dilute alkali, and titrated the acetic acid, separated after acidifying with sulphuric acid and distilling with steam.

We noticed beforehand that irigenin was decomposed by concentrated alkali with formation of formic acid. We determined, therefore, how much formic acid was produced by treatment of a quantity of irigenin equivalent to the diacetylirigenin used for the acetyl determination under exactly the same conditions and subtracted the value obtained from that given in the acetic acid titration. For our purpose the results so obtained are sufficiently near the truth, but under these difficult conditions results agreeing closely with theory are not to be expected.

ACETYL DETERMINATION.—CALCULATED FOR $C_{18}H_{14}(C_2H_3O)_2O_8$.

	Per cent. C_2H_3O.
Calculated	19.37
Found	21.41

The compound melting at 122° is, therefore, diacetylirigenin.

(To be continued.)

PATENTS OF INTEREST TO CHEMISTS.

EDITED BY ALBERT H. WELLES.

Zinc.—Johannes Pfleger has an electrolytic process for zinc (495,637). It is described as consisting in adding a basic zinc salt solution to a zinc-containing anode, to which basic zinc solution a conducting neutral salt has been added. George T. Lewis treats roasted zinc sulphide ores by adding sodium nitrate or its equivalent to unite with the sulphur left, roasting to form soluble sulphate, leaching out, oxidizing the zinc in the ores thus freed from sulphur and collecting the zinc oxide fumes (495,593). G. M. Gouyard concentrates zinc bearing sulphides by roasting the ores, and at the final stage employing a low heat, adding a small per cent. of finely pulverized coal in a reducing atmosphere, which renders the iron present magnetic and precipitates the lead on the iron, and then separating the iron with a magnetic separator (495,550). Zinc oxide is prepared by the method of Carl V. Petraeus from sulphide ores by subliming the zinc, reducing the temperature of the gases and zinc oxide driven off below a bright red heat, catching the zinc oxide fumes, and finally heating at a red heat to whiten and free from sulphur compounds (496,205). W. R. Ingalls and Francis Wyatt treat complex ores as follows: First, roast to convert into sulphates, recovering sulphur driven off as sulphuric acid; next, lixiviating with water and said sulphuric acid, removing iron if necessary, precipitating zinc as carbonate or basic carbonate, using sodium carbonate, and burning to zinc oxide, evaporating sodium sulphate and heating with sodium chloride and coal to convert into sodium sulphide, then into bicarbonate of soda by dissolving in water and precipitating with carbon dioxide and heating the precipitate to convert into sodium carbonate (497,473).

Rubber and Leather.—Jean M. Raymond first soaks vulcanized rubber in benzine, then immerses in a solution of permanganate of potassium, and then treats again with benzine in order to render the rubber adhesive (490,500). To unhair hides a composition of "fifteen pounds of hydrated sulphide of soda, white creosote, eight ounces carbolic acid, four pounds of fifty per cent. Baumé solution" is used by Jacob Mellinger (490,791). John K. Hawkins (433,999) dissolves resin in benzine or gasoline, places this solution in contact with lime treated with water, pours off the solution from the lime and mixes with a solution of dissolved rubber or gutta percha. 492,836 is a method for the treatment of sole leather, Frederick Riegert, patentee. The leather is first treated in a hot bath of beeswax and spirits of turpentine or benzine, then removed from the bath and subjected to a pounding action.

Linseed Oils.—Eugen Schaal patents a process and apparatus for thickening linseed oil (493,187). The oil is heated to 320°-345° C., a current of indifferent fluid is kept on the surface of the heated oil, while fresh oil is fed into the lower portion of the heated mass and the thickened oil flows off from the top.

Explosives.—Bernhard Lepsius heats a mixture of picric acid with some enveloping explosive agent, such as tri-nitrotoluene, in a mould at a temperature above the fusing point of the latter and below that of the former, thus cementing together the picric acid for use in projectiles (492,089). Samuel Rodgers patents a detonating compound (489,761), which contains potassium picrate and chlorate, extract of logwood and a gallotannic ink; and Prof. C. E. Munroe (489,684) extracts "the lower products of nitration from gun-cotton, which is mixed and incorporated with nitro-benzene, and indurated by acting upon it with heated liquor vapor," to form an explosive powder.

Ore Separators, Etc.—Robert J. Kennedy has a hydraulic amalgamator (498,979). Orrin B. Peck has eight patents on an ore separator (499,342–349). C. E. Seymour has a concentrator (498,823). John M. Finch has a separator (499,915) and R. H. Sanders and Charles T. Thompson have a magnetic separator (499,253). G. W. Nixon patents a new coke oven (499,565), and Jacob Reese has a patent basic lining (499,248), a highly burned non-calcareous compound of magnesia and tar, externally glazed. John M. Hartman has two patents, one (500,386) on an iron notch for blast furnace, and the other (500,387) on a blast furnace.

Metallurgical Processes.—Martin V. Smith reduces zinc ores by passing the fumes over batches of ores in a separate condenser (500,436). Charles C. Bartlett smelts nickel ores with a flux of niter cake, salt cake, nitrates or carbonates of alkaline bases, separates out buttons rich in sulphide of nickel by specific gravity and repeats the smelting operation to obtain nickel sulphide (499,314). F. W. Martino forms alloys of nickel and other metals by a peculiar process (499,559). F. R. Carpenter treats ores as follows: First mixes with a flux containing magnesia to form a light slag of definite proportion; second, adding sulphide of iron matte-forming materials free from copper and lead; third, heating, when the heavy iron slag will sink, taking the precious metals; fourth, adding lead to the molten sulphide (499,318). R. M. Shearer anneals aluminum wire, subjects blanks to a bath of sodium hydroxide, a water bath, a nitric acid or potassium chlorate bath, and a second water bath in his process for "pencil and art of making it" (497,350). F. P. Harned makes cast astringent pencils (497,659) of aluminum sulphate by reducing material under steam pressure, adding at intervals aluminum sulphate in solution, and casting in a greased appliance. E. D. Kendall uses a mixture of hyposulphites and ferricyanides and water for a composition of matter to extract precious metals from their ores (500,137), while John A. Frey uses carbonated soda ash, silica, sand, and pulverized sal-ammoniac, mixed in the dry state, for the purification and separation of metals and their alloys (499,018).

Hydrogen and Carbon Dioxide.—H. S. Blackmore first forms an alkali formate by the action of carbonic oxide upon a caustic alkali in a state of fusion, then continues the reaction so as to decompose the formate into a carbonate and set free hydrogen gas (497,700). To obtain pure carbon dioxide, Walter Walker passes the impure gas into retorts containing a solid carbonate which absorbs the gas forming a bicarbonate. Nitrogen and other gaseous impurities are removed by exhaustion, heat is applied to drive off the purified carbon dioxide, and the crystals of carbonate are re-obtained (496,546).

Tanning, Bleaching, and Dyeing.—A. D Little has a process for tawing hides by forming in the skins a chromium compound, and then subjecting to a bath of sodium sulphide and hydrochloric acid (498,067). W. M. Norris, to accomplish the same purpose, first dips in a bath of potassium bichromate and hydrochloric acid, and then treats with a solution evolving hydrogen sulphide (498,077), while 498,214 is also for the same object. Jacob Mellinger has a soap for removing hair from skins (499,134), and H. F. Dietz protects his method of carrotting and dyeing fur by 498,910. C. J. Delescluse, to bleach raw cotton, treats it in a bath of a chloride solution, water, grape sugar, and sulphuric acid (499,184). Victor G. Blaede has a process for dyeing and printing (499,649); George Donaldson, a scheme for printing on cotton (499,161); and Otto P. Amend, a process for dyeing analin black (499,410). W. T. Whitehead has several related patents (499,687–692 inclusive) of interest to dyers in which a zinc composition is the active element. J. Bammann and Moritz Ulrich have several new blue tetrazo dyes (499,198, 498,759, 498,873, and 498,874), and Emil Meyer (499,243), and Carl Drusberg (499,216) have each a blue dye. 496,392 is a blue tetrazo dye, patented by J. Bammann and M. Ulrich; 496,435 is another blue dye, the discovery of Oscar Nastvogel; and 497,032 is an orange azo dye, credited Christian Rudolpho. Emil Von Portheim patents a glycine dye, formed by the addition of a tetrazo compound of a diamine with a glycine (498,303), and Jacob Braek obtains a blue dye by heating an amine of the fatty series with a gallocyanine (497,114). Hugo Hassencamp describes a triphenyl methane dye (498,471), and Philip Ott has two new diazo dyes, one a reddish blue (498,405), the other a greenish blue (498,404). Ernest Bonsier uses alcohol, ammonia, carbolic acid, naphtha, and oleic acid for a mordant (497,229).

Oils, etc.—Walter D. Field has a "process for producing sulphuretted oils and products thereof" (498,162). The non-drying glycyl or glyceryl ethers of the unsaturated fatty acids are combined with benzine or its equivalent, then chloride of sulphur is added at a temperature less than 40° C., and when combination is effected, chlorine, free acid, and benzine, or its equivalent, is driven off by heat. Charles Toppan treats mineral or vegetable oils to the action of gases evolved from salt, metallic zinc, and sulphuric acid (498,588). Messrs. Benoit and Vila separate olein or stearin from suet by liquefying tallow, adding manganese to clarify it, allowing to settle, decanting the upper portion and heating this. After adding cream of tartar it is again allowed to settle and decanted, and finally heated until olein and stearin are separated (498,375). Wm. N. Blakeman, Jr., thickens drying oils by adding a mixture of cotton-seed oil and a metallic soap (496,988). Mr. Blakeman also has three other patents on processes for imparting drying properties to oils, *viz.*: 496,991, 496,989, and 496,987. Etienne Watel extracts perfume essences, using a patent apparatus (498,830). G. W. Scollay heats vegetable oils under pressure until the natural color is discharged and then at once reduces the temperature before color is recovered to refine the oils (498,821) and he also has a plan for treating cotton-seed oil (498,822), which consists in heating until vapor heavier than air is given off and then removing vapor before it is converted into vapor lighter than air. Herman Frasch has a compound for purifying Canadian or similar petroleum which contains metallic oxides as lead or copper (500,252).

Brewing, etc.—Herman Kropff (497,327) describes an improvement in the pasteurization of liquids. Charles Bullock (497,857) has an improved method for treating alcoholic liquors, as has also William Saint Martin (497,033). Charles Rettig has an apparatus for aerating, cooling, and clarifying liquors (498,571) and T. R. Timby places barrels of wines on trucks and runs on tracks with undulating rails in order to age the wines (496,759). E. Polgar obtains 497,814 on the manufacture of spirits from amylaceous materials, and Otto Schweissinger (496,752) manufactures extract of hops by a new process. Carl Rach has a patent on the preparation of wort from Indian corn (500,294). Wm. E. Bradley has an improvement on the manufacture of whisky (499,316) and James A. Tilden patents a process of malting (500,305).

Glue, etc.—Michael A. Goloseieff utilizes gelatine refuse or broth from evaporating to 27°–28° B., adding quick lime, allowing mass to expand and dry, and grinding (500,100). Eduard Rauppach and Leopold Bergel heat a mixture of curds and water to 104° F., add an alkali to precipitate the casein, and after separating the latter, heat it with an alkaline solution to 90°–110° F., in their process for making glue (500,428).

Paints and Varnishes.—George H. Smith has a method for making varnish (496,451). Ludwig Pflug patents a paint for ships (496,895) which contains hydrazin and its salts, and W. N. Blakeman, Jr., has a process for utilizing metallic and earthy oxides and salts as pigments or paints (496,990), by combining with some salts capable of absorbing carbon dioxide when the pigments are applied. James E. and G. H. McAlpine use for a fire or water proof-paint, a mixture of coal tar, crude petroleum, benzine, resin, sulphate of zinc, sal-soda, and linseed oil (500,346).

Plasters, etc.—"Hydromagnesite, oxalic and boracic acids and mother liquor of sea water with sand, fiber and an oleaginous substance" is what Hugo Gallinowsky names as an artificial stone composition (500,485). Enos A. Bronson prepares a finish for plastering by mixing lime, gypsum, white sand, soapstone or talc, and china clay or kaolin with enough water to form a pasty mass, adding alum and borax, drying, grinding, and adding to the mass calcined gypsum and white sand (499,710), M. B. Church mixes gypsum with glue as it comes from the rendering tank without drying as a process for making "retarded gypsum" (497,947), and 497,948 is a process for manufacturing gypsum compounds, which consists in mixing the gypsum in a dry, pulverized condition, with the retarder in a hot liquid condition. George H. Blake uses "wood tar, rosin, and pulverized plumbaginous slate" as a composition for roofing (498,840), while A. Monroe incorporates the following for the same purpose: "Portland cement, sand, plaster of Paris, crude petroleum, turpentine, salt and water" (500,024).

Organic Compounds.—Prosper Monnet patents a process for making anisoline (499,927). Meinhard Hoffman patents his plan for forming naphthylene-diamin-disulpho acid (498,882), and 499,301 is a process for making derivatives of amido-crotonic acid, invented by L. Lederer.

Miscellaneous.—August Viner uses saltpeter, borax, glycerin, and water as a compound for glazing collars and cuffs (499,685), and "whiting, ammonia, kerosene oil, coal ashes and water" is what is claimed by Dora A. Smith for a silver cleaning composition (499,401). "Oil and sulphur boiled together, turpentine and salt," Walter E. Rohner combines for wood polishing (498,961). Carbon and tar pressed and baked in place form a composition for attaching anti-friction linings or facings (K. W. Hedges, 499,111). E. Schloesing uses "spent oxide" from gas works or "Laming mixture" freed from cyanides and tobacco for an insecticide (498,819). Robert W. Johnson has two patents on a sulphur candle (499,324 and 499,325). A. T. Denison obtains pulp from vegetable substances by the action of an alkaline nitrate under pressure and heat (496,400). Edwin Tatham has a method for making gas (499,483), and 499,994 and 499,995 are granted Henry C. Higginson on the manufacture of whiting. Harriet Carter patents "hard coal ashes, fine hard coal, white sand, fire clay, and fine salt, mixed with water," as a composition for saving fuel (497,627); C. Cronin uses a combination of "culm, wood pulp, ground limestone and crude petroleum" for a fuel (498,629). "Ground ocher, cotton-seed oil, and liquefied resin" is a compound for preserving wood, patented by W. A. Gayle (497,471), and Ludwig Frorum adds hazel-nut flour to farinaceous products to preserve them (496,780). Jacob Ziegler has a new antiseptic, a quinoline compound (497,740), and H. P. Weidig employs a solution of bromine and potassium permanganate for a disinfectant (497,082). An antiseptic embalming fluid, containing "bisulphite of potash, soda or lime, sulphite of aluminum, and sulphite of lime, dissolved in an aqueous solution of sulphurous acid" is patented by Max Huneke (498,350) and Otto L. Mulot has a medicinal composition (496,694), the electrolyzed distillate from a mixture of a dozen ingredients. 500,535 is granted Anatole and Ernest des Cressonieres for a process of and apparatus for the manufacture of "kneaded and agglomerated soaps," and Max. Güttner adds to molten tin or an alloy of tin and lead an oxidizing substance, removes scum and repeats this operation several times prior to casting in his process for preparing solder (500,125). Edward Watson uses oxide of chromium as the active agent for fumigations (499,407). John Rowbotham has a moulding compound (499,753), and J. de S. Brown uses bitumen and sulphur with fine filling as lead protoxide and gum camphor, incorporated with bitumen and toughened and hardened by heat as a substitute composition for hard rubber (499,354).