after coupling the colour changes to a beautiful blue. It is concluded that the base is likely to be 4- (or 5-) guanidinoglyoxaline, and that it arises from guanine as represented by the reaction :
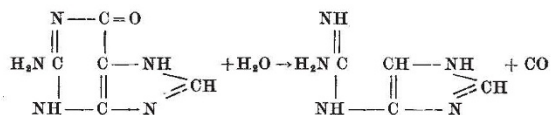
Guanine　　　　4- (or 5-) guanidinoglyoxaline

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[1] Fargher and Pyman, *J. Chem. Soc.*, **115**, 217 (1919).
[2] Fargher, *J. Chem. Soc.*, **117**, 668 (1920).

Continuous Spectrum of Nova Herculis

IN NATURE of January 25, p. 150, Dr. W. M. Cohn refers to the spectrophotometric observations of Nova Herculis 1934 by Barbier, Chalonge and Vasy. In the earlier stages of the Nova these investigators find a secondary maximum in the energy distribution of the continuous spectrum, and Dr. Cohn attributes this feature to electron radiation, and deduces that "the early stage of a nova seems to permit the generation of free electrons of high speed".

The secondary maximum is not shown in the results of Beileke and Hachenberg[1], neither is it shown in the Greenwich results (at present unpublished). Part, if not all, of the discordance between our results and those of Barbier, Chalonge and Vasy is to be ascribed to the difficulty in deciding exactly what is the continuous spectrum. The spectrum of the Nova is rich in emission and absorption lines, the former are strongly 'winged',