Tubes.	O_2 %.	CO %.	N_2 %.	Reaction.
1	7·32	63·4	29·28	XX
2	5·22	73·9	20·8	X
3	3·6	82·0	14·4	0
4	3·4	0	96·6	XXXX
5	1·8	0	98·2	XXX
6	1·1	0	99·0	XX

Similar results are obtained with yeast in which the respiration is almost completely abolished, while the oxidase is still very active.

Daylight, or the light of a ½ watt electric lamp (50 c.p.), dissociates the carbon monoxide oxidase compound, the oxidase becoming active again. To demonstrate this, six Thunberg's tubes are prepared as in the above experiments, evacuated to about 150 mm. to 200 mm. pressure of mercury, and are filled with pure carbon monoxide. These tubes, standing in the same rack, are then reversed and their contents mixed in the dark. Of the six tubes, three are covered and kept dark, while the other three are exposed to the light by shaking the rack in front of an electric lamp. After shaking for 1-5 minutes, the three protected tubes are uncovered, and the reaction in all six tubes is compared rapidly. The result is that, while the three tubes kept in dark show only a slight blueing (X), the tubes exposed to the light show a strong blue colour of indophenol (XXXX). Control experiments with tubes filled with nitrogen instead of carbon monoxide show no difference in the rate of indophenol formation in the tubes exposed to the light or kept in the dark.

Carbon monoxide was found to inhibit in a similar manner the indophenol oxidase of mammalian muscles, and the oxidation of catechol by the aqueous extract of oatmeal flour or of dry potato oxidase preparation.

These experiments show that Warburg's respiratory ferment is a polyphenol or indophenol oxidase system, which can display its characteristic reactions even in dead cells in which the respiration is abolished. All this clearly indicates that the oxidase systems revealed by the indophenol test belong to respiratory catalysts essential for the oxygen uptake by the living yeast cell.

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The Industrial Revolution.

I AM curious to learn the grounds upon which Miss Buer (See NATURE, Mar. 12, p. 379) bases her belief that the rise of population in England after 1750 was due to the introduction of the practice of inoculation and a consequent decline in infant mortality.

The accepted view is, I believe, that the rise was due in the first instance to the expansion of England's colonial trade, which increased twelve-fold, according to Edmund Burke, between 1702 and 1772. The growth of the demand for English cloth led to Kay's invention of the fly-shuttle in 1733. This invention doubled the weavers' output, raised the prices of yarn, and thus gave increased employment in the spinning trade.

Newcomen's steam-engine was introduced in 1712, and thenceforward made steady progress, resulting in an increased demand for coal. The new conditions inaugurated by the growth of trade and invention reacted upon agriculture and transport, and thus paved the way for the Industrial Revolution.

It is difficult to see how medical science could affect the size of a population. Unless there is more to divide, population cannot increase. Moreover, under the conditions prevailing in the eighteenth century a high rate of infant mortality would not affect the size of the population. Natural fertility would secure a replacement of the infant population. *Primo avulso non defuit alter.*

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I SHOULD like to reply briefly to the points raised in Mr. Wyndham Hulme's letter. In my book I have laid considerable stress on the growth of commerce and its important reaction upon agriculture and consequently upon population. My reviewer has also mentioned this, though naturally stressing other points of more immediate interest to readers of NATURE.

In regard to Newcomen's engine; its use was never widespread, and, after experiment, was frequently abandoned owing to the wasteful consumption of fuel. Water-power was always preferred when available. The growth of the coal trade before 1800 was mainly due to the increasing use of coal for domestic purposes and for brewing, brick-making, forging, smelting, etc., rather than to the demands of the steam-engine. This increasing use of coal was partly due to the growing shortage of timber and partly to the development of canals.

In regard to the statement that "Unless there is more to divide, population cannot increase," from one aspect this is a truism, but Mr. Hulme seems to imply by it that production cannot be adjusted to needs. This implication is open to question. Given a sufficiently elastic social system, a growing population will stimulate production, and it undoubtedly did so in the period in question.

Neither can I agree that a high rate of infant mortality does not affect the size of a population, because the birth-rate adjusts itself to this rate. Obviously, this argument cannot hold if the birth-rate is at the maximum which natural fertility allows. The nearer the actual birth-rate is to this maximum the smaller is the possible movement of the birth-rate in an upward direction. Personally, I believe that until recent times, when the use of contraceptives introduces a new factor, the death-rate rather than the birth-rate was the prime regulator of population. In regard to the period under review, there is no evidence of any appreciable alteration of the birth-rate, but there is overwhelming evidence of a great fall in the death-rate, mainly among infants, and this fall was concomitant with a great growth of population. The fall of the death-rate was due to a variety of causes, of which inoculation was probably one. For the grounds upon which I base my conclusions I can only refer Mr. Hulme to my book, in which they are stated in some detail.

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Regularity in the Spectrum of Ionised Neon.

THE spectrum of neon has been completely analysed by Paschen, but certain lines were obtained by Liveing and Dewar in 1900, and afterwards confirmed by Merton (*Proc. Roy. Soc.*, vol. 89, p. 447), which are not included in Paschen's scheme. L. and E. Bloch and Dejardin (*J. de Phys.*, May 1926) obtained these lines by the method of electron bombardment, and found that the lines come out strongly at 49 volts. They ascribed the lines to ionised neon.

I have tried to classify these lines, and have succeeded in arranging about 140 of them in groups of