A similar relationship between the R.I. of *milk* and the S.N.F. also holds good, after a fashion, as shown in the following table and the accompanying figure which includes samples with S.N.F. below 8·5 per cent.

*Relationship between certain constants of milk low in S.N.F.*

| Density (20°C.) | S. N. F. % | R. I. (40°C.) | K |
|---|---|---|---|
| | *Cow Milk* | | |
| 1·0272 | 8·38 | 1·3457 | 0·2070 |
| 47 | 7·97 | 50 | 72 |
| 48 | 8·14 | 50 | 72 |
| 73 | 8·22 | 49 | 67 |
| 55 | 8·23 | 54 | 72 |
| 69 | 8·30 | 50 | 68 |
| 73 | 8·28 | 55 | 70 |
| 81 | 8·30 | 50 | 65 |
| 15 | 7·36 | 43 | 75 |
| 50 | 8·29 | 51 | 72 |
| 80 | 8·43 | 56 | 68 |
| 62 | 8·32 | 57 | 72 |
| 55 | 8·04 | 54 | 73 |
| 73 | 8·28 | 53 | 69 |
| | *Buffalo Milk* | | |
| 60 | 8·31 | 65 | 78 |
| 85 | 8·04 | 78 | 82 |
| 44 | 8·13 | 63 | 80 |
| 40 | 8·19 | 67 | 83 |

Fig. 1 illustrates clearly the fact that gross differences in S.N.F. are reflected in R.I. also.

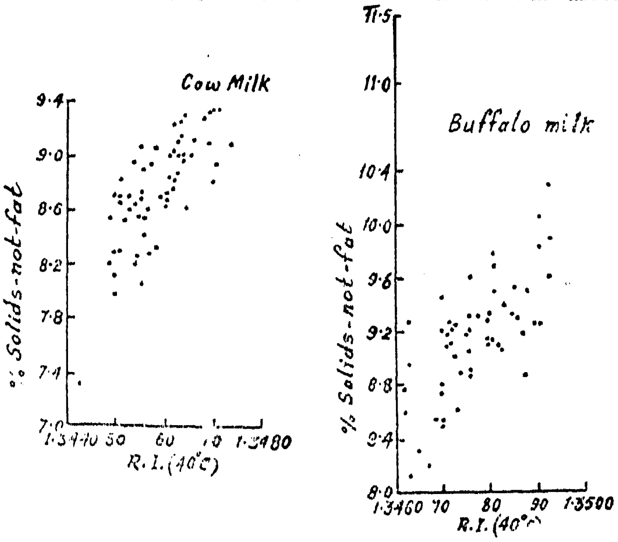


FIG. 1. Relationship between Solids-not-fat and Refractive Index of Milk.

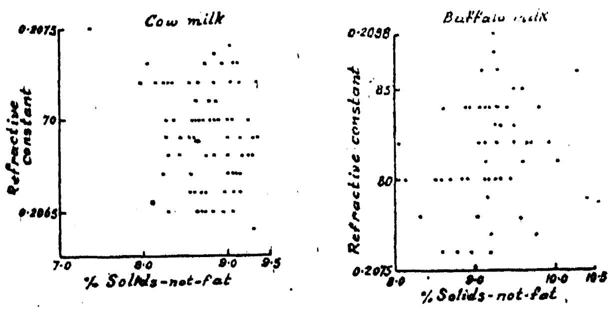


FIG. 2. Relationship between Solids-not-fat and K in Cow and Buffalo milk.

The refractive constant, however, is free from this disadvantage. As can be seen in Fig. 2 and the table, K bears no relationship to the S.N.F. constant of milk. For all values of S.N.F. of genuine milk, K lies between 0·2065 and 0·2075 for cow milk, and between 0·2076 and 0·2088 for buffalo milk. A noteworthy feature is that samples with low S.N.F. are found to be usually associated with low R.I. and values of K considerably above the minimum for normal milk. It may be possible that this is a feature, more or less, characteristic of samples abnormally low in S.N.F. On the other hand, attempts to lower the S.N.F. by addition of water only succeed in bringing down the values of both R.I. and K, which must, therefore, be viewed always in conjunction with each other. Added water thus begins to reveal itself at levels of about 10 per cent. addition.

The complete paper on the subject will be published elsewhere.

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*October* 7, 1946.

1. Rangappa, *Curr. Sci.*, 1946, **15**, 130. 2. Elsdon, and Stubbs, *Analyst*, 1929, **54**, 321.

## EFFECTS OF PENICILLIN ON BONE PHOSPHATASE

SILVER AND GOLDING[1] have reported that sulphonamide drugs which are commonly introduced in high concentrations at the site of fracture inhibit bone phosphatase. There is accumulating evidence[2,3] that the phosphatase of bone plays an essential role in normal bone formation and probably also in bone repair. We decided to study the action of penicillin on bone phosphatase as this drug is extensively used either alone or in combination with sulphonamides in fractures and other bone diseases. Observations were made *in vitro.*

### CHEMICAL METHODS

The bone phosphatase was prepared from young growing rabbit's bone by the method of Mortland and Robinson.[4] Phosphatase activity was determined by the method of Binkley, Shank and Hoagland.[5] It consists of incubating disodium phenyl phosphate and veronal buffer at pH 9·2 with phosphatase. Phenol which is split off, is determined colorimetrically by the blue colour given with the Folin-Ciocalteu reagent using the Klett-Sommerson photoelectric colorimeter. Tyrosine was used as a convenient standard and the phosphatase activity expressed in tyrosine units. Penicillin was added to produce concentrations comparable to those that might be present in wounds instilled with this drug. The concentrations of penicillin used were from 25 units per 100 c.c. to 100 units per 100 c.c.

The phosphatase concentrations employed in the reaction mixture were from ½ mg. per 10 c.c. to 2 mg. per 10 c.c. It was also found that commercial samples of penicillin gave a