The Origin of the South-west Monsoon.[1]

By DR. G. C. SIMPSON, F.R.S.

IT has generally been held that the south-west monsoon owes its origin to the great difference of temperature which exists during the summer months between the heated land surface of India and the surrounding oceans, the general idea being that the warm air over the land rises, and damp air from the sea flows into India to take its place, thus resulting in the strong south-west winds, the rainfall itself being due to the cooling of the air as it rises over India.

This theory has to face the difficulties that the temperature over India is much higher in May, before the monsoon sets in, than it is during the monsoon itself; that the temperature is higher in years of bad monsoon than in years of good monsoon; and that the part of India which has the highest temperature and the lowest pressure, and where ascending currents should be the greatest, is a region of practically no rainfall throughout the monsoon.

The true explanation of the south-west monsoon can be obtained only by taking a wide view of the weather conditions over large parts of the earth's surface during the summer months in the northern hemisphere. It is then seen that the south-west winds are not due to the temperature in India, but are a relatively small part of a general circulation of the atmosphere caused by a region of high pressure over the South Indian Ocean and a region of low pressure which extends over the whole of Central Asia. Air passes northwards from the region of high pressure as the south-west trade winds so far as the equator, where it gets caught up in the circulation around the low pressure over Asia. On account of the particular arrangement of sea and land, combined with deflection of wind currents due to the earth's rotation, this air travels for 4000 miles over the sea before it reaches India, where it arrives in a very warm and exceedingly humid condition. This air, however, would probably sweep right across India to its goal in Central Asia without producing much rainfall if it were not for the unique distribution of mountains around India. From the north of the Mokran coast, right round India, following the line of Afghanistan, the Himalayas, and the mountains of Burma, there extends an unbroken wall of mountains, nowhere lower than 5000 ft., standing directly athwart the air-currents. The mountains catch the air, which is being driven by a pressure distribution extending from the Southern Indian Ocean to the centre of Asia, in a kind of trap, out of which there is no escape except by ascension. The damp, humid air, which begins to rain as soon as it rises 500 ft., is forced to rise between 10,000 ft. and 20,000 ft., and, in consequence, large masses of water are precipitated over the greater part of the Indian area.

[1] Abstract of a paper entitled "The South-west Monsoon," read to the Royal Meteorological Society on Wednesday, March 16.

The Finsbury School of Chemistry.

By PROF. G. T. MORGAN, F.R.S.

THE widespread feeling among scientific workers that the threatened closing of the Finsbury Technical College would be a calamity of national importance has found expression in a petition recently presented to the council of the City and Guilds of London Institute. In this appeal, which is supported by a long list of eminent names representative of every branch of art, science, and technology, the members of the Finsbury Technical College Defence Committee, many of whom are former students of the college, testify to their grateful appreciation of the long-continued benefactions made by the institute to the college, and urge the council to take into consideration all possible sources of assistance in the responsible task of keeping the college open as an institution for higher technical education.

The salving of Finsbury cannot be regarded otherwise than as a prudent step in the conservation of our educational resources at a time when public expenditure on new institutes embodying untried schemes is scarcely likely to meet with popular approval. This anticipated continuance of the college involves, however, a retention in its entirety of the unique system of scientific education given at Finsbury, so that the future of this institution may be a logical and evolutionary development of its former activities. The policy consistently adopted in the past by the City and Guilds of London Institute was to place implicit trust in the judgment of the scientific men appointed to the professoriate of the college. These professors were not tied down by formal curricula, and were allowed complete liberty to teach their respective subjects in their own way.

It is largely this freedom from prescribed courses and examinational restraints which has given to the Finsbury School of Chemistry, founded by Prof. H. E. Armstrong in 1879, its outstanding and distinctive features. From the first its laboratories were a centre of unceasing chemical activity, for they were open to day and evening students, who found unfailing assistance in their preparatory studies and inspiration in research from the hard-working staff whom the professor gathered round him. Among the more salient investigations of the early Finsbury School of Chemistry, which inaugurated a new era in the teaching of this science, were the researches on the laws of substitution among aromatic compounds and on the relationship between colour and chemical constitution, and the important discovery by Armstrong and Miller of the purification of coal-tar hydrocarbons through their sulphonic acids.

With Prof. Meldola's arrival in 1885 the chemical department was brought into even closer association with the synthetic colour industry. The new professor had recently discovered the oxazine blue which still bears his name, and had also made in the works several notable discoveries which afterwards bore fruit either in this country or abroad. The investigations then initiated at Finsbury showed the influence of the earlier industrial experience of its director. The course of substitution in the naphthalene series was the subject of several memoirs, and the researches on azo-compounds originally commenced in the works laboratory were continued throughout the remainder of the professor's lifetime. In collaboration with Mr. F. W. Streatfeild, Meldola instituted an inquiry into the constitution of diazoamino-compounds and amino-amidines which brought to light unexpected instances of isomerism. In 1000 he discovered the first recorded instance of the replacement of a nitro-group