Introduction to Rural Sociology. By Paul L. Vogt. D. Appleton and Co., New York. 1917.

This book was written primarily as a text for college students interested in the social problems of small communities. The subject matter is what one would expect in such a book. The physical basis of rural life; the rural population, its movements, its health and its attitudes of mind; farmers' organizations, both social and economic; the established institutions dealing with country life, *e. g.*, the church and the school; and the relation of the village to the open country are the principal topics discussed.

Throughout the book it is very apparent that the author has been at great pains to make his work as accurate and comprehensive as possible. In both respects he has succeeded admirably, and that, too, without becoming tedious. In fact, I think the combination of the essentials of a text with a pleasing exposition will recommend the book to a rather large circle of readers outside of the class room.

A feature of the book especially worthy of notice is the thorough discussion of the relation of the village to the life of the open country. The author fully realizes that there can be no satisfactory development of agencies for the betterment of rural life unless village and farm cooperate and he has expressed this view clearly and convincingly.

No doubt reviewers will always feel that sins of omission are frequent. I am happy to say they are but few in the work under discussion. To my mind the most important omission is the failure to discuss the eugenic problems of the rural population and to give more attention to the natural movements of population due to the varying birth rates and death rates in different groups and in different sections of the nation.

In the numerous suggestions for the improvement of rural life occurring in almost every chapter the author shows sound practical sense. He knows rural communities at first hand. He knows their prejudices, their apathy, their strength and their weaknesses. One feels that the spirit of the writer would go far towards allaying the suspicion and the hostility so often encountered by those who would help to make the rural community a better place to live.

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SPECIAL ARTICLES

NOTE ON A WET CONDENSER SUITABLE FOR CONTINUOUS HIGH POTENTIAL SERVICE

In certain investigations necessitating long continuous production of a fat spark by means of a closed circuit transformer (1 K.W., 110 v. primary, 11,000 v. secondary) it was found that the glass plate condensers usually provided for this purpose repeatedly broke down owing to the heating under continuous performance. It occurred to us to substitute the ordinary glass with some glass having greater heat-resisting properties.

One liter, tall form, lipless "Pyrex" beakers were accordingly covered with tinfoil as carefully as possible, both on the inner and outer surfaces. These were then mounted by placing the edge into a groove in a board and sealing in with rosin. Condensers of this kind were tedious to make, and proved quite a problem to mount securely. The labor involved in producing a set of the required capacity stopped work in this direction.

The final form of condenser which has proved very serviceable for the work in hand was that in which the "Pyrex" glass beakers mentioned above constituted the dialectric, and a nearly saturated solution of common salt constituted the conductor plates. The beakers were filled to within 2.5 cm. of the rim with the solution, and were immersed to a similar depth into the solution contained in an earthen vessel, a 3 gallon crock. The beakers measure 9 cm. in diameter, 19 cm. high, 16.5 cm. effective height, thickness, about 1.2 mm. The twenty beakers used were selected from a stock of about 100 in order to avoid flaws, particularly bubbles. The stock was a little old and therefore probably not as good in evenness of surface and homogeneity of material as that now being manufactured. It was not pos-

sible to avoid such defects entirely, but it is interesting to note that no beaker has proved defective after very long and severe use.

The place subjected to greatest danger of puncture and that which allows greatest leakage is where the exposed surfaces of the solution inside and out come in contact with the surface of the beakers. This defect can be reduced considerably by filling the beakers with the salt solution to a slightly different level from that of their containers. Care should be taken not to wet the portion of the beaker that is not immersed. To eliminate sparking quite completely, however, the surfaces of the solution inside the beakers and that surrounding the beakers were covered with a layer of oil 5 cm. deep. For this purpose a 300-degree mineral seal oil was used. This oil, as Mr. C. E. Skinner kindly informed us, has very good dialectric properties—as good as can be expected from an oil not free from water. Whether this layer of oil eliminated sparking at the sacrifice of some capacity we have not determined.

The capacity of these condensers was estimated by the method of divided discharge and by the method of mixtures. The capacity of each of the five jars containing four beakers each was: .0088 M.F., .0091 M.F., .0093 M.F., .010 M.F., .0088 M.F. respectively. The mean of these capacities is .0092 M.F. A similar estimation of the capacity of two such beakers covered with tinfoil indicated that their combined capacity was very appreciably less than two beakers of the wet condenser. This is probably due to the unevenness of the surface and the difficulty of making contact between the glass and the tinfoil.

A comparison was made between the wet condenser as above described in which beakers of Jena glass and of "Pyrex" glass were used. The dimensions of these beakers were approximately the same. Assuming that the average thickness of the "Pyrex" beaker is equal to that of the Jena and assuming the dielectric constant of Jena glass to be 6.5, that of "Pyrex" glass must be about 4.3.

A comparison was also made as to the influence of the character of the conducting medium. Beaker condensers were set up using mercury, concentrated salt solution and distilled water (iron still), respectively. The capacities of the latter two were equal within the limits of error of measurements, while the capacity when using mercury was 10 per cent. higher than when using the salt solution. The slight superiority of mercury at low constant potential seems to be very greatly enhanced at the high and discontinuous potentials employed to produce the spark, where, judging by the fatness of the spark, the capacity of the condenser with mercury is three or four times as great as that of the condenser with salt solution.

This wet condenser has given perfect satisfaction under severe use for many months. Its cost is approximately the same as the glass plate condenser and considerably less than similar condensers covered with tinfoil.

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BOSTON MEETING OF THE AMERICAN CHEMICAL SOCIETY. VI

DIVISION OF INDUSTRIAL CHEMISTS AND CHEMICAL ENGINEERS

H. E. Howe, *Chairman.*

S. H. Salisbury, Jr., *Secretary.*

Conference on "The Industrial Chemist in War Time"

The cracking of solvent naphtha in the presence of Blau gas: GUSTAV EGLOFF. Solvent naphtha derived from the thermal decomposition of coal was passed through a carburetted water gas set in the presence of Blau gas at a temperature of 850° C. to produce toluene. The solvent naphtha used gave a distillation range of 93 per cent. between 130° C. and 165° C. First drop at 128° C. and dry at 183° C. Distillation determined by means of a 100 c.c. Standard Engler flask. The percentage yield of toluene in the recovered oil was nineteen, and upon the basis of solvent naphtha used eleven and one half per cent.