unsafe water, although no conclusive evidence in the way of figures is brought forward to prove it. Indeed, throughout the paper, which gives in considerable detail the results of tests made on multiple filtration plants in different parts of the world, there is no mention of any tests being made for *B. coli*.

THE Health of Munition Workers' Committee has issued a memorandum on special industrial diseases in which it is stated that the work of certain industrial processes entails risk of serious, and possibly fatal, illness from exposure to lead, ethane tetrachloride, nitrous fumes, and certain explosives, whilst contact with trinitrotoluol, tetryl, mercury fulminate, and certain lubricating and cooling liquids used in metal turning may produce dermatitis. The provision of facilities for the prompt treatment of all cases of sickness and injury is recommended. Operatives engaged in manufacturing or handling trinitrotoluol have been found affected with unusual drowsiness, frontal headache, eczema, and loss of appetite. The symptoms are generally slight at first, and disappear when exposure ceases, but in exceptional cases sudden collapse may occur after a few hours' work on a hot day. The symptoms are intensified by continued exposure, and in a few cases profound jaundice and even death have resulted. T.N.T. may be absorbed by the lungs, skin, or digestive tract, in the form of vapour or dust, and certain preventive measures are specified.

BULLETIN No. 266 of the Scientific Papers of the Bureau of Standards, by Messrs. Cain, Schramm, and Cleaves, deals with the preparation of pure iron and iron-carbon alloys. The authors have worked out methods of producing laboratory samples of iron-carbon alloys of a very high degree of purity; sources of contamination of melts and means of eliminating them are described; a method of preparing magnesia of a satisfactory degree of purity for making crucibles to be used in work of this kind has been developed; and a procedure for making small ingots, which are sound and free from blowholes, without the use of deoxidisers, has been worked out. A series of iron-carbon alloys containing 99·96 per cent. of the two elements has been prepared to serve as a basis for the redetermination of the iron-carbon equilibrium diagram.

IN Bulletin No. 60 of the Technological Papers of the U.S. Bureau of Standards, H. S. Rawdon describes the microstructural changes accompanying the annealing of cast bronze (Cu88, Sn10, Zn2). The alloy is first brought into physico-chemical equilibrium. The dendritic structure persists until heated for approximately two hours at 800° C. The absorption of the eutectoid depends much on how the sample cooled on freezing. No evidence was found suggesting a change of crystal size of cast samples which had not been distorted in any way. Recrystallisation, including twinning, was found only to follow distortion or its equivalent. Metal cooled suddenly from the molten state behaves similarly because of the high internal stresses resulting.

MESSRS. CASSELL AND CO., LTD., have ready for publication "Alfred Russel Wallace: Letters and Reminiscences," by J. Marchant. The volume will contain a number of hitherto unpublished letters, reminiscences from various friends, and a sketch (from his son and daughter) of Dr. Wallace's home life. The evolution of the idea of natural selection is traced up to the time when the papers on the subject by Darwin and Wallace were communicated to the Linnean Society, and Dr. Wallace's other scientific work is dealt with in the volume.

OUR ASTRONOMICAL COLUMN.

THE PLANET MERCURY.—This planet will be at greatest E. elongation on May 12, 21° 36′ E. from the sun. It will continue above the horizon about two hours after sunset. Maximum conspicuousness occurs several days *before* the elongation.

COMET 1916*a* (NEUJMIN).—Observations, including an arc of thirty-seven days (February 27–April 4), have been employed by M. J. Braae in calculating a new orbit for this comet. The second and third places are based on observations made at Bamberg (March 23) and Neu Babelsberg. The modifications of the earlier orbit are all in the direction of the Berkeley orbit noted last week, consequently the differences between the respective ephemerides have been considerably reduced. According to Copenhagen Postcard No. 17 the new orbit is :—

T = 1916 March 11·2350 G.M.T. P = 2008·8 days (5·50 y.
$\mu = 645{\cdot}163''$

Epoch 1916 Jan. 0·5 G.M.T.	Equinox 1916·0
$M_0 = 347^\circ\ 19'\ 24{\cdot}5''$	$\omega = 193^\circ\ 43'\ 17{\cdot}7''$
$\phi = 34^\circ\ 43'\ 4{\cdot}7''$	$\Omega = 327^\circ\ 30'\ 59{\cdot}6''$
$\log a = 0{\cdot}493559$	$i = 10^\circ\ 39'\ 53{\cdot}0''$

Ephemeris (Messrs. J. Braae and J. Fischer-Petersen), Greenwich midnight :—

	h. m. s.	° ′
April 28 ...	10 20 36 ...	− 9 41·9
30 ...	24 59 ...	10 10·7
May 2 ...	29 24 ...	10 38·7
4 ...	33 51 ...	11 5·9
6 ...	38 21 ...	11 32·3

Log Δ April 26, 9·7979, May 4, 9·8386

Observations made at the Hill Observatory, Sidmouth, on April 20 and 22, were represented by this ephemeris within the limits of accuracy attainable in the measures. On April 22, the sky being especially clear, the comet still showed a considerable diffused coma and a feeble condensation was glimpsed.

THE IRREGULAR VARIABLE STAR, T TAURI.—The annual report of the director of the Mount Wilson Solar Observatory for 1915 bears more resemblance to a review of the world's work in astronomical physics than the report of a single institution. The summary contains seventy-eight important items. No. 61 states that the irregular variable star, T. Tauri, is surrounded by an extensive atmosphere 4″ in diameter, which shows the bright lines characteristic of Wolf-Rayet stars. The spectrum of the star proper is about F5. The magnitude of this remarkable object ranges between 10·3 and 13·2. Notwithstanding the impressive output of work it appears there is room for regret—the 60-in. reflector remains the only instrument for work on stars and nebulæ, but it is offset by a crescendo of hope—the 10-in. portrait lens telescope is nearly ready, and the 100-in. reflector is expected to be in working order by the end of 1916.

A NEW VARIABLE STAR HAVING NEBULOUS ENVELOPE.—An addition to this at present very limited group of extremely interesting objects is announced by Mr. R. T. A. Innes in Circular No. 33 of the Union Observatory. The star is −37° 8450 in the Southern Crown, and normally its magnitude is 8·7, but on two occasions last year, October 29 and November 24, it was considerably fainter (12·4 and 11·5 respectively). The nebulous envelope was also found to vary. The 6·88 magnitude star, −37° 8449, possesses a similar appendage, and is so near to the above as to touch, thus affording an excellent basis for comparison. It is tantalising to think that these stars actually come above our horizon.