

- Tornado predictions, 126.  
 Tornadoes, 381; and how to escape them, *ill.* 572.  
 Torpedo-boat, 410.  
 Torsion of leaves, 340; scales, 320.  
 Touche, de la, on Langrin coal-field, 504.  
 Track-inspection car, 348.  
 Traill, W. A., on Giants' Causeway and Portrush electric tramway, 324.  
 Transition of beds, 327.  
 Trawls, *ill.* 224.  
 Treasury department and philosophical instruments, 451; rulings, 302, 427; in regard to periodicals, 141, 269.  
 TRELEASE, W. Blooming-time for flowers, 573.  
 Trillium grandiflorum, abnormal form of, 352.  
 Tromholt's work on Lapland, 366.  
 TROWBRIDGE, J. Atmospheric electricity, 164; thunder-storms, 97; what is electricity, 232.  
 Trowbridge, J., on telegraphing without cable, 297.  
 TRUE, F. W. Babirusa tusks from an Indian grave in British Columbia, 34; bot-flies in a turtle, 511; a muskrat with a round tail, 34; photographs of the interior of a coal-mine, 223.  
 Tuberculosis, 59, 342.  
 Tuke, J. A., on Irish emigration, 285.  
 Tunnel, ancient, 464.  
 Turbine water-wheel, 12.  
 Turner's Samoa, reviewed, 378.  
 TYLOR, E. B. How the problems of American anthropology present themselves to the English mind, 545; some American aspects of anthropology, 217.  
 Tylor, E. B., on American tribes, 396; North-American races, 345.  
 Unalashka sands, 44.  
 Underground wires, 350.  
 United States, African race in, 222; census report of 1880, reviewed, 119; seventh volume of, reviewed, 421; eighth volume of, reviewed, 461; coast and geodetic survey, geodetic work of, 293; commercial relations of, 348; credit of, 347; earthquakes in, 569; future of, 347; geological survey, annual report of, reviewed, *ill.* 62; bulletin No. 5, 481; topographical sheets of, 188; hydrographic office, report of, 502; work of, 483; national museum, additions to, 505; bird-collection of, 496; building-stone, collection of, 505; postage in, 351; resources of, 421; Scudder's history of, 450; signal-service papers, 266, 467; systematic earthquake observation in, 520; temperature in, *ill.* 569; tertiaries of, 562.  
 University, ideal, 95; of Virginia, Leander McCormick observatory of, 294.  
 Upton, Winslow. Weather forecasts, 568.  
 Utricularia vulgaris, 262.  
 Valence, 321.  
 Valley formation, 365.  
 Valve gear, 290.  
 Van Dyck, F. C., on storage-batteries, 389.  
 Vapor tensions, 250.  
 Vashchenko-Zakharenko's Elements of Euclid, 442.  
 Vegetable remains of drift, 73.  
 Vegetation, North-American, 261.  
 Veins, arrangement of, 410.  
 Ventilation of cargoes, 426; sewer, 366.  
 Venus, reduction of French photographs of transit of, 424.  
 Vermont gneiss, 327.  
 VERRILL, A. E. Evidences of the existence of light at great depths in the sea, 8.  
 Vertebrates, hibernation of, *ill.* 36; oldest living type of, 484, 524.  
 Vidal's Photometric tables, reviewed, 311.  
 Vinland, 283.  
 Vivarez, H., on limitations of submarine telegraphy, *ill.* 439.  
 Viviparous pumpkin, 470.  
 Volcanic island off Iceland, 506; outburst of Mount St. Augustin, 538; sand, 154.  
 Volcano, Bogosloff, *map*, 432; andesite from, 524.  
 W., S. The mosses of North America, 446.  
 WADE, J. M. Perforations in wool fibre, 52.  
 WADSWORTH, M. E. Some United-States geologists, and the propylite question, 111.  
 Wady el Arabah, 75.  
 Wages, rate of, 283.  
 Wagner, P., on special manures for particular crops, 57.  
 WALDO, Leonard. The earthquake of Aug. 10, 144.  
 Walker, F. A., on industrial education and handicraft, 537.  
 Wampum, 320.  
 WARD, L. F. Irrigation in the upper Missouri and Yellowstone valleys, 166.  
 Ward, L. F., on fossil flora of globe, 340.  
 Warren, C., on learned professions and the public, 348.  
 Washburn observatory, eye-pieces of meridian circle at, 396.  
 Water of steam-boilers, superheated, 424; transparency of, 421; rates, 13.  
 Watson, Ellen, life of, 380.  
 Wave-currents, influence of, on fauna, 75; ship, 382.  
 Waverley group, 327.  
 Wead, on production of sound, 298.  
 Weather forecasts, 568; *map*, 300; review, monthly, 480; service in Japan, 321; signals of Alabama, 464.  
 WEED, C. M. The evolution of petals, *ill.* 52.  
 Weed, W. H., on geyser eruption, 22.  
 Wellington, A. M., on Mexican railway, 12.  
 Wells, driven, 324.  
 WENDELL, O. C. New maps of the heavens, *maps*, 580.  
 Weser hills, mineral wealth of, 365.  
 Westgarth, W., on British empire in North America and Australia, 255.  
 Whirlwinds at sea, 562.  
 Wiedemann's Electricity, reviewed, 87.  
 Wilder, B. G., on anthropoid apes, 339; cerebellum and oblongata, 341.  
 Wiley, H. W., on optical methods of estimating sugar in milk, 322.  
 WILLIAMS, G. H. Specimens illustrating Lehmann's Origin of the crystalline schists, 511.  
 Williams, G. H., on apatitbringer, 258; Lehmann's crystalline schists, 327.  
 Williams, H. S., on ancient faunas, 326.  
 Williams, S. G., on New-York gypsum deposits, 325.  
 Wilson, D., on human skull from Podbaba, 318; Huron Iroquois, 318.  
 Wilson, Sir Erasmus, death of, 332.  
 Wilson, J. H., on American permanent railway, 288.  
 WINCHELL, N. H. The crystalline rocks of the north-west, 238.  
 Wind-currents, effect of, on rainfall, 409.  
 Wine-production in France, 264.  
 WINLOCK, W. C. The long-continued bad seeing, 94.  
 Winsor, J., on Ptolemy's geography, 331.  
 Wintuns, mythology of, 345.  
 WOELKOF, A. An open polar sea, 485.  
 Wolf comet, 381.  
 Wolfe expedition to Chaldaea, 378.  
 Wood-sections, study of, 45.  
 Woodbury, C. J. H., on automatic sprinkler system, 291.  
 Wool fibre, perforations in, 52.  
 Working-girls, condition of, in Boston, 450.  
 Workshop in technical education, 395.  
 WORKLEY, T. G. Microscopic science, 244.  
 Wright, C. D., on condition of working-girls in Boston, 450.  
 WRIGHT, R. Ramsay. On the function of the serrated appendages of the throat of Amia, 511.  
 Wright's Adjustment of observations, reviewed, 520.  
 Wurtz, Charles Adolph, *portrait*, 6; Pictet's acquaintance with, 74.  
 Yard, relation of metre to, 206.  
 Yellowstone national park survey, 22.  
 YOUNG, C. A. Pending problems in astronomy, 192; sun-spots and the earth, *ill.* 564.  
 Young, S. See Ramsay, and Young, S.  
 Zabriskie, J. L., on Appendicularia entomophila, 25.  
 ZIWER, A. Euclid as a text-book of geometry, 442.  
 Zodiacal light, 28.  
 Zonites cellaria, discovered in Oregon, 538.  
 Zoological researches of Scottish fishery board, 478.  
 Zuñis, art among, 319; customs of, 448.

## ERRATA.

- |                                                                       |                                                                                                               |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Page 29, col. 2, line 36, for 'Bouvain' read 'Louvain.'               | Page 390, col. 2, 16th line. Remarks wrongly attributed to Professor James Dewar: the correct name not known. |
| " 35, " 1, 9th line from bottom, for 'animalculae' read 'animalcula.' | " 393, " 2, 29th line, for 'Prof. George F. Barker' read 'Lieut. Commander T. F. Jewell.'                     |
| " 41, " 1, line 26, for 'from chance' read 'pure chance.'             | " 397, " 2, last line, for 'May' read 'April.'                                                                |
| " 162, " 2, 10th line from bottom, for 'angular' read 'abrupt.'       | " 427, " 1, line 8, for 'prescribing' read 'proscribing.'                                                     |
| " 281, " 2, line 24, for 'school boards' read 'board schools.'        | " 484, " 2, line 36, for 'Water of crystallization' read 'Effect of crystallization on sediment.'             |
| " 285, " 1, line 18, for '\$68,500' read '\$342,500.'                 | " 498, " 2, line 34, for 'Kjellberg' read 'Rjellberg.'                                                        |
| " 301, " 1, 16th line from bottom, for 'the' read 'his.'              |                                                                                                               |
| " 366, " 1, in last note, for 'Trombolt' read 'Tromholt.'             |                                                                                                               |