**Anti-Neuritic Vitamin.**—Previous methods for the isolation of anti-neuritic vitamin have yielded only very small quantities of material which is probably still far from chemically pure. In the June number of the *Journal of the American Chemical Society*, Seidell and Birckner, of the National Institute of Health, Washington, describe experiments on the isolation of the vitamin from yeast, the process involving four stages. An 'activated solid' is first prepared by adsorption on fuller's earth of the filtered yeast extract made at 80°. Extraction of the solid is now made by agitating it violently for five minutes in 0·4–0·5 *n*NaOH and centrifuging. The clear liquid is rapidly acidified to *p*H 3·0 with sulphuric acid. On evaporation under reduced pressure to one-tenth, a brown solid separates, which has been shown to be very rich in the thermostable growth factor ($B_2$ or G) required as a supplement to anti-neuritic vitamin for normal growth. The clear liquid is cooled for deposition of sodium sulphate, and inorganic salts, impurities, etc., are precipitated with alcohol to approximately 50 per cent alcohol in the solution. This alcoholic solution contains the anti-neuritic ($B_1$) vitamin, but only about 15 to 20 per cent of that originally present in the yeast. The solution is distilled down to small volume, centrifuged, and benzoylated with sodium carbonate and benzoyl chloride, extracted with chloroform, and the aqueous layer poured slowly into 10–15 vols. of acetone. The precipitate is extracted with a mixture of propyl alcohol and concentrated hydrochloric acid, distilled down and poured into acetone. The precipitated solid is dissolved in methyl alcohol and added dropwise to a large volume of acetone. The white voluminous flaky precipitate is washed with acetone and dried in a vacuum. It is curative in 0·03 mgm. doses by the Smith rat method, or about one-fourth greater than the crystals obtained by Jansen and Donath in 1927.

**Aceto-acetic Ester Condensation.**—Since the discovery by Geuther in 1863 that aceto-acetic ester, $CH_3COCH_2COOC_2H_5$, is formed by the action of sodium on ethyl acetate there has been much discussion as to whether the metal itself is responsible for the condensation (Michael's theory), or whether the active agent is sodium ethoxide formed from traces of alcohol in the ester or from other side reactions (Claisen's theory). It was found by Michael that ethyl acetate from which all traces of alcohol have been removed reacts with sodium as readily as the ordinary ester, but it is possible, of course, that some alcohol might be produced by a side reaction. It has also been shown by Snell and McElvain that acetic and propionic esters are unique in not giving the corresponding acyloins when treated with sodium in presence of excess of ester, and a study of the reaction mechanism should therefore be confined to them. In the June number of the *Journal of the American Chemical Society*, these authors state that they have made a careful study of the reaction between sodium and ethyl acetate in which the amounts of aceto-acetic ester, alcohol and hydrogen produced have been determined. Similar determinations were made with sodium ethoxide as condensing agent, and the results obtained appear to constitute strong evidence in favour of Claisen's theory. The amount of alcohol found in the mixture when sodium is used is approximately the sum of that produced by the aceto-acetic ester condensation and that resulting from the reduction of the ester by the sodium used in the reaction. The action of the sodium thus appears to be the generation, by reduction of the ester, of sodium ethoxide, which is the real condensing agent. In contradiction to earlier investigators, but in agreement with the recent experiments of Kutz and Adkins, it was found that sodium ethoxide produces practically the same amount of condensation, and just as readily as metallic sodium does.

## Astronomical Topics.

**Nagata's Comet, 1931 *b*.**—This proves to be the brightest comet observed for several years. The following orbit and ephemeris have been circulated from the U.A.I. Bureau at Copenhagen. They are by Mr. Berman:

$T$ 1931 June 15·140 U.T.
$\omega$ 324° 58′
$\Omega$ 191 8 } 1931·0
$i$ 41 24
log $q$ 0·03342

EPHEMERIS FOR $0^h$ U.T.

| | R.A. | N. Decl. |
|---|---|---|
| Aug. 7 | $12^h$ $0^m$ $24^s$ | 10° 16′ |
| 11 | 12 14 56 | 10 9 |
| 15 | 12 28 56 | 9 58 |

The light on July 26 and Aug. 7 is 0·9 and 0·6 of that at discovery. The comet should be looked for in the evening twilight.

The two following positions of Nagata's comet are from photographs by Nicholson and Moore at Mt. Wilson:

| U.T. | R.A. 1931·0. | N. Decl. |
|---|---|---|
| July 18·1792 | $10^h$ $40^m$ $44{\cdot}7^s$ | 9° 51′ 3″ |
| 19·1861 | 10 45 6·0 | 9 54 47 |

The comet had a tail 4° long (*Harvard Card*, No. 161).

**Changes of the Corona in the Sunspot Cycle.**—It has for a long time been recognised that the type of the corona varies with the sunspot cycle, having polar streamers at spot-maximum and equatorial extensions with delicate 'polar plumes' at minimum. Dr. W. J. S. Lockyer reopens the subject and extends his study up to 1930, in *Mon. Not. Roy. Ast. Soc.* for May. He introduces statistics of prominences, and his discussion indicates that the correlation between prominences and the corona is much closer than between spots and the corona; and further, that the latitudes of prominences and of the coronal streamers are very closely associated. Prominences attain much higher latitudes than spots, and even reach the poles of the sun at the times of spot-maximum. Dr. Lockyer notes that the corona of the 1926 eclipse was of maximum type, although it was nearly two years before spot-maximum; but the prominences had already reached high solar latitudes. He refers to the corona of 1908, which, when the photographs were first published, appeared to have little connexion with the prominences; but it was afterwards found that the orientation marked on the photographs was wrong.

The research also indicates that the latitudes of prominences and coronal streamers are somewhat higher during increasing than during decreasing sunspot activity; in other words, maximum prominence latitude precedes maximum sunspot activity. Reference is also made to the 'coronal arches' that appear above prominences in many eclipse photographs. They afford further evidence of the close connexion between prominences and corona.

Dr. Lockyer anticipates that the 1932 corona will be nearly of minimum type; the sunspot minimum is expected to be about 1934.