The cause, here as in Russia, is the glorification of "labor"—apparently synonymous with cessation of labor, at any rate for a price proportioned to its value.

When a professor does not actually "quit his job," the public supposes he is giving the same service as formerly. In fact he may be simply meeting his classes as before, some ten or twenty hours in the week; the rest of his active time, which should be spent in preparation, study and research, is under present conditions too often dissipated in chores of house and garden, for which "help" is no more to be had. In effect the professor has "quit his job," for half time and in that half is situated somewhat like Professor Pavlov.

The irony of it is that the professor is the last man in the world to shirk his professional work, which is also his pleasure; but the topsy-turvy economics of the day are forcing many to do so.

A MEMBER OF THE EXPLOITED CLASSES

QUOTATIONS

NITROGEN FROM THE AIR AND THE BRITISH GOVERNMENT

THE report of the Nitrogen Products Committee has at last been allowed to emerge from the seclusion of the government pigeon-hole, in which it has reposed, in type, for at least seven months. It is a voluminous document of over 350 pages, containing the results of nearly three years' work, largely voluntary, on the part of a number of scientific men, who in that period explored in great detail the statistical and economic aspects of the nitrogen problems and also supervised much experimental research. The latter was devoted especially to the Haber process for the synthetic manufacture of ammonia by the direct union of its elements, nitrogen and hydrogen—a process which, coupled with the oxidation of the ammonia to nitric acid, undoubtedly enabled Germany, cut off from supplies of nitrate from Chile, to continue the war longer than would otherwise have been possible. The general principles of that process were familiar enough in this country, but acquaintance with the technique of its operation was confined to Germany. However, the committee made such progress towards remedying this deficiency that in their report they feel justified in recommending the immediate establishment of the process on a "commercial unit" scale in this country and its extension up to a minimum of 10,000 tons of ammonia annually.

For this purpose they suggest the utilization of a factory at Billingham-on-Tees. The Explosives Department of the Ministry of Munitions decided to start this factory in a hurry, and perhaps in advance of the technical knowledge available at the time, towards the end of 1917; but their attitude towards it was somewhat Laodicean, and it has not been finished. Its completion would cost a considerable sum, but the committee's view is that, as a matter of national insurance, we ought to be in a position to manufacture nitrates artificially in this country, since, from the military aspect, we cannot afford the risk of being dependent on saltpeter imported from Chile for the nitrogen compounds which are indispensable for modern high explosives. Perhaps the best solution would be for private enterprise to take over and equip the factory, with some measure of government control and interest; and the appearance a few weeks ago of an advertisement inviting offers for it suggests that this is the direction in which events are moving. It is believed, indeed, that an important group of firms is in negotiation for the place. In this connection it must be remembered that nitrates are as essential in peace, for fertilizing purposes and the manufacture of mining explosives, as they are in war.

A cheap and abundant supply of electric power being essential for the commercial success of some of the processes of fixing atmospheric nitrogen, the committee considered very fully the question whether this condition can be met in the United Kingdom. In particular, they investigated the possible advantages of employing preliminary processes of carbonization and gasification in connection with large electric power stations, instead of firing

the coal direct into the furnaces of steam boilers. Such methods offer the attraction that they permit the recovery of by-products that are lost with direct firing, and it is, therefore, disappointing to find that the committee's conclusions are adverse. They conclude that, in the present state of knowledge, the direct burning of coal under steam boilers forms the cheapest method of generating electricity on a large scale from coal, even when the indirect processes are credited with the revenue obtainable from the sale of the recovered by-products. What is still more unfortunate—from the point of view of those who hope for an increased supply of home-produced liquid fuel, as well as cheaper electricity from capital power stations with gas-fired boilers—they make out that the advantage of direct firing increases with rising costs of coal and labor.—The London *Times*.

NOTES ON METEOROLOGY AND CLIMATOLOGY

RAINFALL (AND SNOWFALL) OF THE UNITED STATES[1]

THE Weather Bureau has just issued a reprint from the *Monthly Weather Review* entitled "Seasonal distribution of precipitation and its frequency and intensity in the United States,"[2] by Joseph B. Kincer. Three reviews and abstracts are included in the reprint: "Some characteristics of the rainfall of the United States,"[3] by R. DeC. Ward; "New seasonal precipitation factor of interest to geographers and agriculturalists,"[4] by R. M. Harper; and "The snowfall of the United States,"[5] by R. DeC. Ward. Since these three papers are easily available, this note will cover only Mr. Kincer's article and the graphs added to the reviews of Professor Ward's two papers.

Here are published, for the first time, reliable and detailed maps of the average rainfall of the whole United States for each month. The topographic (hachured) base-map used shows at once the close dependence of rainfall on topography as it affects precipitation of moisture from the prevailing westerly winds. We have long known of the marked spring and early summer rainfall maximum in the prairies and Great Plains; but these monthly maps give us almost a moving picture of the wave of rainfall which spreads northward and westward as the warm southerly winds blow in day after day from the Gulf of Mexico. From its February position across east Texas, northwest Arkansas and southern Illinois, the 3-inch monthly rainfall line in March has moved westward into Oklahoma, central Missouri and northern Illinois; in April, to central Texas, central Oklahoma, eastern Kansas and central Iowa; in May, to the 101st meridian in south Texas, across the Panhandle into northeastern New Mexico, through western Kansas, west central Nebraska, the Dakotas and northern Minnesota, and in June still farther westward in the central and northern Great Plains—in Montana even to the Rockies. By June in the southern Plains and by July in the northren Plains the spring-time flood of moist air has spent itself, and the rainfall lines are beginning to retreat—eastward as the summer passes, and southward as the coldness of the oncoming winter renders much precipitation impossible. The four maps of precipitation by seasons summarize this same movement of the isohyets. With such a series of maps before one it is obvious that the Gulf of Mexico and the open country to the north and northwest allow our prairies and plains to be so productive.

If the conditions year after year were like those shown on these maps of average rainfall, we should not have been experiencing or

[1] *Cf.* notes on this subject in SCIENCE, July 19, 1918, N. S., Vol. XLVIII., pp. 69–72 (snow, SCIENCE, February 11, 1916, N. S., Vol. XLIII., pp. 212–214).

[2] September and October, 1919, Vol. 47, pp. 624–633, 695–696, 7 graphs, 30 maps—13 in text and 17 full-page lithographs. (For copies, apply to "Chief, U. S. Weather Bureau, Washington, D. C.")

[3] *Scientific Monthly*, September, 1919, Vol. 9, pp. 210–223.

[4] SCIENCE, August 30, 1918, N. S., Vol. XLVIII., pp. 208–211.

[5] *Scientific Monthly*, November, 1919, Vol. 9, pp. 397–415, map.