WEATHER FORECASTS

IN the issue of SCIENCE for May 8, page 479, there is a little slip in the item "Weather Forecasts," by J. D. Davidson. To disprove the notion that "the air is heavy with moisture" when it is going to rain, the first reason given is "because of the molecular weights of water and of the hydrogen-oxygen mixture." Presumably this should have read "nitrogen-oxygen" mixture.

The erroneous idea that moist air is heavier than dry air probably is due in part to the assumption that air absorbs moisture very much as a sponge absorbs water, and that moist air, therefore, should consist of the original volume of air plus the added water vapor and should weigh more than the dry air alone. What actually occurs, of course, is that the water vapor displaces an equal volume of air. Since water vapor is lighter than air any mixture of the two will weigh less than the same volume of dry air under the same condition of temperature and pressure.

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PER CENT.

DR. ELLIOTT[1] has made a much needed plea that instead of using the ambiguous term "per cent.," authors should indicate exactly what they mean when they state the concentrations of their solutions. In this connection it might be well to mention the official sanction which has been given by the U. S. Pharmacopoeia to the usually more useful definition of the term per cent. The eleventh edition of the U.S.P. defines it for solutions of solids or gases in liquids as grams per hundred cubic centimeters of solution, and for liquids in liquids as cc per 100 cc of solution, when not otherwise qualified.

Another source of confusion, not mentioned by Dr. Elliott, is the use of per cent. to refer to dilutions of a concentrated solution. A solution of HCl prepared by diluting 10 cc of conc. HCl to 100 cc with water, is not a 10 per cent. solution (or even a 1:10 solution).

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HEALTH AS A NATIONAL ASSET

IN the magazine, *Britain To-day,* which apparently serves the purpose of promoting amity and cultural relations among English-speaking people, Sir George Newman, formerly chief medical officer of the Ministry of Health, published an article on "Health as a National Asset." In this article he states that modern English medicine was mainly established by seven particular events, among which he lists the discovery of anesthesia by Humphry Davy and Simpson.

[1] K. A. C. Elliott, SCIENCE, n.s., 95: 123, 1942.

It happens that both Davy and Simpson were Britishers and both contributed materially to the advancement of science and medicine. Davy, who at the age of nineteen was employed in the laboratory of the Pneumatic Institute of Thomas Beddoes in Clifton, made some interesting observations on the recently discovered gases—carbon dioxide and nitrous oxide. He used nitrous oxide on various animals, as well as on himself, and observed the pleasant feeling of inebriation as well as the suppression of pain perception resulting from the inhalation of this gas. Due to its exhilarating actions he very properly termed nitrous oxide as laughing gas and remarked that "as nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used to advantage during surgical operations in which no great effusion of blood takes place." (1799.)

It may be added that Davy's chief, Beddoes, made the same observation concerning ether—an observation which was amply confirmed by Faraday and other British and American observers. It is fair to state, however, that these isolated observations remained mere scientific curiosities and remained unheeded for a long time by surgeons in general and the British medical profession in particular and that they have not accomplished what Sir George Newman implies—the establishment of modern English medicine.

The other name mentioned by Sir George Newman is that of Sir James Young Simpson. Simpson was a well-known obstetrician and woman specialist who first used ether to alleviate the suffering of child-birth after ether had been successfully used in America by a number of surgeons and introduced into the British Isles by Bigelow. Simpson is also responsible for the introduction of chloroform into the practice of surgery after its action in animals had been discovered by the great French physiologist, Flourens.

These very interesting observations and discoveries have little to do with the discovery of anesthesia for surgical operations, which is a purely American contribution. Whether the credit for this great discovery should be given to Crawford W. Long, of Jefferson, Ga., or to William T. G. Morton is a debatable question, although it is certain that Long preceded Morton but that Morton had the good fortune of having demonstrated the efficacy of ether in the operating room of the Massachusetts General Hospital to the satisfaction of the leading surgeons of the day (October 16, 1846).

It is the American discovery of anesthesia and its successful demonstration by Morton that influenced English and other medicines, because within a year after this demonstration ether was used throughout the civilized world and "strong men" were no longer needed to hold down the tortured, struggling patients