

of subbituminous C rank with an average of 8650 Btu on an "as received" basis. The ash content is usually high, ranging from 5 to 25 percent and averaging about 10 percent. When exposed to the air, the coal slacks readily because of its high moisture content, which ranges from 16 to 35 percent.

Nearly 15,000 ft of drilling between 1949 and 1951 yielded information on the extent, thickness, physical characteristics, and reserves of the district's coal. This information, combined with information obtained by mapping and prospecting, shows that the district contains more than 3.5 billion short tons of coal, of which about 40 percent is considered recoverable with present mining methods. During 1951, four mines were operating in the district and produced a total of 52,500 short tons of coal.

As early as 1901, the presence of a thick sequence of marine sedimentary rocks in the Centralia-Chehalis area encouraged the search for oil and gas. Since that date, there has been intermittent exploration, and prior to July, 1952, 14 test holes were drilled within the area. The results of this drilling have not been encouraging, but small shows of gas have been reported. The McIntosh formation of late middle Eocene age, which includes a thick sequence of marine siltstone with interbedded sandstone, is considered the most favorable formation to test for oil and gas. Seven of the test wells drilled in the area are reported to have penetrated rocks of the McIntosh formation. Shows of gas were reported in all these test holes; and a show of oil was reported from a well drilled on the Lincoln Creek uplift, in the western part of the mapped area.

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A Dehydrator for Direct-Current Amplifiers

THE direct-current amplifier is extremely sensitive to minute variations in grid voltage. This sensitivity is required for operation but also is a property that introduces considerable error into experimental data obtained with its use under certain conditions. The phototube amplifier in the Beckman DU Spectrophotometer was often found to be unstable in humid weather, as indicated by continuous fluctuations in the galvanometer needle. Since the battery voltage source was constant, the instability was assumed to be caused by variations in the grid voltage. The latter could result from a variable d.c. ground path in parallel with the 2000 megohm grid resistor (the phototube load resistor). The grid voltage variation proved to be due to moisture condensed on the grid resistor, as shown by stabilization after drying. Although the

cartridge containing silica gel may successfully perform this function, the following system was found to be more rapid and effective.

Two of the mounting screws on the front panel of the amplifier case were replaced by longer screws that had been drilled lengthwise to permit the passage of air. To these screws were connected the intake and outlet hoses of a recirculating drying system that consisted of an electric double-action piston pump to circulate the air, a cotton filter to remove any oil from the pump, and a tube containing the desiccant (indicating silica gel). The color change from blue to pink indicates when the tube of desiccant must be changed. Several tubes of desiccant may be kept on hand and, when necessary, dried in an oven or by perfusion with hot air. The pump should be turned on about an hour before the amplifier is to be used, unless the atmospheric conditions have been especially humid, in which case more time may be necessary.

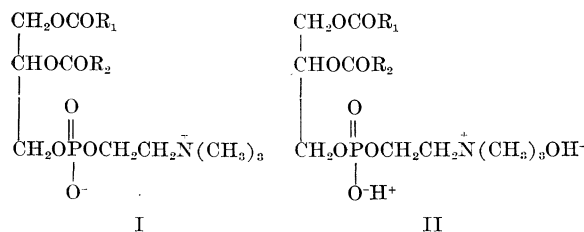
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Depiction of the Lecithin Molecule

DESPITE the fact that experimental evidence serving to establish the zwitterion structure (I) of lecithin on a firm basis was provided by a number of investigators about 20 yr ago (1), there has been consider-



able reluctance to discard the archaic and misleading depiction II. Thus, the structure of lecithin continues to be represented as II (or even more naive representations in which the nitrogen atom is joined to five substituents) in current literature and in otherwise modern and up-to-date biochemistry textbooks.

In a recent series of papers, Baer (2) has spoken more and more positively in favor of the old representation II on the basis of the fact that ultimate analyses of crystalline lecithins and structurally related substances indicate the presence of the elements of a molecule of water in addition to those predicted from a consideration of formula I. Baer's painstaking compilation of analytic data on a number of lecithins isolated from natural sources, in addition to those based on his own elegantly prepared synthetic products, would seem to leave little doubt that such substances characteristically incorporate a molecular equivalent of water within their crystal lattices. However, the presence of what is usually termed "water of