

EXHIBIT 18



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non-bond-ing \-'bän-din\ *adj* (1952): being or occupied by electrons esp. of an atom's valence shell that are not involved in a chemical bond (a ~ atomic orbital)

non-book \-'buk\ *adj* (1949): being something other than a book; esp: being a library holding (as a microfilm) that is not a book

non-book \-'buk\ *n* (1960): a book of little literary merit which is often a compilation (as of pictures, press clippings, or speeches)

non-business \-'biz-näs- 'näs\ *adj* (1927): not related to business; esp: not related to one's primary business

non-cal-to-ric \-'nän-ka-'lör-ik, -'lör-\ *adj* (1950): free from or very low in calories

non-cand-id-ate \-'nän-'kän-dä-'dät, -'kä-nä-, -dät\ *n* (1944): a person who is not a candidate; esp: one who has refused to be a candidate for a particular political office — **non-cand-id-ate-ry** \-'dä-sä-\ *n*

nonce \-'nän(t)s\ *n* [ME *nanex*, alter. (fr. misdivision of *then anes* in such phrases as *to then anes* for the one purpose) of *anes* one purpose, irreg. fr. *an*, as *one* — more at **ONE**] (13c) 1: the one, particular, or present occasion, purpose, or use (for the ~) 2: the time being

nonce *adj* (1884): occurring, used, or made only once or for a special occasion (a ~ word)

non-chal-lance \-'nän-shə-'län(t)s; 'nän-shə-'län(t)s, -län(t)s\ *n* (1678): the quality or state of being nonchalant

non-chal-ant \-'län(t), -'län(t), -län(t)\ *adj* [F. fr. OF, fr. prp. of *nonchalot* to disregard, fr. *non-* + *chalot* to concern, fr. L *calere* to be warm — more at **LEE**] (ca. 1734): having an air of easy unconcern or indifference **syn** see **COOL** — **non-chal-ant-ly** *adv*

non-chro-mo-som-al \-'nän-'krō-mō-'sō-məl\ *adj* (1960) 1: not situated on a chromosome 2: not involving chromosomes

non-com \-'nän-'käm\ *n* (1883): NONCOMMISSIONED OFFICER

non-com-bat-ant \-'nän-'käm-'bät-'ant\ *n* (1811): one that does not engage in combat; as a: a member (as a chaplain) of the armed forces whose duties do not include fighting b: CIVILIAN — **non-combatant** *adj*

non-com-mis-sioned officer \-'nän-'kä-'mi-'shänd-\ *n* (1703): a subordinate officer (as a sergeant) in the army, air force, or marine corps appointed from among enlisted personnel

non-com-mit-tal \-'kä-'mi-täl\ *adj* (1829) 1: giving no clear indication of attitude or feeling 2: having no clear or distinctive character — **non-com-mit-tal-ly** \-'täl-\ *adv*

non-com-pas \-'nän-'käm-'päs-\ *n* (1607): not of sound mind

non-com-cur \-'nän-'käm-'kür\ *w* (ca. 1847): to refuse or fail to concur — **non-com-cur-rence** \-'kür-'sän(t)s, -'kä-'räs(t)s\ *n*

non-con-duc-tor \-'kän-'dök-tör\ *n* (1751): a substance that conducts heat, electricity, or sound only in very small degree

non-con-form \-'kän-'fōrm\ *w* [back-formation fr. *nonconformist*] (1681): to fail to conform — **non-con-form-er** *n*

non-con-form-ance \-'fōrm-'mäns\ *n* (1843): failure to conform

non-con-form-ism \-'fōrm-'mizəm\ *n* (1844): NONCONFORMITY

non-con-form-ist \-'fōrm-'mist\ *n* (1619) 1 *often cap*: a person who does not conform to an established church; esp: one who does not conform to the Church of England 2: a person who does not conform to a generally accepted pattern of thought or action — **non-con-form-ist** *adj*, *often cap*

non-con-form-ity \-'fōrm-'mät-i\ *n* (1618) 1 a: failure or refusal to conform to an established church b *often cap*: the movement or principles of English Protestant dissent c *often cap*: the body of English Nonconformists 2: refusal to conform to an established or conventional creed, rule, or practice 3: absence of agreement or correspondence

non-co-op-er-a-tion \-'näi-'kō-'pə-'rā-shən\ *n* (1795): failure or refusal to cooperate; *specif*: refusal through civil disobedience of a people to cooperate with the government of a country — **non-co-op-er-a-tion-ist** \-'sh(ə)'mist\ *n* — **non-co-op-er-a-tor** \-'pə-'rā-tör\ *n*

non-co-op-er-a-tive \-'pə-'rā-tiv\ *adj* (1922): of, relating to, or characterized by noncooperation

non-cred-it \-'nän-'kred-ät\ *adj* (1965): not offering credit toward a degree (~ courses)

non-cross-over \-'krō-'sō-vər\ *adj* (1919): having or being chromosomes that have not participated in genetic crossing-over (~ offspring)

non-cus-to-dial \-'kä-'stüd-ē-əl\ *adj* (1973): of or being a parent who does not have legal custody of a child

non-dairy \-'dä-ē-, -'där-; 'nän-\ *adj* (1968): containing no milk or milk products (~ whipped topping)

non-de-duc-tible \-'nän-'dē-'dök-tə-bəl\ *adj* (1943): not deductible; esp: not deductible for income tax purposes — **non-de-duc-tibil-ity** \-'dök-tə-'bi-lät-i\ *n*

non-de-fense \-'nän-'dē-'fens\ *adj* (1961): not used or intended for or associated with the military (~ spending)

non-de-scrip-tive \-'nän-'di-'skript\ *adj* [non- + L *descriptus*, pp. of *describere* to describe] (ca. 1807) 1: belonging or appearing to belong to no particular class or kind; not easily described 2: lacking distinctive or interesting qualities: DULL, DRAB — **non-descriptive** *n*

non-de-struc-tive \-'di-'strak-tiv\ *adj* (1926): not destructive; *specif*: not causing destruction of material being investigated or treated (~ testing of metal) — **non-de-struc-tive-ly** *adv* — **non-de-struc-tive-ness** *n*

non-dis-paus-ing \-'nän-'dä-'pō-zin\ *adj* (1963) 1: not having a diapause 2: not being in a state of diapause

non-di-rec-tive \-'nän-'dä-'rek-tiv-, -(d)'\ *adj* (1931): of, relating to, or being psychotherapy, counseling, or interviewing in which the counselor refrains from interpretation or explanation but encourages the client (as by repeating phrases) to talk freely

non-dis-junc-tion \-'nän-'dis-'jəŋ(k)-shən\ *n* [ISV] (1913): failure of homologous chromosomes or sister chromatids to separate subsequent to metaphase in meiosis or mitosis so that one daughter cell has both and the other neither of the chromosomes — **non-dis-junc-tion-al** \-'shən-, -shə-n'\ *adj*

non-dis-tinc-tive \-'di-'sting(k)-tiv\ *adj* (1916) of a speech sound: having no signaling value

non-di-vid-ing \-'nän-'dä-'vi-din\ *adj* (1945): not undergoing cell division

non-dor-mant \-'nän-'dör-mənt\ *adj* (1940) 1: being in such a condition that germination is possible (~ seeds) 2: being in active reproductive growth (~ plants)

non-drink-er \-'driŋ-'kər\ *n* (1899): a person who abstains from alcoholic beverages — **non-drink-ing** \-'kiŋ-\ *adj*

non-dry-ing oil \-'dri-ŋ-\ *n* (1903): a highly saturated oil (as olive oil) that is unable to solidify when exposed in a thin film to air

none \-'nän\ *pron, sing or pl in constr* [ME, fr. OE *nān*, fr. *ne* not + *an* one — more at **NO, ONE**] (bef. 12c) 1: not any 2: not one; **NUMBER** 3: not any such thing or person 4: no part: NOTHING

none *adj* (bef. 12c) *archaic*: not any; **NO**

none *adv* (1651) 1: by no means: not at all (~ too soon to begin) 2: in no way: to no extent (~ the worse for wear)

none \-'nän\ *n, after cap* [LL *nona*, fr. L, 9th hour of the day but sunrise — more at **NOON**] (1845): the fifth of the canonical hours

non-eco-nom-ic \-'nän-'ē-kə-'nē-mik-, -ē-kə-\ *adj* (1920): not economic; esp: having no economic importance or implication

non-elec-tro-lyte \-'nän-'ē-'lek-trō-'līt\ *n* (1891): a substance that does not readily ionize when dissolved or melted and is a poor conductor of electricity

non-ex-ist-ent \-'nän-'iz-ə-'tēnt-\ *n* (ca. 1600) 1: something that does not exist or exists only in the imagination 2: **NONEXISTENCE** 3: a person of little consequence or significance

none \-'nän\ *n pl but sing or pl in constr* [ME *nonys*, fr. L *nonus* fem. pl. of *novus* ninth] (14c) 1: the ninth day before the Ides according to ancient Roman reckoning 2 *often cap*: **NONE**

non-es-sen-tial \-'nän-'i-'sēn(t)-shəl\ *adj* (1751) 1: not essential; synthesized by the body in sufficient quantity to satisfy dietary needs (~ amino acids) 2: **NONESSENTIAL** *n*

none-such \-'nän-'sach\ *n* (1590): a person or thing without a peer — **none-such** *adj*

no-net \-'nō-'net\ *n* [It *nonetto*, fr. *nono* ninth, fr. L *nonus* — more at **NOON**] (1865): a combination of nine instruments or voices also a musical composition for such a combination

none-the-less \-'nän-'thə-'les\ *adv* (1847): **NEVERTHELESS**

non-er-clud-e-pan \-'nän-'yü-'kli-'dē-sən\ *adj*, *often cap* E (ca. 1864): not assuming or in accordance with all the postulates of Euclid's *Elements* (~ geometry)

non-event \-'nän-'i-'vent-, -nän-'i-\ *n* (1962) 1: an expected event that fails to take place or to satisfy expectations b: an often highly publicized event of little intrinsic interest or significance 2: an event that is officially ignored

non-ex-ist-ence \-'nän-'iz-'tis-təns\ *n* (1646): absence of existence; the negation of being — **non-ex-ist-ent** \-'tēnt-\ *adj*

non-fat \-'nän-'fat\ *adj* (1926): lacking fat solids; having fat removed (~ milk)

non-feas-ance \-'nän-'fē-'zəns\ *n* [non- + *feas*, E *feasance* from *facere*] (1596): failure to act; esp: failure to do what ought to be done

non-fer-rous \-'nän-'fēr-'əs\ *adj* (1887) 1: not containing, including, or relating to iron 2: of or relating to metals other than iron

non-fic-tion \-'fik-shən\ *n* (1909): literature that is not fiction

non-fic-tion-al \-'nän-'fik-shənəl-, -shə-n'\ *adj*

non-fig-u-rative \-'nän-'fi-gyə-'rə-tiv-, -'fi-gə-\ *adj* (1927): **NON-FIGURATIVE**

non-flam-ma-ble \-'flā-mə-'bəl\ *adj* (1915): not flammable; not easily ignited and not burning rapidly if ignited — **non-flam-ma-bil-ity** \-'flā-mə-'bi-lät-i\ *n*

non-flow-er-ing \-'nän-'flau-(ə)-r-ŋ-\ *adj* (ca. 1934): producing no flowers; *specif*: lacking a flowering stage in the life cycle

non-flu-ency \-'flū-sən(t)-sē\ *n, pl -cies* (ca. 1945) 1: lack of fluency 2: an instance of nonfluency

non-gon-o-coc-cal \-'nän-'gō-'nō-'kō-kəl\ *adj* (1961): not caused by gonococcus (~ urethritis)

non-gra-tis \-'nän-'grā-tis-, -'grā-\ *adj* [periphrasis for *gratis*] (1902): not approved: **UNWELCOME**

non-green \-'nän-'grēn\ *adj* (1897): not green; *specif*: containing no chlorophyll (~ saprophytes)

non-he-ro \-'nän-'hē-(j)ro-, -'hīr-(j)ro\ *n* (1940): **ANTIHERO**

non-his-tone \-'his-tōn\ *adj* (ca. 1966): relating to or being part of the eukaryotic proteins (as DNA polymerase) that bind to nucleic acids but are not histones

non-Hodg-kin's lymphoma \-'nän-'häd-'kīn-'s\ *n* (1976): any of the numerous malignant lymphomas (as Burkitt's lymphoma) that are not classified as Hodgkin's disease

non-iden-ti-cal \-'nän-(ə)'den-ti-kəl-, -'den-\ *adj* (1890) 1: **DIFFERENT** 2: **FRATERNAL**

non-mil-lion \-'nän-'mī-ljən\ *n, often attrib* [F. fr. L *novus* ninth + *millio* (as in *million*) — more at **NOON**] (1690) — see **MILLION** table

non-in-duc-tive \-'nän-'in-'dök-tiv\ *adj* (1896): not inductive; esp: being negligible inductance

non-in-ter-ven-tion \-'in-'tər-'ven(t)-shən\ *n* (1831): the state or policy of not intervening (~ in the affairs of other countries) — **non-in-ter-ven-tion-ist** \-'ven(t)-sh(ə)'mist\ *n* or *adj*

non-in-va-sive \-'in-'vā-siv-, -ziv\ *adj* (1971): not involving penetration (as by surgery or hypodermic needle) of the skin of the patient (~ diagnostic techniques)

non-in-volve-ment \-'in-'vīlv-mənt-, -'vōlv-, -'vōlv-\ *n* (1902): absence of involvement or emotional attachment — **non-in-volve-ment-ly** \-'vīlv-(ə)vd-, -'vōlv-(ə)vd\ *adv*

non-ion-ic \-'nän-'i-'nik\ *adj* (1929): not ionic; esp: not dependent on surface-active anions for effect (~ surfactants)

non-join-der \-'nän-'jōin-dər\ *n* (1833): failure to include a second party to a suit at law

non-judg-ment-al \-'nän-'jōj-'mənt-əl\ *adj* (1932): avoiding judgments based on one's personal and esp. moral standards

non-jur-ing \-'nän-'jūr-ŋ-\ *adj* [non- + L *jurare* to swear — more at **JURY**] (1691): not swearing allegiance — used esp. of a member of a party in Great Britain that would not swear allegiance to William and Mary or to their successors

non-ju-ror \-'jūr-ər-, -'jūr-ər\ *n* (1691): a person refusing to take an oath esp. of allegiance, supremacy, or abjuration; *specif*: one of the benefited clergy in England and Scotland refusing to take an oath of allegiance to William and Mary or to their successors after the Revolution of 1688

grilse \gril'se/ n, pl **grilse** [ME *grills*] (15c): a young Atlantic salmon returning to its native river to spawn for the first time after one winter at sea; **broadly**: any of various salmon at such a stage of development

grim \grim/ adj **grim-mer**; **grim-meest** [ME, fr. OE *grimm*; akin to OHG *griman* *feroc*, Gk *chremetizain* to neigh] (bef. 12c) 1: fierce in disposition or action: SAVAGE 2 a: stern or forbidding in action or appearance (a ~ taskmaster) b: **SOMBER**, **GLOOMY** 3: ghastly, repellent, or sinister in character (a ~ tale) 4: UNFLINCHING, UNYIELDING (a ~ determination) — **grim-ly** adv — **grim-ness** n

grimace \grī-mās, grī-mās/ n [F, fr. MF, alter. of *grimache*, of Gmc origin; akin to OE *grima* mask] (1651): a facial expression usu. of disgust or disapproval — **grimace** vi — **grim-er** n

grimalkin \grī-m(ə)l-kən, -mal-/ n [*gray* + *malkin*] (1630): a domestic cat; esp: an old female cat

grime \grīm/ n [MD *grime* soot, mask; akin to OE *grima* mask] (14c) 1: soot, mud, or dirt adhering to or embedded in a surface; **broadly**: accumulated dirtiness and disorder — **grime** vt

Grimm's law \grī-məs/ n [Jacob *Grimm*] (1838): a statement in historical linguistics: Proto-Indo-European voiceless stops became Proto-Germanic voiceless fricatives (as in Greek *pyr*, *treis*, *kardia* compared with English *fire*, *three*, *heart*), Proto-Indo-European voiced stops became Proto-Germanic voiceless stops (as in Latin *duo*, *genus* compared with English *two*, *kin*), and Proto-Indo-European voiced aspirated stops became Proto-Germanic voiced fricatives (as in Sanskrit *māhī*, *māhīya* "mid" compared with English *navel*, Old Norse *míthr* "mid")

grim reaper n, often cap **G&R** (ca. 1927): death esp. when personified as a man or skeleton with a scythe

grimy \grī-mē/ adj **grim-er**; -est (1612): full of or covered with grime; **DIRTY** — **grim-iness** n

grin \grīn/ n **grinned**; **grin-ning** [ME *grinnen*, fr. OE *grinnian*; akin to OHG *grinnen* to snarl] (bef. 12c): to draw back the lips so as to show the teeth esp. in amusement or laughter; **broadly**: SMILE — **grin** v — **grin-er** n — **grin-ning-ly** \grī-nīŋ-lē/ adv

grinch \grīnch/ n [fr. the *Grinch* character in the children's story *How the Grinch Stole Christmas* (1957) by Dr. Seuss] (1979): KILJOY, SPOLL-SPORT

grind \grīnd/ v **ground** \grāund/; **grind-ing** [ME, fr. OE *grindan*; akin to L *frōdere* to crush, *grind*] vi (bef. 12c) 1: to reduce to powder or small fragments by friction (as in a mill or with the teeth) 2: to wear down, polish, or sharpen by friction (~ an ax) 3 a: OPRESS, HARASS b: to weaken or destroy gradually — usu. used with *down* (poverty *ground* her spirit down) 4 a: to press together with a rotating motion (~ the teeth) b: to rub or press harshly (*ground* the cigarette out) 5: to operate or produce by turning a crank (~ a hand organ) ~ vi 1: to perform the operation of grinding 2: to become pulverized, polished, or sharpened by friction 3: to move with difficulty or friction esp. so as to make a grating noise (ears ~ing) 4: DRUDGE; esp: to study hard (~ for an exam) 5: to rotate the hips in an erotic manner (as in a burlesque striptease) — **grind-ing-ly** \grī-dīŋ-lē/ adv

grind n (13c) 1: a: an act of grinding b: the sound of grinding 2 a: dreary, monotonous, or difficult labor, study, or routine b: one who works or studies excessively 3: the result of grinding; also: material ground to a particular degree of fineness (a drip ~ of coffee) 4: the act of rotating the hips in an erotic manner *SYN* see WORK

grinder \grīn-dər/ n (14c) 1 a: MULAR b pl: TEETH 2: one that grinds 3: a machine or device for grinding 4: SUBMARINE 2

grind house n (1927): an often shabby movie theater having continuous showings esp. of pornographic or violent films

grind out vi (1868): to produce in a mechanical way

grindstone \grīn-stōn/ n (13c) 1: MILLSTONE 1 2: a flat circular piece of natural sandstone that revolves on an axle and is used for grinding, shaping, or smoothing

gringo \grīŋ-(j)gə/ n, pl **gringos** [Sp, alter. of *griego* Greek, stranger, fr. L *Graecus* Greek] (1849): a foreigner in Spain or Latin America esp. when of English or American origin; **broadly**: a non-Hispanic person — often used disparagingly

gris \grī-s/ n [F] (1906): any of a class of musician-entertainers of western Africa whose performances include tribal histories and genealogies

grip \grīp/ v **gripped**; **grip-ping** [ME *grippen*, fr. OE *grippan*; akin to OE *grīpan*] (bef. 12c) 1: to seize or hold firmly 2: to hold the interest of strongly (a story that ~s the reader) — **grip-per** n — **grip-ping-ly** \grī-pīŋ-lē/ adv

grip n (bef. 12c) 1 a: a strong or tenacious grasp b: strength in gripping c: manner or style of gripping 2 a: a firm tenacious hold typically giving control, mastery, or understanding b: mental grasp 3: a part or device for gripping 4: a part by which something is grasped; esp: HANDLE 5: SUITCASE 6: STAGEHAND

gripe \grīp/ v **griped**; **grip-ing** [ME, fr. OE *grīpan*; akin to OHG *grīfan* to grasp, Lith *grībtīti*] vi (bef. 12c) 1 *archaic*: SEIZE, GRASP 2 a: AFFLICT, DISTRESS b: IRRITATE, VEX 3: to cause pinching and spasmodic pain in the bowels of ~ vi 1: to experience gripes 2: to complain with grumbling — **grip-er** n

gripe n (13c) 1 *archaic*: CLUTCH, GRASP; **broadly**: CONTROL, MASTERY 2: a pinching spasmodic intestinal pain — usu. used in pl. 3: GRIEVANCE, COMPLAINT

grip-man \grīp-mən, -mən/ n (1886): a cable car operator

grippe \grīp/ n [F, lit., seizure] (1776): an acute febrile contagious virus disease; esp: INFLUENZA 1 — **grippy** \grī-pē/ adj

grip-sack \grīp-sək/ n (1877): SUITCASE

grisaille \grī-zī, -zā(s)/ n [F, fr. *gris* gray, fr. MF — more at GRIZZLE] (1848): decoration in tones of a single color and esp. gray designed to produce a three-dimensional effect

Griseida \grī-zel-də/ n [ME, fr. It.] a woman of humble origins in medieval legend who endures tests of wifely patience laid on her by her wealthy husband

griseofulvum \grī-zē-ō-fūl-vən, -grī-zē-, -fəl-/ n [NL *griseofulvum*, specific epithet of *Penicillium griseofulvum*, mold from which it is obtained] (1939): an antibiotic C₁₇H₁₇ClO₆ used systematically in treating superficial fungal infections

grissette \grī-'zet/ n [F, *grissette*, cheap unbleached cloth, fr. *gris*] (1723) 1: a young French working-class woman 2: a young woman combining part-time prostitution with some other occupation

gris-gris \grī-'grī-/ n, pl **gris-gris** \-'grīz/ [F] (1698): an amulet or incantation used chiefly by people of black African ancestry

gris-ly \grīz-lē/ adj **gris-ly-er**; -est [ME, fr. OE *grislīc*, fr. *gris* (akin to OE *grīsan* to fear); akin to OHG *grisenlīh* terrible] (12c) 1: inspiring horror or intense fear (houses that were dark and ~ under the blank, cold sky — D. H. Lawrence) 2: inspiring disgust or distaste (a ~ account of the fire) *SYN* see GHASTLY — **gris-ly-ness** n

grist \grīst/ n [ME, fr. OE *grīst*; akin to OE *grindan* to grind] (bef. 12c) 1 a: grain or a batch of grain for grinding b: the product obtained from a grist of grain including the flour or meal and the grain offals 2: a required or usual amount 3: matter of interest or value forming the basis of a story or analysis 4: something turned to advantage or use — used esp. in the phrase *grist for one's mill*

gristle \grī-səl, -zəl/ n [ME *gristle*, fr. OE *grīstle*; akin to MLG *grīstel* gristle] (bef. 12c): CARTILAGE; **broadly**: tough cartilaginous, tendinous, or fibrous matter esp. in table meats

grist-ly \grī-sē-lē, 'grīz-lē/ adj **grist-ly-er**; -est (14c): consisting of or containing gristle (~ steak) — **grist-ly-ness** n

grist-mill \grīst-mīl/ n (1602): a mill for grinding grain

grit \grīt/ n [ME *grēte*, fr. OE *grīst*; akin to OHG *grīz* sand] (bef. 12c) 1 a: SAND, GRAVEL b: a hard sharp granule (as of sand); also: material (as many abrasives) composed of such granules 2: any of several sandstones 3 a: the structure of a stone that adapts it to grinding b: the size of abrasive particles usu. expressed as their mesh 4: firmness of mind or spirit: unyielding courage in the face of hardship or danger 5 cap: a Liberal in Canadian politics

grit v **grit-ter**; **grit-ting** vi (1762): to give forth a grating sound ~ vt 1: to cause (as one's teeth) to grind or grate 2: to cover or spread with grit; esp: to smooth (as marble) with a coarse abrasive

grith \grīth/ n [ME, fr. OE, fr. ON, security] (bef. 12c): peace, security, or sanctuary imposed or guaranteed in early medieval England under various special conditions

grits \grīts/ n *pl but sing or pl in constr* [perh. partly fr. *grit*, partly fr. dial. *grit* coarse meal, fr. OE *grīst*; akin to OE *grōf*] (1579): coarsely ground hulled grain; esp: ground hominy with the germ removed

grit-ty \grī-tē/ adj **grit-ty-er**; -est (1598) 1: containing or resembling grit 2: courageously persistent: PLUCKY 3: having strong qualities of tough uncompromising realism (a ~ novel) — **grit-ti-ly** \grī-tē-lē/ adv — **grit-ti-ness** \grī-tē-nəs/ n

griz-ale \grī-zəl/ n [ME *grīzel*, adj., gray, fr. MF, fr. *gris*, of Gmc origin; akin to OHG *gris* gray] (1601) 1 *archaic*: gray hair 2 a: a roan coat pattern or color b: a gray or roan animal

grizzle v **griz-zled**; **griz-zling** \grīz-līŋ, 'grī-zəl/ vi (1740): to make grayish ~ vt 1: GRIBE, ORUMBLE 2: to become grayish

griz-zled \grī-zeld/ adj (15c): sprinkled or streaked with gray: GRAY-ING (a ~ beard)

griz-zly \grī-zlē/ adj **griz-zly-er**; -est (1594): GRIZZLED

grizzly \grīz-lē/ n [GRISEL]

grizzly bear n (1791): a very large brown bear (*Ursus arctos horribilis*) of the uplands of western No. America — called also *grizzly*

groan \grōn/ v [ME *grōnen*, fr. OE *grōnian*; akin to OHG *grīnan* to growl] vi (bef. 12c) 1: to utter a deep moan indicative of pain, grief, or annoyance 2: to make a harsh sound (as of creaking) under sudden or prolonged strain ~ vi: to utter or express with groaning — **groan** n

groaner \grō-nər/ n (1795) 1: one that groans 2: a stale or corny joke, observation, or story

groat \grōt/ n [ME *grotes*, pl., fr. OE *grotan*, pl. of *grot*; akin to OE *grōt* grit] (12c) 1 *usu pl but sing or pl in constr*: hulled grain broken into fragments larger than grits 2: a grain (as of oats) exclusive of the hull

groat n [ME *groot*, fr. MD] (14c): an old British coin worth four pennies

grocer \grō-sər, -shər/ n [ME, fr. MF *grossier* wholesaler, fr. *gros* coarse, wholesale — more at GROSS] (15c): a dealer in staple food-stuffs, meats, produce, and dairy products and usu. household supplies

grocery \grōs-rē, 'grō-sə-/ n, pl -cer-ies (15c) 1 pl: commodities sold by a grocer — usu. sing. in Brit. usage 2: a grocer's store

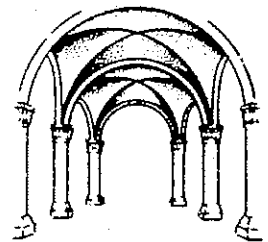
grog \gräg/ n [*Old Grog*, nickname of Edward Vernon †1757 Eng. admiral responsible for diluting the sailors' rum] (1770) 1: alcoholic liquor; esp: liquor (as rum) cut with water and now often served hot with lemon juice and sugar sometimes added 2: refractory materials (as crushed pottery and firebricks) used in the manufacture of refractory products (as crucibles) to reduce shrinkage in drying and firing

grog-gy \grā-gē/ adj **grog-gy-er**; -est [grog] (1832): weak and unsteady on the feet or in action — **grog-gly** \grā-gē-lē/ adv — **grog-gi-ness** \grā-gē-nəs/ n

gro-grain \grā-grām, 'grō-/ n [MF *gros* grain coarse texture] (1562): a coarse loosely woven fabric of silk, silk and mohair, or silk and wool — compare GROSGRAIN

grog-shop \gräg-shāp/ n (1790) chiefly Brit.: a usu. low-class barroom

groin \grōin/ n [alter. of ME *grynde*, fr. OE, abyss; akin to OE *grund* ground] (ca. 1532) 1: the fold or depression marking the juncture of the lower abdomen and the inner part of the thigh; also: the region of this line 2 a: the projecting curved line along which two intersecting vaults meet b: a rib that covers this edge 3: a rigid structure



groin 2a

\ə/ abet \v/ kitten, F table \ər/ further \ə/ ash \ə/ ace \ə/ mop, mar
 \aʊ/ out \ch/ chain \el/ bet \ē/ easy \g/ go \h/ hit \ā/ ice \j/ job
 \ŋ/ sing \ō/ go \ō/ law \ōi/ boy \th/ thin \th/ the \ū/ loot \ū/ foot
 \y/ yet \zh/ vision \ā, ă, ʰ, æ, ɛ, ɛ, ɛ, ɛ, ʌ see Guide to Pronunciation

de-prav-ity \di-'prə-vā-tē also -'prā-\ n. *pl* -ties (1641) 1: the quality or state of being depraved 2: a corrupt act or practice

de-pre-cate \de-'pri-kāt\ *vt* -cat-ed; -cat-ing [L *deprecatus*, pp. of *deprecari* to avert by prayer, fr. *de-* + *precari* to pray — more at **PRAY**] (1628) 1 a *archaic*: to pray against (as an evil) b: to seek to avert (~ the wrath... of the Roman people — Tobias Smollett) 2: to express disapproval of 3 a: **PLAY DOWN**: make little of (speaks five languages... but ~s this facility — Time) b: **BELITTLE**, **DISPARAGE** (the most reluctantly admired and least easily deprecated of... novelists — *New Yorker*) — **de-pre-cat-ing-ly** \-kā-tiŋ-lē\ *adv* — **de-pre-ca-tion** \de-'pri-kā-shən\ n

de-pre-ca-to-ry \de-'pri-kā-tō-rē, -tōr-, 'de-prə-kā-tō-rē\ *adj* (1586) 1: seeking to avert disapproval: **APOLOGETIC** 2: serving to deprecate: **DISAPPROVING** — **de-pre-ca-to-ri-ly** \de-'pri-kā-tō-rē-lē, -tōr-lē\ *adv*

de-pre-ci-ate \di-'prē-shē-āt\ *vb* -at-ed; -at-ing [LL *depreciatus*, pp. of *depreciare*, fr. *L de-* + *pretium* price — more at **PRICE**] *vt* (15c) 1: to lower in estimation or esteem 2: to lower the price or estimated value of ~ *vi*: to fall in value *syn* see **DECRY** — **de-pre-ci-a-ble** \-shə-bəl\ *adj* — **de-pre-ci-at-ing-ly** \-shē-āt-iŋ-lē\ *adv* — **de-pre-ci-a-tion** \-prē-shē-ā-shən\ n — **de-pre-ci-a-tive** \-prē-shə-tiv-, -shē-ā-tiv\ *adj* — **de-pre-ci-a-tor** \-shē-ā-tər\ n — **de-pre-ci-a-to-ry** \-shə-tōr-ē, -tōr-lē\ *adj*

de-pre-date \de-'prā-dīt\ *vb* -dat-ed; -dat-ing [LL *depraedatus*, pp. of *depraedari*, fr. *L de-* + *praedari* to plunder — more at **PREV**] *vt* (1626) 1: to lay waste: **PLUNDER**, **RAVAGE** ~ *w*: to engage in plunder — **de-pre-da-tion** \de-'prā-dā-shən\ n — **de-pre-da-tor** \de-'prā-dā-tər, dē-'prē-dā-\ n — **de-pre-da-to-ry** \di-'prē-dā-tōr-ē, -tōr-lē, -tōr-lē\ *adj*

de-press \di-'pres, dē-\ *vi* [ME, fr. MF *depresser*, fr. *L depressus*, pp. of *deprimere* to press down, fr. *de-* + *primere* to press — more at **PRESS**] (14c) 1 *obs*: **REPRESS**, **SUBDUCE** 2 a: to press down (~ a typewriter key) b: to cause to sink to a lower position 3: to lessen the activity or strength of 4: **SADDEN**, **DISCOURAGE** 5: to decrease the market value or marketability of — **de-press-ible** \-pres-ə-bəl\ *adj*

de-press-ant \di-'pres-ənt, dē-\ n (1876) 1: one that depresses; *specif*: an agent that reduces a bodily functional activity or an instinctive desire (as appetite) — **de-press-ant** *adj*

de-pressed *adj* (1621) 1: low in spirits: **SAD**; *esp*: affected by psychological depression 2 a: vertically flattened (a ~ cactus) b: having the central part lower than the margin c: lying flat or prostrate d: dorsoventrally flattened 3: suffering from economic depression; *esp*: **UNDERPRIVILEGED** 4: being below the standard

de-press-ing *adj* (1789) 1: that depresses; *esp*: causing emotional depression (a ~ story) — **de-press-ing-ly** \-sɪŋ-lē\ *adv*

de-press-ion \di-'pre-shən, dē-\ n (14c) 1 n: the angular distance of a celestial object below the horizon b: the size of an angle of depression 2: an act of depressing or a state of being depressed; as a: a pressing down: **LOWERING** b (1): a state of feeling sad: **DEJECTION** (2): a psychoneurotic or psychotic disorder marked esp. by sadness, inactivity, difficulty in thinking and concentration, a significant increase or decrease in appetite and time spent sleeping, feelings of dejection and hopelessness, and sometimes suicidal tendencies c (1): a reduction in activity, amount, quality, or force (2): a lowering of vitality or functional activity 3: a depressed place or part: **HOLLOW** 4: low lb 5: a period of low general economic activity marked esp. by rising levels of unemployment

Depression glass n (Great Depression of 1929 to ca. 1939) (1971) tinted glassware machine-produced during the 1930s

de-press-ive \di-'pre-siv, dē-\ *adj* (1620) 1: tending to depress 2: of, relating to, marked by, or affected by psychological depression — **de-press-ive-ly** *adv*

de-pressive n (1937): one who is affected with or prone to psychological depression

de-press-or \di-'pre-sər, dē-\ n [LL, fr. *L deprimere*] (1611) 1: one that depresses; as a: a muscle that draws down a part — compare **LEVATOR** b: a device for pressing down or aside c: a nerve or nerve fiber that decreases the activity or the tone of the organ or part it innervates

de-press-sur-tize \de-'pres-shə-'rīz\ *vi* (1944) 1: to release pressure from — **de-press-sur-tiza-tion** \de-'pres-shə-'rīz-ā-shən\ n

de-priv-a-tion \de-'prī-vā-shən also dē-'prī-\ n (15c) 1: the state of being deprived: **PRIVATION**; *esp*: removal from an office, dignity, or benefice 2: an act or instance of depriving: **LOSS**

de-priv-e \di-'prīv\ *vi* de-priv-ed; de-priv-ing [ME *depriven*, fr. ML *deprivare*, fr. *L de-* + *privare* to deprive — more at **PRIVATE**] (14c) 1 *obs*: **REMOVE** 2: to take something away from (deprived him of his professorship — J. M. Phalen) 3: to remove from office 4: to withhold something from (deprived a citizen of her rights)

de-priv-ed *adj* (ca. 1522): marked by deprivation esp. of the necessities of life or of healthful environmental influences (culturally ~ children)

de-program \de-'prō-'gram, -gram\ *vi (1973) 1: to dissuade from convictions usu. of a religious nature often by coercive means — **de-program-mer** \-mər\ n*

depth \dɛpθ\ n, *pl* depths \dɛpθə, 'dɛpθə\ [ME, prob. fr. *dep* deep] (14c) 1 a (1): a deep place in a body of water (2): a part that is far from the outside or surface (the ~s of the woods) (3): **ABYSS** 2 b (1): a profound or intense state (as of thought or feeling) (the ~s of misery); also: a reprehensibly low condition (hadn't realized that standards had fallen to such ~s) (2): the middle of a time (as winter) (3): the worst part 2 a: the perpendicular measurement downward from a surface b: the direct linear measurement from front to back 3: the quality of being deep 4: the degree of intensity (~ of a color); also: the quality of being profound (as in insight) or full (as of knowledge) 5: the quality or state of being complete or thorough (a study will be made in ~) — **depth-less** \dɛpθ-ləs\ *adj*

depth charge n (1917): an antisubmarine weapon that consists essentially of a drum filled with explosives which is dropped near a target and descends to a predetermined depth where it explodes — called also **depth bomb**

depth of field (1911): the range of distances of the object in front of an image-forming device (as a camera lens) measured along the axis of the device throughout which the image has acceptable sharpness

depth perception n (ca. 1911): the ability to judge the distance of objects and the spatial relationship of objects at different distances

depth psychology n (1924): **PSYCHOANALYSIS**; also: psychology concerned esp. with the unconscious mind

de-put-a-tion \de-'pyū-tā-shən\ n (14c) 1: the act of appointing a deputy 2: a group of people appointed to represent others

de-pute \di-'pyūt\ *vt* de-put-ed; de-put-ing [ME, to appoint, fr. MF *deputer*, fr. LL *deputare* to assign, fr. *L*, to consider (as), fr. *de-* + *putare* to consider — more at **PAVE**] (14c) 1: **DELEGATE**

de-put-ize \de-'pyū-tīz\ *vb* -tīz-ed; -tīz-ing *vt* (ca. 1736) 1: to appoint as deputy ~ *w*: to act as deputy — **de-put-iza-tion** \de-'pyū-tā-'zā-shən\ n

de-put-y \de-'pyū-tē\ n, *pl* -ties [ME, fr. MF *deputé*, pp. of *deputer*] (15c) 1 a: a person appointed as a substitute with power to act b: a second in command or assistant who usu. takes charge when his or her superior is absent 2: a member of the lower house of some legislative assemblies

de-rac-i-nate \de-'rā-s'n-āt\ *vt* -nat-ed; -nat-ing [MF *desraciner*, fr. *des-* + *racine* root, fr. LL *radicina*, fr. *L radix*, *radix* — more at **ROOT**] (1599): **UPROOT** — **de-rac-i-na-tion** \de-'rā-s'n-ā-shən\ n

de-rail \di-'rā-ē\ *vb* [F *dérailer* to throw off the track, fr. *dé-* + *rail*, fr. E] *vt* (1850) 1: to cause to run off the rails 2: to obstruct the progress of: **FRUSTRATE** ~ *w*: to leave the rails — **de-rail-ment** \-mənt\ n

de-rail-leur \di-'rā-lər\ n [F *dérailleur*, fr. *dérailer*] (1930): a mechanism for shifting gears on a bicycle that operates by moving the chain from one set of exposed gears to another

de-range \di-'rāŋ\ *w* de-ranged; de-rang-ing [F *déranger*, fr. OF *dérangier*, fr. *des-* + *reng* line, row — more at **RANK**] (1776) 1: to disturb the operation or functions of 2: **DISARRANGE** (hatless, with the *de-ranged* — G. W. Stonier) 3: to make insane — **de-range-ment** \-mənt\ n

de-rate \de-'rāt\ *w* (1947) 1: to lower the rated capability of (as electrical or mechanical apparatus) because of deterioration or inadequacy

der-by \dər-'bē, esp Brit 'dār-\ n, *pl* derbies [Edward Stanley 1834, 12th earl of Derby] (1844) 1: any of several horse races held annually and usu. restricted to three-year-olds 2: a race or contest open to all comers or to a specified category of contestants (bicycle ~) 3: a man's stiff felt hat with dome-shaped crown and narrow brim

de-re-al-iza-tion \de-'rē-ō-lā-'zā-shən, -rē-ō-\ n (1942) 1: a feeling of altered reality that occurs often in schizophrenia and in some drug reactions

de-reg-u-la-tion \de-'re-gyū-lā-shən\ n (1963): the act or process of removing restrictions and regulations — **de-reg-u-late** \de-'re-gyū-jāt\ *vt*

de-ri-er-ect \dər-'rī-ēkt\ *adj* [L *derelictus*, pp. of *derelinquere* to abandon, fr. *de-* + *relinquere* to leave — more at **RELINQUISH**] (1649) 1: abandoned esp. by the owner or occupant: **RUN-DOWN** 2: lacking a sense of duty: **NEGLIGENT**

der-elict n (1670) 1 a: something voluntarily abandoned; *specif*: a ship abandoned on the high seas b: a tract of land left dry by receding water 2: a destitute homeless social misfit: **VAGRANT**, **BUM**

der-e-lic-tion \dər-'rī-ē-shən\ n (1597) 1: a: an intentional abandonment b: the state of being abandoned 2: a recession of water leaving permanently dry land 3 a: intentional or conscious neglect: **DELINQUENCY** (~ of duty) b: **FAULT**, **SHORTCOMING**

de-re-press \de-'rē-'pres\ *vt* (1962): to activate (a gene or enzyme) by releasing from a blocked state — **de-re-press-ion** \-pre-'shən\ n

de-ride \di-'rīd, dē-\ *vi* de-rid-ed; de-rid-ing [L *deridere*, fr. *de-* + *ridere* to laugh] (1530) 1: to laugh at contemptuously 2: to subject to *usu.* bitter or contemptuous ridicule *syn* see **RIDICULE** — **de-rid-er** n — **de-rid-ing-ly** \-rī-dīŋ-lē\ *adv*

de-ri-gueur \dā-'rē-'gər\ *adj* [F] (1833): prescribed or required by fashion, etiquette, or custom: **PROPER**

de-ri-sion \di-'rī-zhən\ n [ME, fr. MF, fr. LL *derisio*-, *derisio*, fr. *L deridere*] (14c) 1 a: the use of ridicule or scorn to show contempt b: a state of being derided 2: an object of ridicule or scorn

de-ri-sive \di-'rī-siv-, -zīv-, 'rī-zīv-, 'rī-sīv\ *adj* (ca. 1662): expressing or causing derision — **de-ri-sive-ly** *adv* — **de-ri-sive-ness** n

de-ri-vo-ry \di-'rī-vō-rē, -zə-\ *adj* (1618) 1: expressing derision: **DERISIVE** 2: worthy of derision; *esp*: laughably small (a ~ sum)

de-ri-va-ble \di-'rī-və-bəl\ *adj* (1653): capable of being derived

de-ri-va-tive \dər-'vā-tīv\ n (1660): **DERIVATIVE**

der-iv-a-tion \dər-'vā-shən\ n (15c) 1 a (1): the formation of a word from another word or base (as by the addition of a *usu.* noninflectional affix) (2): an act of ascertaining or stating the derivation of a word (3): **ETYMOLOGY** 1 b: the relation of a word to its base 2 a: **SOURCE**, **ORIGIN** b: **DESCENT**, **ORIGINATION** 3: something derived: **DERIVATIVE** 4: an act or process of deriving 5: a sequence of statements (as in logic or mathematics) showing that a result is a necessary consequence of previously accepted statements — **der-iv-a-tion-al** \-shən-, -shə-nəl\ *adj*

de-ri-va-tive \di-'rī-vā-tīv\ n (15c) 1: a word formed by derivation 2: something derived 3: the limit of the ratio of the change in a function to the corresponding change in its independent variable as the latter change approaches zero 4 a: a chemical substance related structurally to another substance and theoretically derivable from it b: a substance that can be made from another substance

derivative *adj* (ca. 1530) 1: formed by derivation 2: made up of or marked by derived elements 3: lacking originality: **BANAL** — **de-ri-va-tive-ly** *adv* — **de-ri-va-tive-ness** n

de-ri-va-ti-za-tion \dā-'rī-vā-'zā-shən\ n (1967): the conversion of a chemical compound into a derivative (as for identification) — **de-ri-va-tize** \dā-'rī-vā-tīz\ *vt*

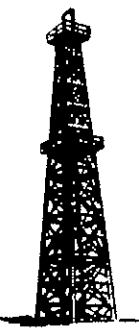
de-rive \di-'rīv, dē-\ *vb* de-ri-ved; de-riv-ing [ME, fr. MF *deriver*, fr. *L derivare*, lit., to draw off (water), fr. *de-* + *rivus* stream — more at **RUN**] *vt* (14c) 1 a: to take, receive, or obtain esp. from a specified source b: to obtain (a chemical substance) actually or theoretically from a parent substance 2: **INFERR**, **DEDUCE** 3 *archaic*: **BRING** 4: to trace

\ə\ about \ə\ kitten, F table \ə\ further \ə\ ash \ə\ ace \ə\ mop, mar
 \a\ out \ch\ chin \el\ bet \ē\ easy \ə\ go \i\ hit \i\ ice \j\ job
 \ŋ\ sing \ŋ\ go \ŋ\ law \ŋ\ boy \th\ thin \th\ the \ū\ foot \ū\ foot
 \y\ yet \zh\ vision \k, ŋ, ç, æ, ū, ē, ʌ see Guide to Pronunciation

312 **deriver • desert**

the derivation of ~ vi: to have or take origin: come as a derivative
 syn see **SPRING** — **de-riv-er** n
derma- or **dermo-** or **dermo-** comb form [NL, fr. Gk *derm-, dermo-*, fr. *derma*, fr. *derein* to skin — more at **TEAR**]: skin (dermal)
-derma \dər-mə\ n comb form [prob. fr. F *-derme*, fr. Gk *derma*]: skin
 covering (ectoderm)
-der-ma \dər-mə\ n comb form, pl **-der-mas** or **-der-ma-ta** \-mə-tə\
 [NL, fr. Gk *dermat-, derma* skin]: skin or skin ailment of a (specified)
 type (scleroderma)
der-ma-ab-ra-sion \dər-mə-'brā-zhən\ n (ca. 1954): surgical removal of
 skin blemishes or imperfections (as scars or tattoos) by abrasion (as
 with sandpaper or wire brushes)
der-mal \dər-məl\ adj (ca. 1803) 1: of or relating to skin and esp. to
 the dermis: CUTANEOUS 2: EPIDERMAL
der-mat- or **der-mat-o-** comb form [Gk, fr. *dermat-, derma*]: skin (<*der-*
matitis) (dermatology)
der-ma-ti-tis \dər-mə-'ti-tis\ n (1876): inflammation of the skin
der-mat-o-gon \dər-mə-tə-'jən\ n [ISV] (1882): PROTODERM
der-ma-to-glyph-ics \dər-mə-tə-'glif-iks\ n pl but sing or pl in constr
 [dermat- + Gk *glyphein* to carve + E *-ics* — more at **CLEAVE**] (1926)
 1: skin patterns; esp: patterns of the specialized skin of the inferior
 surfaces of the hands and feet 2: the science of the study of skin pat-
 terns — **der-ma-to-glyph-ic** \-fik\ adj
der-ma-tol-o-gy \dər-mə-'tɒ-lə-'jɪ\ n (1819): a branch of science deal-
 ing with the skin, its structure, functions, and diseases — **der-ma-to-**
log-ic \-mə-'tɒ-lə-'jɪ\ or **der-ma-to-log-i-cal** \-jɪ-'kəl\ adj — **der-ma-**
tol-o-gist \-mə-'tɒ-lə-'jɪ-st\ n
der-ma-tome \dər-mə-'tɒm\ n [ISV *dermat-* + *-ome*] (1910): the
 lateral wall of a somite from which the dermis is produced — **der-ma-**
to-mal \dər-mə-'tɒ-məl\ adj
der-ma-to-phyte \dər-mə-'tə-'fai-\ n [ISV] (1882): a fungus
 parasitic on the skin or skin derivatives (as hair or nails)
der-ma-to-sis \dər-mə-'tɒ-sis\ n, pl **-to-ses** \-sɪz\ (1866): a disease
 of the skin
-der-ma-tous \dər-mə-'tə-s\ adj comb form [Gk *dermat-, derma* skin]
 having a (specified) type of skin (pachydermatous)
der-mes-tid \dər-'mes-tɪd\ n [ultim. fr. Gk *dermestēs*, a leather-
 eating worm, lit., skin eater, fr. *derm-* + *edmenal* to eat — more at
EAT] (ca. 1888): any of a family (Dermestidae) of beetles with clubbed
 antennae that are very destructive to organic material of animal origin
 (as dried meat, wool, or museum specimens) — **der-mes-tid** adj
der-mis \dər-'mɪs\ n [NL, fr. LL *dermis*] (ca. 1830): the sensitive
 vascular inner mesodermic layer of the skin — called also **corium**, **cutis**
-der-mis \dər-'mɪs\ n comb form [LL, fr. Gk, fr. *derma*]: layer of skin
 or tissue (endodermis)
der-moid cyst \dər-'mɔɪd-\ n (1872): a cystic tumor often of the
 ovary that contains skin and skin derivatives (as hair or teeth) — called
 also **dermoid**
der-nier cri \dər-'ni-ə-'krɪ\ n [F, lit., last cry] (1896): the newest
 fashion
der-o-gate \dər-'ə-'gāt\ vb **-gat-ed**; **-gat-ing** [ME, fr. LL *derogatus*,
 pp. of *derogare*, fr. L, to annul (a law), detract, fr. *de-* + *rogare* to ask,
 propose (a law) — more at **RIGHT**] vt (15c): to cause to seem inferior
 : DISPARAGE ~ vt 1: to take away a part so as to impair : DETRACT
 2: to act beneath one's position or character — **der-o-ga-tion** \dər-'
 ə-'gā-shən\ n — **der-o-ga-tive** \dər-'ə-'gā-tiv\ adj
der-o-ga-to-ry \dər-'ə-'gā-tə-'rɪ-\ n, -tə-'rɪ-\ adj (1503) 1: detracting from
 the character or standing of something — often used with *to*, *of*, or
from 2: expressive of a low opinion : DISPARAGING (~ remarks) —
der-o-ga-to-ri-ly \dər-'ə-'gā-tə-'rɪ-\ adv
der-rick \dər-'ɪk\ n [obs. *derick* hangman, gallows,
 fr. *derick*, name of 17th cent. Eng. hangman] (ca.
 1752) 1: a hoisting apparatus employing a tackle
 rigged at the end of a beam 2: a framework or
 tower over a deep drill hole (as of an oil well) for
 supporting boring tackle or for hoisting and lower-
 ing
der-ri-ere or **der-ri-ère** \dər-'ɪ-er\ n [F *derrière*, fr.
 OF *derrier* back part, rear, fr. *derier*, adv., behind,
 fr. LL *deretro*, fr. L *de* from + *retro* back] (1774)
 : BUTTOCKS
der-ring-do \dər-'ɪŋ-'dū\ n [ME *dorring don* daring
 to do, fr. *dorring* (gerund of *dorren* to dare) + *don*
 to do] (1579): daring action : DARING (deeds of ~)
der-rin-ger \dər-'ɪŋ-'jər\ n [Henry Deringer †1869
 Am. inventor] (1853) : a short-barreled pocket
 pistol
der-ri-s \dər-'ɪs\ n [NL, genus name, fr. Gk, skin, fr.
derein to skin — more at **TEAR**] (1919) 1: a prepa-
 ration of derris roots and stems used as an insecti-
 cide 2: any of a large genus (*Derris*) of legumi-
 nous tropical Old World shrubs and woody vines
 including sources of poisons and esp. commercial sources of rotenone
der-vish \dər-'vɪʃ\ n [Turk *dervis*, lit., beggar, fr. Per *darrish*] (1585)
 1: a member of a Muslim religious order noted for devotional exer-
 cises (as bodily movements leading to a trance) 2: one that whirls or
 dances with or as if with the abandonment of a dervish
des- prefix [F *des-*, fr. OF *des-* — more at **DE**]: DE-6 — esp. before
 vowels (desoxy)
DES \dɛ-'(j)ɛs\ n (1971): DIETHYLSTILBESTROL
de-sa-cral-ize \dɛ-'sə-'krə-'lɪz-, 'sə-'vɪ-'lɪz-ed; -lɪz-ing\ (1911): to
 divest of sacred qualities — **de-sa-cral-iza-tion** \dɛ-'sə-'krə-'lɪ-'zā-
 shən-, 'sə-'vɪ-\ n
de-sa-li-nate \dɛ-'sə-'lɪ-'nāt\ also 'sə-'vɪ-'nāt-ed; -nāt-ing\ (1949)
 : DESALT — **de-sa-li-na-tion** \dɛ-'sə-'lɪ-'nā-'tʃən\ also 'sə-'vɪ-\ n — **de-**
sa-li-na-tor \dɛ-'sə-'lɪ-'nā-tər\ also 'sə-'vɪ-\ n
de-sa-li-nize \dɛ-'sə-'lɪ-'nɪz\ also 'sə-'vɪ-'nɪz-ed; -nɪz-ing\ (1963)
 : DESALT — **de-sa-li-ni-za-tion** \dɛ-'sə-'lɪ-'nɪ-'zā-shən\ also 'sə-'vɪ-\ n
de-salt \dɛ-'sɔlt\ vt (ca. 1904): to remove salt from — **de-salt-er** n
des-cant \des-'kənt\ n [ME *descant*, fr. ONF & ML; ONF *descant*, fr.
 ML *discantus*, fr. L *dis-* + *cantus* song — more at **CHANT**] (14c) 1 a
 : a melody or counterpoint sung above the plainsong of the tenor b
 : the art of composing or improvising contrapuntal part music; also
 : the music so composed or improvised c : SOPRANO. TREBLE d : a

superimposed counterpoint to a simple melody sung typically by some
 or all of the sopranos 2: discourse or comment on a theme
des-cant \des-'kənt, des-', dis-'vɪ\ (15c) 1: to sing or play a descant;
 broadly: SING 2: COMMENT, DISCOURSE
de-scend \di-'send, dɛ-'\ vb [ME, fr. OF *descendre*, fr. L *descendere*, fr.
de- + *scandere* to climb — more at **SCAM**] vi (13c) 1: to pass from a
 higher place or level to a lower one (~ed from the platform) 2: to
 pass in discussion from what is logically prior or more comprehensive
 3 a: to come down from a stock or source : DERIVE (~s from an old
 merchant family) b: to pass by inheritance (a desk that has ~ed in
 the family) c: to pass by transmission (songs ~ed from old ballads)
 4: to incline, lead, or extend downward (the road ~s to the river) 5
 a: to swoop or pounce down (as in a sudden attack) b: to appear
 suddenly and often disconcertingly as if from above (reporters ~ed on
 the candidate) 6: to proceed in a sequence or gradation from higher
 to lower or from more remote to nearer or more recent 7 a: to lower
 oneself in status or dignity : STOOP b: to worsen and sink in condition
 or estimation ~ vt 1: to pass, move, or climb down or down along
 2: to extend down along — **de-scend-ible** \dɛ-'sen-də-bəl\ adj
de-scen-dant or **de-scen-dent** \di-'sen-dənt\ adj [MF & L; MF *de-*
scendant, fr. L *descendens*, *descendens*, prp. of *descendere*] (1572) 1
 : moving or directed downward 2: proceeding from an ancestor or
 source
descendant or **descendent** n [F & L; F *descendant*, fr. LL *desca-*
dent, *descendens*, fr. L] (1600) 1: one descended from another or
 from a common stock 2: one deriving directly from a precursor or
 prototype
de-scen-der \di-'sen-dər, 'dɛ-'\ n (1802): the part of a lowercase letter
 (as p) that separates a main body of the letter; also : a letter
 that has such a part
de-scen-sion \di-'sen-ʃən\ n (15c) archaic : DESCENT 2
de-scent \di-'sent\ n [ME, fr. MF *descente*, fr. OF *descendere*] (14c) 1
 a: derivation from an ancestor : BIRTH LINEAGE (of French ~) b
 : transmission or devolution of an estate by inheritance usu. in the
 descending line c: the fact or process of originating from an ancestral
 stock 4: the shaping or development in nature and character by
 transmission from a source : DERIVATION 2: the act or process of
 descending 3: a step downward in a scale of gradation; specif: one
 generation in an ancestral line or genealogical scale 4 a: an inclina-
 tion downward : SLOPE b: a descending way (as a downgrade or stair-
 way) c obs: the lowest part 5 a: ATTACK, INVASION b: a sudden
 disconcerting appearance (as for a visit) 6: a downward step (as in
 station or value) : DECLINE (~ of the family to actual poverty)
de-scribe \di-'skrib\ vt **de-scribed**; **de-scrib-ing** [ME, fr. L *describere*,
fr. de- + *scribere* to write — more at **SCRIBE**] (15c) 1: to represent or
 give an account of in words (~ a picture) 2: to represent by a figure,
 model, or picture : DELINEATE 3 obs: DISTRIBUTE 4: to trace or tra-
 verse the outline of (~ a circle) 5 archaic : OBSERVE, PERCEIVE —
de-scrib-able \-skri-'bə-bəl\ adj — **de-scrib-er** n
de-scrip-tion \di-'skrip-ʃən\ n [ME *descriptioun*, fr. MF & L; MF
descriptio, fr. L *descriptio*, *descriptio*, fr. *describere*] (14c) 1 a: an
 act of describing; specif: discourse intended to give a mental image of
 something experienced b: a descriptive statement or account 2
 : kind or character esp. as determined by salient features (opposed to
 any tax of so radical a ~) syn see **TYPE**
de-scrip-tive \di-'skrip-tiv\ adj (1751) 1: serving to describe (a ~
 account) 2 a: referring to, constituting, or grounded in matters of
 observation or experience (the ~ basis of science) b: factually
 grounded or informative rather than normative, prescriptive, or emo-
 tive (~ cultural studies) 3 of a modifier a: expressing the quality,
 kind, or condition of what is denoted by the modified term (hot in "hot
 water" is a ~ adjective) b: NONRESTRICTIVE 4: of, relating to, or
 dealing with the structure of a language at a particular time usu. with
 exclusion of historical and comparative data (~ linguistics) — **de-**
scrip-tive-ly adv — **de-scrip-tive-ness** n
de-scrip-tor \di-'skrip-tər\ n (1933): something (as a word or charac-
 teristic feature) that serves to describe or identify; esp: a word or
 phrase (as an index term) used to identify an item (as a subject or docu-
 ment) in an information retrieval system
de-scry \di-'skri\ vt **de-scried**; **de-scry-ing** [ME *descrien*, fr. MF
descrier to proclaim, decry] (14c) 1 a: to catch sight of b: to find
 out : DISCOVER 2 obs: to make known : REVEAL
des-cry n (1605) obs: discovery or view from afar
Des-de-mo-na \dez-'dɛ-'mɒ-nə\ n: the wife of Othello in Shaka-
 speare's *Othello*
des-e-crate \dɛ-'si-'krāt\ vt **-crat-ed**; **-crat-ing** [de- + *-secrate* (as in
consecrate)] (1677) 1: to violate the sanctity of : PROFANE 2: to
 treat disrespectfully, irreverently, or outrageously (the kind of shore
 development... that has *desecrated* so many waterfronts — John Fi-
 scher) — **des-e-crat-er** or **des-e-cra-tor** \-krā-tər\ n
des-e-cra-tion \dɛ-'si-'krā-'tʃən\ n (ca. 1717): an act or instance of
 desecrating : the state of being desecrated
de-seg-re-gate \dɛ-'se-'grɪ-'gāt\ vt (1952): to eliminate segregation
 in; specif: to free of any law, provision, or practice requiring isolation
 of the members of a particular race in separate units ~ vt: to become
 desegregated
de-seg-re-ga-tion \dɛ-'se-'grɪ-'gā-'tʃən\ n (1951) 1: the action or an
 instance of desegregating 2: the state of being desegregated
de-se-lect \dɛ-'sɛ-'lekt\ vt (1965): DISMISS, REJECT
de-sen-si-tize \dɛ-'sen(t)-sə-'tɪz\ vt (1898) 1: to make (a sensitized
 or hypersensitive individual) insensitive or nonreactive to a sensitizing
 agent 2: to make emotionally insensitive or callous; specif: to extin-
 guish an emotional response (as of fear, anxiety, or guilt) to stimuli that
 formerly induced it — **de-sen-si-ti-za-tion** \dɛ-'sen(t)-sə-'tɪ-'zā-
 shən\ n — **de-sen-si-tiz-er** \dɛ-'sen-sə-'tɪ-'zər\ n
des-ert \dɛ-'zɜrt\ n [ME, fr. OF, fr. LL *desertum*, fr. L, neut. of *deser-*
tus, pp. of *deserere* to desert, fr. *de-* + *serere* to join together — more at
SERIES] (13c) 1 a: arid barren land; esp: a tract incapable of sup-
 porting any considerable population without an artificial water supply
 b: an area of water apparently devoid of life 2 archaic: a wild unin-
 habited and uncultivated tract 3: a desolate or forbidding area (lost
 in a ~ of doubt) — **de-ser-tic** \dɛ-'zɜrt-ɪk\ adj



derrick 2

746 miticidal • mobile

mi-ti-cide \mi-ti-sid/ *n* [mite] (ca. 1946): an agent used to kill mites
mi-ti-cid-al \mi-ti-sid-əl/ *adj*
mit-i-gate \mi-ti-gāt/ *v* -gat-ed; -gat-ing [ME, fr. *L. mitigatus*, pp. of *mitigare* to soften, fr. *mitis* soft + *-igare* (akin to *L. agere* to drive); akin to *OFr. moith* soft — more at **AGENT**] (15c) 1: to cause to become less harsh or hostile; **MOLLIFY** (aggressiveness may be *mitigated* or ... channeled — Ashley Montagu) 2: to make less severe or painful
ALLEVIATE *b*; **EXTENUATE** *syn* see **RELIEVE** — **mit-i-ga-tion** \mi-ti-gā-shən/ *n* — **mit-i-ga-tive** \mi-ti-gā-tiv/ *adj* — **mit-i-ga-tor** \-gā-tōr/ *n* — **mit-i-ga-to-ry** \mi-ti-gā-tōr-ē, -tōr-ē/ *adj*
usage *Mitigate* is sometimes used as an intransitive (followed by *against*) where *militate* might be expected. Even though Faulkner used it (some intangible and invisible social force that *mitigates* against him — William Faulkner) and one critic thinks it should be called an American idiom, it is usu. considered a mistake.
mi-to-chon-dri-on \mi-tō-kān-drē-ən/ *n*, *pl* -dri-ə \-drē-ə/ [NL, fr. *Gk. mitos* thread + *chondrion*, dim. of *chondros* grain] (1901): any of various round or long cellular organelles of most eukaryotes that are found outside the nucleus, produce energy for the cell through cellular respiration, and are rich in fats, proteins, and enzymes — see **CELL** illustration — **mi-to-chon-dri-al** \-drē-əl/ *adj*
mi-to-sis \mi-tō-jōs/ *n* [mitosis + *-gen*] (ca. 1951): a substance that induces mitosis — **mi-to-sis-ic** \mi-tō-jē-nik/ *adj* — **mi-to-sis-ic-ity** \-jē-ni-sē-tē/ *n*
mi-to-my-cin \mi-tō-mi-ān/ *n* [ISV *mito-* (prob. fr. NL *mitosis*) + *-mycin*] (1956): a complex of antibiotic substances which is produced by a Japanese streptomycete (*Streptomyces caespitosus*) and one form of which acts directly on DNA and shows promise as an anticancer agent
mi-to-sis \mi-tō-sis/ *n*, *pl* -to-ses \-sez/ [NL, fr. *Gk. mitos* thread] (1887) 1: a process that takes place in the nucleus of a dividing cell, involves typically a series of steps consisting of prophase, metaphase, anaphase, and telophase, and results in the formation of two new nuclei each having the same number of chromosomes as the parent nucleus — compare **MEIOSIS** 2: cell division in which mitosis occurs — **mi-to-sis-ic** \-tō-sis-ik/ *adj* — **mi-to-sis-cal-ly** \-tō-sis-kəl-ē/ *adv*
mit-ral \mi-trəl/ *adj* (1610) 1: resembling a miter 2: of, relating to, being, or adjoining a mitral valve or orifice
mitral valve *n* (1705): **INCUSPID VALVE**
mit-ter-wort *also* **mit-ter-wort** \mi-tōr-wōrt, -wōrt/ *n* (ca. 1818): any of a genus (*Mitella*) of rhizomatous perennial herbs of the saxifrage family that bear a capsule resembling a bishop's miter
mitt \mit/ *n* [short for *mitten*] (1765) 1: a woman's glove that leaves the fingers uncovered *b*; **MITTEN** 1 *c*: a baseball catcher's or first baseman's glove made in the style of a mitten 2 *slang*: **HAND**
mit-ten \mi-tēn/ *n* [ME *mitain*, fr. MF *mitaine*, fr. OF, fr. *mita* mitten] (14c) 1: a covering for the hand and wrist having a separate section for the thumb only 2: **MITT** 1a
mit-ti-ment \mi-ti-mēt/ *n* [L. *mittere* to send] (ca. 1591): a warrant of commitment to prison
mitz-vah \mitz-və/ *n*, *pl* mitz-vōth \-vōt, -vōth, -vōs/ or mitz-vahs [Heb *mitzvah*] (1650) 1: a commandment of the Jewish law 2: a meritorious or charitable act
mix \miks/ *vb* [ME, back-formation fr. *mixte* mixed, fr. MF, fr. *L. mixtus*, pp. of *miscere* to mix; akin to *Gk. mignynai* to mix] *v* (15c) 1: to combine or blend into one mass (2): to combine with another *b*: to bring into close association (~ business with pleasure) 2: to form by mixing components (~ a drink at the bar) *b*: to produce (a sound recording) by electronically combining or adjusting sounds from more than one source 3: **CONFUSE** — often used with *up* (~es things up in his eagerness to speak out — Irving Howe) ~ *v* 1 *a*: to become mixed *b*: to be capable of mixing 2: to enter into relations: **ASSOCIATE** 3: **CROSSBREED** 4: to become involved: **PARTICIPATE** (decided not to ~ in politics) — **mix-able** \miks-ə-bəl/ *adj* — **mix it up**: to engage in a fight, contest, or dispute
syn **MIX, MINGLE, COMMINGLE, BLEND, MERGE, COALESCE, AMALGAMATE, FUSE** mean to combine into a more or less uniform whole. **MIX** may or may not imply loss of each element's identity (*mix the salad greens*) (*mix a drink*). **MINGLE** usu. suggests that the elements are still somewhat distinguishable or separately active (fear *mingled* with anticipation in my mind). **COMMINGLE** implies a closer or more thorough mingling (a sense of duty *commingled* with a fierce pride drove her). **BLEND** implies that the elements as such disappear in the resulting mixture (*blended* several teas to create a balanced flavor). **MERGE** suggests a combining in which one or more elements are lost in the whole (in his mind reality and fantasy *merged*). **COALESCE** implies an affinity in the merging elements and usu. a resulting organic unity (telling details that *coalesce* into a striking portrait). **AMALGAMATE** implies the forming of a close union without complete loss of individual identities (refugees who were readily *amalgamated* into the community). **FUSE** stresses oneness and indissolubility of the resulting product (a building in which modernism and classicism are *fused*).
mix *n* (ca. 1586) 1: an act or process of mixing 2: a product of mixing; as *a*: a commercially prepared mixture of food ingredients (a cake ~) *b*: a combination of different kinds (the right ~ of jobs, people and amenities — *London Times*) 3: **MIXER** 2b
mixed \mikt/ *adj* [ME *mixte*] (15c) 1: combining characteristics of more than one kind; *specif*: combining features of two or more systems of government (a ~ constitution) 2: made up of or involving individuals or items of more than one kind; as *a*: made up of or involving persons differing in race, national origin, religion, or class *b*: made up of or involving individuals of both sexes (~ company) (a ~ school) 3: including or accompanied by inconsistent, incompatible, or contrary elements (~ emotions) (received ~ reviews) (a ~ blessing) 4: deriving from two or more races or breeds (a stallion of ~ blood)
mixed alphabet *n* (1931): an alphabet (as in a cryptographic system) that has been rearranged or disordered systematically or randomly
mixed bag *n* (1926): a miscellaneous collection: **ASSORTMENT**
mixed bud *n* (1900): a bud that produces a branch and leaves as well as flowers
mixed drink *n* (1943): an alcoholic beverage prepared from two or more ingredients
mixed farming *n* (1872): the growing of food or cash crops, feed

mixed grill *n* (1913): meats (as lamb chop, kidney, and bacon) and vegetables broiled together and served on one plate
mixed marriage *n* (1829): a marriage between persons of different races or religions
mixed-media *adj* (1962): **MULTIMEDIA**
mixed metaphor *n* (1800): a figure of speech combining inconsistent or incongruous metaphors
mixed nerve *n* (1878): a nerve containing both sensory and motor fibers
mixed number *n* (1542): a number (as 5²/₃) composed of an integer and a fraction
mixed-up \miks-t'əp/ *adj* (1862): marked by bewilderment, perplexity, or disorder: **CONFUSED**
mix-er \miks-ōr/ *n* (ca. 1611) 1: one that mixes; as *a* (1): one whose work is mixing the ingredients of a product (2): one who balances and controls the dialogue, music, and sound effects to be recorded for or with a motion picture or television *b*: a container, device, or machine for mixing *c*: a game, stunt, or dance used at a get-together to give members of the group an opportunity to meet one another in a friendly and informal atmosphere 2: one that mixes with others; as *a*: a person considered in regard to casual sociability (was shy and a poor ~) *b*: a nonalcoholic beverage (as ginger ale) used in a mixed drink
mix-ol-ogy \miks-ō-lō-jē/ *n* (1948): the art or skill of preparing mixed drinks — **mix-ol-og-ist** \-jist/ *n*
Mix-tec \mēs-tek, mī-, mēsh-, mish-/ *n*, *pl* Mixtecs or Mixtecos [AmerSp *mixteco*] (1850) 1: the language of the Mixtec people 2: a member of an American Indian people of the state of Oaxaca, Mexico
mix-ture \miks-čər/ *n* [ME, fr. MF, fr. OF *mixture*, fr. *L. mixtura*, fr. *mixtus*] (15c) 1: *n*: the act, the process, or an instance of mixing *b* (1): the state of being mixed (2): the relative proportions of constituents; *esp*: the proportion of fuel to air produced in a carburetor 2: a product of mixing: **COMBINATION**; as *a*: a portion of matter consisting of two or more components in varying proportions that retain their own properties *b*: a fabric woven of variously colored threads *c*: a combination of several different kinds
mix-up \miks-əp/ *n* (1841) 1: a state or instance of confusion 2: **MIXTURE** 3: **CONFLICT, FIGHT**
mis-sal *also* **mis-sal** \mi-səl/ *n* [ME *meson*, fr. MF *misaine* (foremast sail, prob. ultim. fr. *L. medianus* of the middle — more at **MEDIAN**)] (15c) 1: a fore-and-aft sail set on the mizzenmast 2: **MIZZENMAST**
mis-sal *also* **mis-sal** \mi-səl/ *n* (15c): of or relating to the mizzenmast
mis-sal-mast \-māst, -mōst/ *n* (15c): the mast aft or next aft of the mainmast in a ship
mis-sile \mi-zəl/ *v* **mis-siled**; **mis-siling** \mi-zəl-ŋ, 'miz-ŋŋ/ [ME *misselen*; akin to Flem *mizzelen* to drizzle, MD *mist* (log, mist)] (15c): to rain in very fine drops: **DRIZZLE** — **mizzle** *n* — **mis-sily** \mi-zəl-ē/ *adv*
mis-sile *v* **mis-siled**; **mis-siling** \mi-zəl-ŋ, 'miz-ŋŋ/ [origin unknown] (1781) chiefly *Brit*: to depart suddenly
mis-sion-ic \mi-mā-nik/ *adj* [Gk *mnēmonikos*, fr. *mnēmōn* mindful, fr. *mnēneskesthai* to remember — more at **MIND**] (1753) 1: assisting or intended to assist memory; *also*: of or relating to mnemonics 2: of or relating to memory — **mis-sion-ic-ally** \mi-nik-ē-lē/ *adv*
mnemonic *n* (1858): a mnemonic device or code
mis-sion-ic \mi-mā-nik/ *n*, *pl* *but sing in constr* (ca. 1721): a technique of improving the memory
Mis-sion-y-ne \mi-mā-ē-n-ē, -z'n-/ *n* [L, fr. *Gk. Mnēmatyne*]: the Greek goddess of memory and mother of the Muses by Zeus
-mo *n* *suflx* [duodecimo] — after numerals or their names to indicate the number of leaves made by folding a sheet of paper (sixteenmo) (16mo)
moa \mō-/ *n* [Maori] (1842): any of various usu. very large extinct flightless birds of New Zealand of a ratite family (Dinornithidae) including one (*Dinornis giganteus*) about 12 feet (3.7 meters) in height
Mo-ab-ite \mō-ə-bit/ *n* [ME, fr. LL *Moabita*, *Moabites*, fr. *Gk. Moabitai*, fr. *Mōab* Moab, ancient kingdom in Syria] (14c): a member of an ancient Semitic people related to the Hebrews — **Moabite** or **Mo-ab-it-ish** \-bē-tish/ *adj*
moan \mōn/ *n* [ME *moan*, fr. (assumed) OE *mān*] (13c) 1: **LAMENTATION, COMPLAINT** 2: a low prolonged sound of pain or of grief
moan *v* (14c) 1: to bewail audibly: **LAMENT** 2: to utter with moans ~ *w* 1: **LAMENT, COMPLAIN** 2: to make a moan: **GRAN** *b*: to emit a sound resembling a moan (the wind ~ed in the trees) — **moan-er** \mō-n-ər/ *n*
moat \mōt/ *n* [ME *mote*, prob. fr. MF *motte* hill, mound] (14c) 1: a deep and wide trench around the rampart of a fortified place (as a castle) that is usu. filled with water 2: a channel resembling a moat (as about a seamount or for confinement of animals in a zoo) — **moat-ed** \mō-təd/ *adj* — **moat-like** \-lik/ *adj*
mob \mɒb/ *n* [L *mobile vulgus* vacillating crowd] (1688) 1: a large or disorderly crowd; *esp*: one bent on riotous or destructive action 2: the lower classes of a community: **MASSES, RABBLE** 3: chiefly *Austral*: a flock, drove, or herd of animals 4: a criminal set; **GANG**; *esp. often cap*: **Mafia** 1 5: chiefly *Brit*: a group of people: **CROWD** *syn* see **CROWD** — **mob-bish** \mɒb-ɪʃ/ *adj*
mob *v* **mobbed**; **mob-bing** (1709) 1: to crowd about and attack or annoy (*mobbed* by autograph hunters) (a crowd *mobbed* by songbirds) 2: to crowd into or around (customers ~ the stores on sale days)
mob-cap \mɒb-kæp/ *n* [mob woman's cap + cap] (1795): a woman's fancy indoor cap made with a high full crown and often tied under the chin
mo-be pearl or **mo-bé pearl** \mō-bā-, mō-ā/ *n*, *often cap M* [origin unknown] (1955): **MARE**
mo-bile \mō-bəl, -bil/ *adj* [ME *mobyll*, fr. MF *mobile*, fr. *L. mobilis*, fr. *movere* to move] (15c) 1: capable of moving or being moved: **MOVABLE** (a ~ missile launcher) 2: *a*: changeable in appearance, mood, or purpose (~ face) *b*: **ADAPTABLE, VERSATILE** 3: **MIGRATORY** 4: characterized by the mixing of social groups *b*: having the opportunity for or undergoing a shift in status within the hierarchical social levels of a society (socially ~ workers) 5: marked by the use of vehicles for transportation (~ warfare) 6: of or relating to mobility — **mo-bil-ly** \-bəl-ē/ *adv*

356 druggist • drystone

drug-gist \ˈdrʌ-gɪst\ *n* (1611): one who sells or dispenses drugs and medicines: **a**: PHARMACIST **b**: one who owns or manages a drug-store

drug-mak-er \ˈdrʌg-māk-ər\ *n* (1964): one that manufactures pharmaceuticals

drug-store \-ˈstɔr, -ˈstɔr\ *n* (1810): a retail store where medicines and miscellaneous articles are sold: PHARMACY

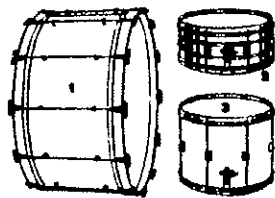
drugstore cowboy *n* (1925) 1: one who wears cowboy clothes but has had no experience as a cowboy 2: one who loafs on street corners and in drugstores

druid \ˈdruɪd\ *n*, *often cap* [L. *druides*, *druidae*, pl., fr. Gaulish *druides*; akin to OIr. *druid*, and perh. to OE *treow tree*] (1563): one of an ancient Celtic priesthood appearing in Irish and Welsh sagas and Christian legends as magicians and wizards — **druid-ic** \ˈdruɪd-ɪk\ or **druid-ical** \-dɪ-kəl\ *adj*, *often cap*

druidism \ˈdruɪd-ɪz-əm\ *n*, *often cap* (1715): the system of religion, philosophy, and instruction of the druids

drum \ˈdrʌm\ *n* (prob. fr. D. *trom*; akin to MHG. *tromme* drum) (1539)

1: a percussion instrument consisting of a hollow shell or cylinder with a drumhead stretched over one or both ends that is beaten with the hands or with some implement (as a stick or wire brush) 2: TYMPANIC MEMBRANE 3: the sound of a drum; *also*: a sound similar to that of a drum 4: any of various bony fishes (family Sciaenidae) that make a drumming noise 5: something resembling a drum in shape: **a**: a cylindrical machine or mechanical device or part **b**: a cylindrical container; *specif*: a large usu. metal container for liquids (a 55-gallon ~) **c**: a disk-shaped magazine for an automatic weapon — **drum-like** \-lɪk\ *adj*



drum 1: 1 bass, 2 snare (orchestra), 3 snare (parade)

drum *vb* **drummed**; **drum-ming** *w* (1583) 1: to make a succession of strokes or vibrations that produce sounds like drumbeats 2: to beat a drum 3: to throb or sound rhythmically 4: to stir up interest: **SOLICIT** ~ *vt* 1: to summon or enlist by or as if by beating a drum (*were drummed into service*) 2: to dismiss ignominiously: **EXPULSION** — *usu.* used with *out* 3: to drive or force by steady effort or reiteration (*drummed the speech into her head*) 4: **a**: to strike or tap repeatedly **b**: to produce (rhythmic sounds) by such action

drum *n* [ScGael. *drum* back, ridge, fr. OIr. *drumim*] (1725) 1 *chiefly* Scot: a long narrow hill or ridge 2: **DRUMLIN**

drum-beat \ˈdrʌm-bet\ *n* (1855) 1: a stroke on a drum or its sound; *also*: a series of such strokes 2: vociferous advocacy of a cause 3: **DRUMFIRE** 2 — **drum-beat-er** \-bē-tər\ *n* — **drum-beat-ing** \-ɪŋ\ *n* **drum brake** *n* (1950): a brake that operates by the friction of *usu.* a pair of shoes pressing against the inner surface of the cylinder of a rotating drum — compare **DISC BRAKE**

drum-fire \ˈdrʌm-faɪr\ *n* (1916) 1: artillery firing so continuous as to sound like a drumroll 2: something suggestive of drumfire in intensity: **BARRAGE** (a ~ of publicity)

drum-head \-hed\ *n* (1622) 1: the material (as skin or plastic) stretched over one or both ends of a drum 2: the top of a capstan that is pierced with sockets for the levers used in turning it

drumhead court-martial *n* [fr. the use of a drumhead as a table] (1835): a summary court-martial that tries offenses on the battlefield

drum-lin \ˈdrʌm-lɪn\ *n* [fr. *drum* back, ridge (fr. OIr. *drumim*) + E. *lin* (alter. of *ling*)] (ca. 1833): an elongate or oval hill of glacial drift

drum major *n* (1844): the leader of a marching band

drum major-ette \ˈdrʌm-mā-jər-et\ *n* (1938) 1: a girl or woman who leads a marching band 2: a baton twirler who accompanies a marching band

drum-mor \ˈdrʌ-mɔr\ *n* (1580) 1 **a**: one that plays a drum **b** — used figuratively in expressions denoting an unconventional way of behaving or thinking (*march to a different ~*) 2: **TRAVELING SALESMAN**

drum-roll \ˈdrʌm-rɔl\ *n* (1887): a roll on a drum or its sound

drum-stick \-stɪk\ *n* (1589) 1: a stick for beating a drum 2: the segment of a fowl's leg between the thigh and tarsus

drum up *vt* (1830) 1: to bring about by persistent effort (*drum up some business*) 2: **INVENT, ORIGINATE** (*drum up a new method*)

drunk *past part* of **DRINK**

drunk \ˈdrʌŋk\ *adj* [ME. *drunka*, alter. of *drunken*] (14c) 1 **a**: having the faculties impaired by alcohol **b**: having a level of alcohol in the blood that exceeds a maximum prescribed by law (legally ~) 2: dominated by an intense feeling (~ with rage) 3: of, relating to, or caused by intoxication: **DRUNKEN**

drunk *n* (1779) 1: a period of drinking to intoxication or of being intoxicated (a 2-day ~) 2: one who is drunk; *esp.*: **DRUNKARD**

drunk-ard \ˈdrʌŋk-ərd\ *n* (15c): one who is habitually drunk

drunk-en \ˈdrʌŋ-kən\ *adj* [ME, fr. OE. *druncen*, fr. pp. of *drincan* to drink] (bef. 12c) 1: **DRUNK** 1 (a ~ driver) 2 *obs.*: saturated with liquid 3 **a**: given to habitual excessive use of alcohol **b**: of, relating to, or characterized by intoxication (they come from ... broken homes, ~ homes — P. B. Gilliam) **c**: resulting from or as if from intoxication (a ~ brawl) 4: unsteady or lurching as if from alcoholic intoxication — **drunk-en-ly** *adv* — **drunk-en-ness** \-kən-nəs\ *n*

drunk tank *n* (1947): a large detention cell for arrested drunks

drupa-ceous \ˈdru-pə-ʃeəs\ *adj* (1822) 1: of or relating to a drupe 2: bearing drupes

drupe \ˈdru-p\ *n* [NL. *drupa*, fr. L. *overripe olive*, fr. Gk. *dryppa* olive] (ca. 1753): a one-seeded indehiscent fruit having a hard bony endocarp, a fleshy mesocarp, and a thin exocarp that is flexible (as in the cherry) or dry and almost leathery (as in the almond)

drupe-let \ˈdru-pi-let\ *n* (1880): a small drupe; *specif*: one of the individual parts of an aggregate fruit (as the raspberry)

druth-er \ˈdru-θər\ *n* pl [Druther, alter. of *would rather*] (1875) *dial*: free choice: **PREFERENCE** — used *esp.* in the phrase *if one had one's druthers*

Druze or Druse \ˈdru-z\ *n*, pl **Druze** or **Druzes** or **Druses** or **Druses**

often attrib [Ar. *Darūz*, pl., fr. Muhammad ibn-Ismāʿil al-Darazīyī †1019 Muslim religious leader] (1786): a member of a religious sect originating among Muslims and centered in the mountains of Lebanon and Syria

dry \dri\ *adj* **dri-er** *also* **dry-er** \ˈdri-ər\; **dri-est** *also* **dry-est** \ˈdri-ɛst\ [ME, fr. OE. *drȳge*; akin to OHG. *trukan* dry, OE. *drāhnan* to drain] (bef. 12c) 1 **a**: free or relatively free from a liquid and *esp.* water **b**: not being in or under water (~ land) **c**: lacking precipitation or humidity (~ climate) 2 **a**: characterized by exhaustion of a supply of liquid (a ~ well) **b**: devoid of running water (a ~ ravine) **c**: devoid of natural moisture (my throat was ~) **d**: no longer sticky or damp (the paint is ~) **e**: not giving milk (a ~ cow) **f**: lacking freshness: **STALE** **g**: **ANHYDROUS** 3 **a**: marked by the absence or scantiness of secretions (a ~ cough) **b**: not shedding or accompanied by tears (a ~ sob) 4 *obs.*: involving no bloodshed or drowning (I would fain die a ~ death — Shak.) 5 **a**: marked by the absence of alcoholic beverages (a ~ party) **b**: prohibiting the manufacture or distribution of alcoholic beverages 6: served or eaten without butter or margarine (~ toast) 7 **a**: lacking sweetness: **SEC** (~ champagne) **b**: having all or most sugar fermented to alcohol (a ~ wine) (~ beer) 8 **a**: solid as opposed to liquid (~ groceries) **b**: reduced to powder or flakes: **DEHYDRATED** (~ milk) 9: functioning without lubrication (a ~ clutch) 10 *of natural gas*: containing no recoverable hydrocarbon (as gasoline) 11: requiring no liquid in preparation or operation (a ~ photocopying process) 12 **a**: not showing or communicating warmth, enthusiasm, or tender feeling: **SEVERE** (a ~ style of painting) **b**: **WEARISOME UNINTERESTING** (~ passages of description) **c**: lacking embellishment: **PLAIN** (the ~ facts) 13 **a**: not yielding what is expected or desired: **UNPRODUCTIVE** **b**: having no personal bias or emotional concern (the ~ light of reason) **c**: **RESERVED, ALOOF** 14: marked by matter-of-fact, ironic, or terse manner of expression (~ wit) 15: lacking smooth sound qualities (a ~ rasping voice) 16: being a dry run (a ~ rehearsal) — **dry-ish** \ˈdri-ɪsh\ *adj* — **dry-ly** *adv* — **dry-ness** *n*

dry *vb* **dried**; **dry-ing** *vt* (bef. 12c): to make dry ~ *w*: to become dry — **dry-able** \ˈdri-ə-bəl\ *adj*

dry *n*, pl **drys** (13c) 1: the condition of being dry: **DRYNESS** 2: something dry; *esp.*: a dry place 3: **PROHIBITIONIST**

dry-ad \ˈdri-əd, -əd\ *n* [L. *dryad*, *dryas*, fr. Gk, fr. *drys* tree — more at **TREE**] (14c): **WOOD NYMPH**

dry-as-dust \ˈdri-ɔz-dʌst\ *adj* (ca. 1872): **SORING** — **dry-as-dust** *n*

dry cell *n* (1893): a voltaic cell whose contents are not spillable — called *also* **dry battery**

dry-clean \ˈdri-klen\ *w* (1817): to subject to dry cleaning ~ *w*: to undergo dry cleaning — **dry-clean-able** \-klɪ-nə-bəl\ *adj*

dry cleaner *n* (1897): one whose business is dry cleaning

dry cleaning *n* (1897) 1: the cleansing of fabrics with substantially nonaqueous organic solvents 2: something that is dry-cleaned

dry-dock \ˈdri-dɔk\ *vt* (1884): to place in a dry dock

dry dock *n* (ca. 1627): a dock that can be kept dry for use during the construction or repairing of ships

dry-er *war* of **DRIER**

dry-eyed \ˈdri-ɪd\ *adj* (1667) 1: not moved to tears or to empathy 2: marked by the absence of sentimentalism or romanticism

dry farming *n* (1878): farming on nonirrigated land with little rainfall that relies on moisture-conserving tillage and drought-resistant crops — **dry farm** *n* — **dry-farm** *w* — **dry farmer** *n*

dry fly *n* (1846): an artificial angling fly designed to float

Dry-gas \ˈdri-gas\ *trademark* — used for fuel-line antifreeze for motor vehicles

dry goods \ˈdri-gʊdz\ *n* pl (1657): textiles, ready-to-wear clothing, and notions as distinguished *esp.* from hardware and groceries

dry hole *n* (1883): a well (as for gas or oil) that proves unproductive

dry ice *n* (1925): solidified carbon dioxide

drying oil *n* (ca. 1865): an oil (as linseed oil) that changes readily to a hard tough elastic substance when exposed in a thin film to air

dry-land \ˈdri-land\ *adj* (1893): of, relating to, or being a relatively arid region (a ~ wheat state); *also*: of, adapted to, practicing, or being agricultural methods (as dry farming) suited to such a region

dry-lot \ˈdri-lɔt\ *n* (1924): an enclosure of limited size *usu.* bare of vegetation and used for fattening livestock

dry measure *n* (1688): a series of units of capacity for dry commodities — see **METRIC SYSTEM** table, **WEIGHT** table

dry mop *n* (1933): a long-handled mop for dusting floors

dry-nurse *w* (1581) 1: to act as dry nurse to 2: to give unnecessary supervision to

dry nurse *n* (1598): a nurse who takes care of but does not breast-feed another woman's baby

dryo-pitheciine \ˈdri-ɔ-pi-the-sim\ *n* [ultim. fr. Gk. *drys* tree + *pithekos* ape] (1948): any of a subfamily (Dryopithecinae) of Miocene and Pliocene Old World anthropoid apes sometimes regarded as ancestors of both man and modern anthropoids — **dryopithecine** *adj*

dry out *w* (1892): to undergo an extended period of withdrawal from alcohol or drug use *esp.* at a special clinic

dry-point \ˈdri-pɔɪnt\ *n* (1883): an engraving made with a steel or jeweled point directly into the metal plate without the use of acid as in etching; *also*: a print made from such an engraving

dry-rot *w* (1870): to affect with dry rot ~ *vi*: to become affected with dry rot

dry rot *n* (1795) 1 **a**: a decay of seasoned timber caused by fungi that consume the cellulose of wood leaving a soft skeleton which is readily reduced to powder **b**: a fungal rot of plant tissue in which the affected areas are dry and often firmer than normal or more or less mummified 2: a fungus causing dry rot 3: decay from within caused *esp.* by resistance to new forces

dry run *n* (ca. 1941) 1: a practice exercise: **REHEARSAL TRIAL** 2: a practice firing without ammunition

dry-salt-er \ˈdri-sɔl-tər\ *n* (1707) *Brit*: a dealer in crude dry chemicals and dyes — **dry-salt-ery** \-tɔ-rɪ\ *n*, *Brit*

dry-shod \ˈdri-ʃəd\ *adj* (15c): having dry shoes or feet

dry sink *n* (1951): a wooden cabinet with a tray top for holding a wash basin

dry-stone \ˈdri-stɔn\ *adj* (ca. 1702) *chiefly Brit*: constructed of stone without the use of mortar as an adhesive (a ~ wall)

EXHIBIT 19

EXHIBIT 20

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

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ATTORNEYS FOR MARS, INC.

<hr/>)	
MARS, INC.,)	
)	
	Plaintiff,)	Civil Action No. 2:07-CV-1574 (SRC)(MF)
)	
vs.)	
)	DECLARATION OF
NATRACEUTICAL, S.A., NATRA U.S.,)	JOHN F. HAMMERSTONE, JR. IN
INC.)	SUPPORT OF PLAINTIFF MARS'
)	APPLICATION FOR AN ORDER TO SHOW
	Defendants.)	<u>CAUSE FOR PRELIMINARY INJUNCTION</u>
<hr/>)	

I, John F. Hammerstone Jr., declare as follows:

1. I have been employed by Mars, Inc. since 1982. I am currently employed in the Mars Symbioscience business as its Senior Research Manager, and have been employed in this capacity since 2005.

2. Previously, from 1982-2005, I was employed in the MasterFoods USA business, first as a research assistant, and later as a Senior Research Chemist.

3. My educational background is as follows: In 1980, I received a Bachelor of Science Degree in Chemistry from Desales University in Center Valley, Pennsylvania. I have been the author or co-author of several scientific articles, including over 16 relating to the analysis of cocoa, including the identification and quantification of cocoa polyphenols.

4. I have personal knowledge of the following facts and, if called as a witness, could and would competently testify as to the following.

5. I am an inventor or co-inventor on over 20 issued U.S. patents and several more patent applications, including both of the patents being asserted in this action, United States Patent Nos. 6,790,966 (“the ‘966 patent”) and 6,312,753 (“the ‘753 patent”).

6. These patents relate to products made from cocoa beans, such as extracts and powders. The products made from cocoa beans are typically in a solid or powder form, but may also be in a liquid form.

7. Some of the claims of these patents relate to the preservation or extraction of certain compounds found in cocoa beans. These compounds are known as cocoa polyphenols, and more specifically, as defined in the ‘753 patent, procyanidins. The cocoa polyphenols found in the cocoa bean can include monomers and oligomers. The monomers can include catechins and epicatechins. The oligomers can include dimers, trimers, tetramers, pentamers, hexamers, heptamers, octamers, nonamers, decamers, undecamers, and dodecamers.

8. The extracts and cocoa powders are used, for example, as additives for food products, and to provide food products with enhanced health benefits.

9. In early February, 2007, I obtained Natraceutical's CocoanOX products, including CocoanOX 12 and CocoanOX 45. Each of these products was in a twenty-five kilogram quantity, and was packaged in either a barrel or a box. Each was in a dry powder form. Each of these products included documentation, labeling, and/or a Material Safety Data Sheet, indicating that its source was Natraceutical.

10. I was asked by Mars, Incorporated to analyze these CocoanOX 12 and CocoanOX 45 products for cocoa polyphenols and other components.

11. One of the methods of cocoa polyphenol analysis that I used was a method that I invented, and that was described in a 1999 publication, Adamson et al., HPLC Method for the Quantification of Procyanidins in Cocoa and Chocolate Samples and the Correlation to Total Antioxidant Capacity. *J. Agric. Food Chem.*, 1999, 47 [10]: 4184-8. As of April 2, 2007, this method has been cited in at least one-hundred and twenty (120) publications relating to the analysis of flavanols and procyanidins. Moreover, this method has been accepted as the official quantification process of these compounds by the U.S. Department of Agriculture. It is regarded by those in the industry as authoritative and accurate. According to the above process, sub-samples or aliquots of the CocoanOX 12 and CocoanOX 45 products were reconstituted in an acetone buffer. The buffered samples were analyzed by normal phase high performance liquid chromatography (HPLC) techniques, as published by Adamson et al, 1999.

12. Specifically, the reconstituted sample is pumped through a chromatographic column. The retention time of a particular compound is the time at which the compound elutes, or comes out of the end of the column. Each cocoa polyphenol compound elutes at a characteristic retention time. As the compound elutes, it is detected by a fluorescence detector and creates a peak on a graph.

13. The results of these analyses for CocoanOX 12 and 45 are shown in the attached Exhibits 1 and 2, respectively. The peaks have been labeled to correspond to the particular cocoa polyphenol indicated as being present and quantifiable.

14. These analyses clearly demonstrate, for both CocoanOX 12 and CocoanOX 45, the presence of cocoa polyphenols, including monomers and procyanidin oligomers. The monomer peaks are consistent with the presence of both epicatechins and catechins. The oligomer peaks are consistent with the presence of dimers, trimers, tetramers, pentamers, hexamers, heptamers, octamers, nonamers, and decamers. The reason for my conclusion is that I compared the HPLC trace of the CocoanOX products with a reference standard of cocoa procyanidins. The comparison demonstrated that the sample contained each of the above monomers and oligomers.

15. I have measured the amount of total cocoa procyanidins, or cocoa polyphenols, in the CocoanOX 12 sample. In addition, I have measured the amount of cocoa procyanidin pentamer in the CocoanOX 12 sample. Specifically, I measured the area under each peak that corresponded to the procyanidin compounds in the reconstituted sample of CocoanOX 12 and measured the amounts against an external standard of epicatechin, as disclosed in the '753 patent.

16. Claim 15 of the '753 patent requires in excess of 50,000 micrograms of total cocoa procyanidin per gram of nonfat cocoa solids.

17. Claim 16 of the '753 patent requires in excess of 5,000 micrograms of total cocoa procyanidin pentamer per gram of nonfat cocoa solids.

18. In view of the phrase in these claims, "per gram of nonfat cocoa solids," it is necessary to remove the fat content from the sample. Therefore, I obtained the total cocoa

procyanidins by adding the amounts of all procyanidin compounds in the sample of CoccoanOX 12 and adjusting for the fat content of CoccoanOX 12. Further, I obtained the total procyanidin pentamer by measuring the procyanidin pentamer peak and adjusting for the fat content of CoccoanOX 12. The fat content of CoccoanOX 12 is about 11%. *See infra*, ¶¶43-44. Exhibit 3 shows the measured amounts of procyanidin compounds in the reconstituted sample of CoccoanOX 12.

19. I have concluded that the total amount of cocoa procyanadin per gram of nonfat cocoa solids in CoccoanOX 12 is 77,000 micrograms.

20. I have concluded that the total amount of cocoa procyanadin pentamer per gram of nonfat cocoa solids in CoccoanOX 12 is 5,500 micrograms.

21. Another analytical method that I used was a modification of a method that I also co-authored, and that was described in a 2006 publication, Kelm et al., Purification of Cacao (*Theobroma cacao* L.) Procyanidins According to Degree of Polymerization using a Diol Stationary Phase. *J. Agric. Food Chem.*, 2006, 54, 1571-6. The modification consisted of using a faster solvent gradient, and the use of both UV detection and mass spectrometry for identification of the eluted compounds. I used this method for the identification of certain procyanidin oligomers, namely undecamers and dodecamers within the CoccoanOX products. According to this process, subsamples or aliquots of the CoccoanOX 45 sample were reconstituted in methanol. The reconstituted sample was fractionated on a Sephadex LH-20 HPLC column to enrich the oligomers so that the compounds could be more easily detected by mass spectrometry. A subsample or aliquot of CoccoanOX 12 was extracted with a highly concentrated acetone buffer. The extracted CoccoanOX 12 sample and the fractionated sample of

CocoanOX 45 were analyzed by normal phase HPLC techniques, as published by Kelm et al., 2006.

22. Specifically, the extracted CocoanOX 12 sample and the CocoanOX 45 fractions collected from the Sephadex LH-20 HPLC column were injected into a normal phase HPLC column for separation and identification of the compounds contained therein. The compounds separated by pumping solvent through the column. Each compound eluted at a characteristic retention time and was detected by UV detection. As each compound eluted from the column, it entered the mass spectrometer where it was ionized and its mass was measured as a ratio of the actual mass of the compound divided by the number of charges on the compound, according to another analytical method that I co-invented, and that was described in a 1999 publication, Hammerstone et al., Identification of Procyanidins in Cocoa (*Theobroma cacao*) and Chocolate using High Performance Liquid Chromatography/Mass Spectrometry, *J. Agric. Food Chem.* 1999, 47, 490-6.

23. The results of these analyses for the CocoanOX 12 and 45 fractions are shown in the attached Exhibits 4 and 5, respectively. These analyses clearly demonstrate the presence of procyanidin oligomers known as undecamers and dodecamers in the CocoanOX 12 and 45 products. The basis for my conclusion is that I analyzed the unique mass spectral fingerprints for certain compounds that eluted from the CocoanOX 12 sample and the CocoanOX 45 fractions, and these mass spectral fingerprints matched the mass spectral fingerprints for undecamers and dodecamers.

24. Cocoa beans contain caffeine and theobromine, also known as xanthine alkaloids. In addition, cocoa beans have a particular identifying "fingerprint" of caffeine and theobromine. Specifically, when extracts of cocoa beans are analyzed by chromatography, the caffeine and

theobromine in the extracts create peaks that allow for the quantification of caffeine and theobromine. Cocoa beans contain a unique ratio of theobromine to caffeine.

25. In connection with my analysis of CocoanOX 12 and CocoanOX 45, I performed high performance liquid chromatography (HPLC) tests on the respective reconstituted samples, with ultraviolet (UV) and mass spectrometry detection, to identify and quantify theobromine and caffeine. The results of the HPLC analysis, with UV and mass spectrometry overlaid, for the CocoanOX 12 are shown in the trace of the attached Exhibit 6, while the results of the HPLC analysis, with UV and mass spectrometry overlaid, for the CocoanOX 45 are shown in the trace of the attached Exhibit 7.

26. Exhibits 8 and 9 depict these analyses, with only the UV trace of theobromine and caffeine in the samples using reverse phase HPLC. These Exhibits 8 and 9 were performed to quantify the amounts of theobromine and caffeine in the CocoanOX 12 and the CocoanOX 45.

27. I have concluded that caffeine and theobromine are present in both CocoanOX 12 and CocoanOX 45 samples.

28. I measured the ratios of theobromine to caffeine in the samples and I have concluded that the unique theobromine and caffeine “fingerprint” of the ratio of theobromine to caffeine indicates that CocoanOX 12 and CocoanOX 45 are both derived from cocoa beans.

29. By my analysis, the CocoanOX 45 contains, on a whole fat basis, 6.44% theobromine and 0.71% caffeine. The relatively high levels of theobromine and caffeine in CocoanOX 45 are consistent with an extract of cocoa.

30. By my analysis, the CocoanOX 12 contains, on a whole fat basis, 1.66% theobromine and 0.24% caffeine. The relatively low levels of theobromine and caffeine in CocoanOX 12 are consistent with a cocoa powder, not an extract.

31. The samples can also be analyzed to determine the presence or absence of solvents in the CocoanOX 12 and CocoanOX 45. This test is done by gas chromatography, followed by mass spectrometry of specific compounds.

32. Specifically, the samples are reconstituted by the addition of water to a vial, which is then sealed with a rubber seal. The vial is then heated, and a vapor forms in the head space at the top of the vial. The needle of a syringe is then inserted into the head space, through the rubber seal, and a portion of the vapor in the head space is withdrawn.

33. This vapor is injected into a gas chromatograph, and the components are separated by a temperature gradient.

34. As with HPLC, described above in paragraph 11, the retention time of a particular compound is the time at which the compound elutes from the column. Each compound elutes at a characteristic retention time. As each compound elutes, it is detected and creates a peak on a graph. The area under each peak corresponds to the amount of that compound in the sample.

35. Moreover, as each compound elutes, the compound is ionized and fragmented in a mass spectrometer. The mass to charge ratio of the fragment ions are detected and can be utilized to help identify the compound.

36. Exhibits 10 and 11 depict the results of these tests on CocoanOX 12 and CocoanOX 45, respectively.

37. From my analysis of Exhibit 10, I have concluded that CocoanOX 12 does not include a solvent. The basis for my conclusion is that none of the chromatographic peaks in the total ion chromatogram corresponded to the retention time of a common extraction solvent. Moreover, of the peaks that were present, their unique mass spectral fingerprint was inconsistent with the mass spectrum of a common extraction solvent.

38. From my analysis of Exhibit 11, I have concluded that CocoanOX 45 includes a solvent and that solvent is ethanol. The basis for my conclusion is that a chromatographic peak in the total ion chromatogram of CocoanOX 45 corresponded to the retention time of ethanol. Moreover, the unique mass spectral fingerprint of this peak was also consistent with that of ethanol. Therefore, I concluded that CocoanOX 45 contained ethanol.

39. To determine the quantity of ethanol, a second sample was prepared and was "spiked." Particularly, deuterated ethanol was made, with deuterium as a substitute for hydrogen, and this deuterated ethanol was added to the sample at approximately 100 parts per million (100 ppm). This sample was analyzed in the same manner as described at the above in paragraphs 31-35.

40. Using the area under the curve for the ions that are characteristic of ethanol, vs. ions that are characteristic of deuterated ethanol, the concentration of ethanol in the CocoanOX 45 was shown to be greater than 100 ppm.

41. Therefore, from my analysis of Exhibit 11 and the quantification tests described above in Paragraphs 39-40, I have concluded that CocoanOX 45 does include a solvent in an amount of at least 100 parts per million (100 ppm), and that that solvent is ethanol.

42. In my opinion, and based upon my experience, there is only one reasonable explanation for the presence of this level of ethanol solvent in the CocoanOX 45 extract. Particularly, the CocoanOX 45 was obtained by solvent extraction of the polyphenols from a ground cocoa bean to form solvent-derived cocoa polyphenols. The amount of ethanol that remains in the extract is a residue of this extraction process. CocoanOX 45 is, therefore, a cocoa extract.

43. I analyzed CocoonOX 12 to determine the fat content of CocoonOX 12. Fats in cocoa solids are soluble in petroleum ether solvent. Therefore, I extracted a sample of CocoonOX 12 with petroleum ether solvent to form an extract containing fats and petroleum ether solvent. I removed the petroleum ether solvent from the extract and compared the total weight of the fats remaining to the total weight of the sample to determine the percent fats within CocoonOX 12. I concluded that the sample of CocoonOX 12 contained 11.6% fats.

44. The amount of fats that I analyzed according to the above process confirms the fat content from Natraceutical's Certificate of Analysis for CocoonOX 12. Specifically, I have reviewed the Natraceutical "Certificate of Analysis: CCX Reduced Fat 12% Polyphenols" which it is my understanding is the Certificate of Analysis for CocoonOX 12, attached as Exhibit 12. That Certificate of Analysis indicates that the product has a fat content of 11.0%.

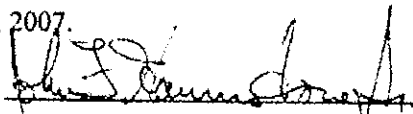
45. A typical cocoa bean has a fat content of approximately 58%. Therefore, the CocoonOX 12 product is at least partially defatted.

46. I have found that CocoonOX 45 meets literally all of the elements of at least Claims 1, 2, 3, 4 and 23 of the '966 patent. Subject to further analysis, it may also meet literally all of the elements of either 10 and 11, and either 13 or 14.

47. I have found that CocoonOX 12 meets literally all of the elements of at least Claims 15 and 16 of the '753 patent.

FURTHER DECLARANT SAYETH NOT.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed on April 12, 2007.


John F. Hammerstone, Jr.

CI1199 4807157-3 002227 0120

Exhibit 1

Print of window 38: Current Chromatogram(s)

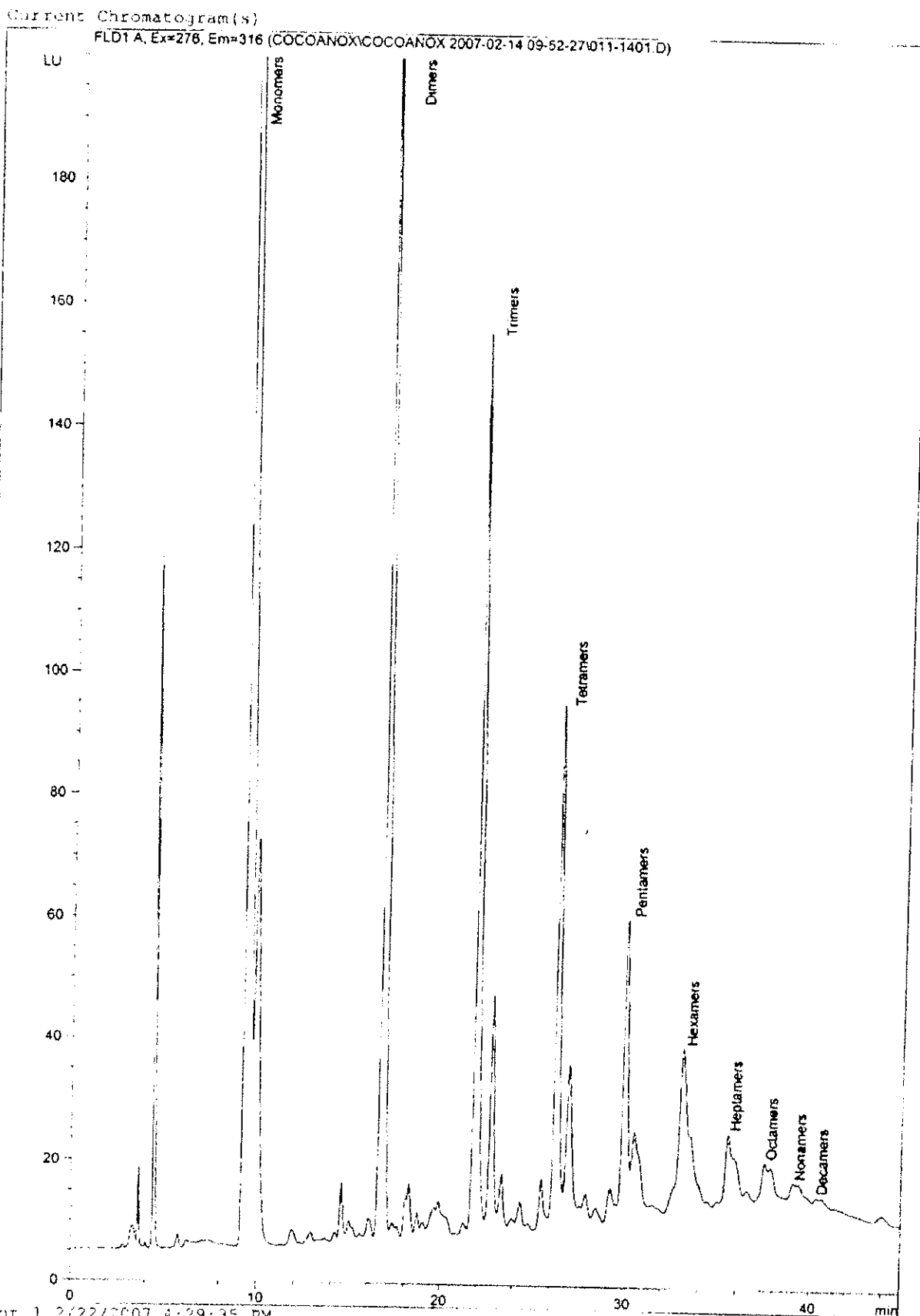


Exhibit 2

Print of window 38: Current Chromatogram(s)

Current Chromatogram(s)

FLD1 A, Ex=278, Em=318 (COCOANOX\COCOANOX 2007-02-14 09-52-27\006-0901.D)

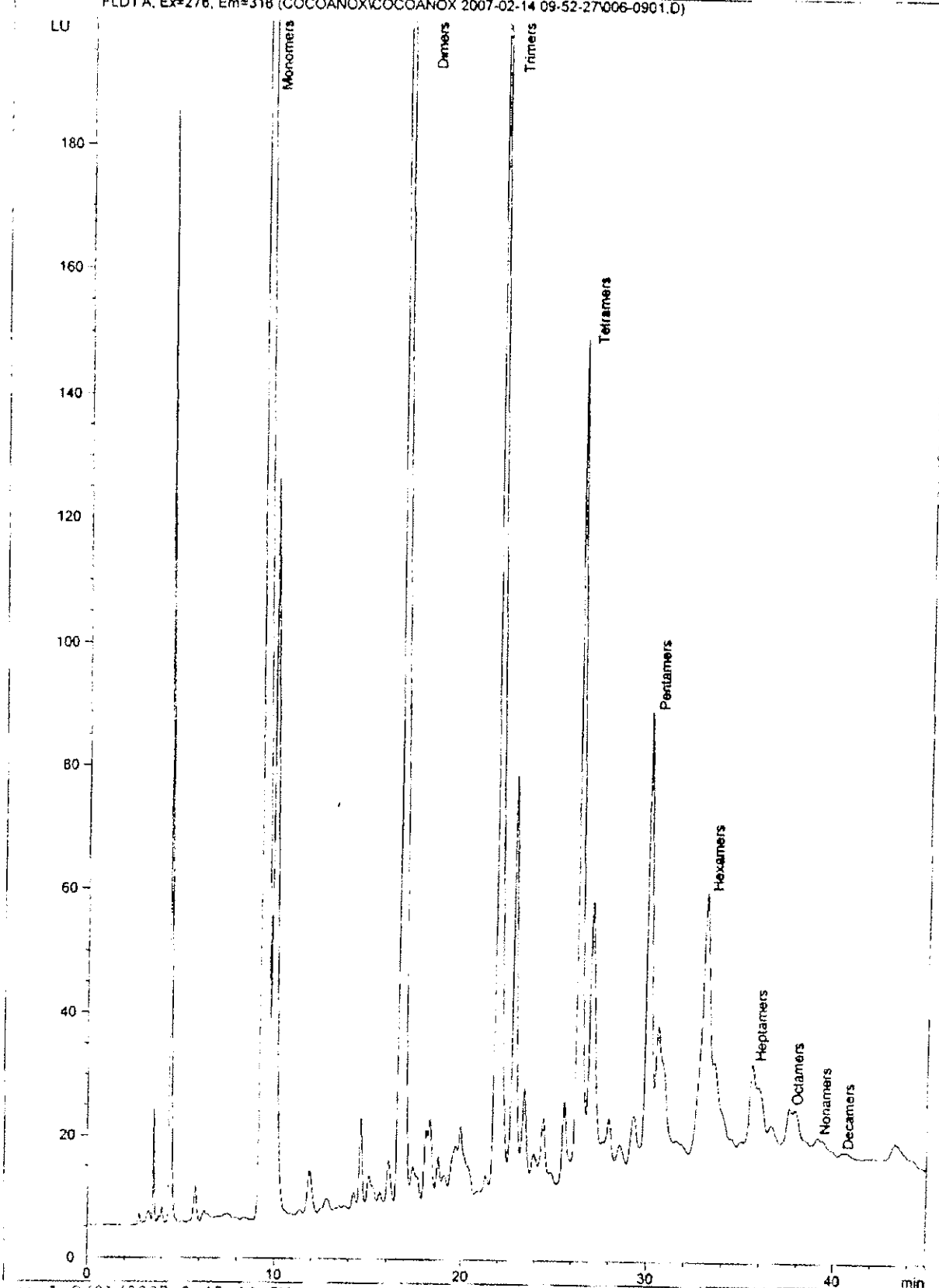


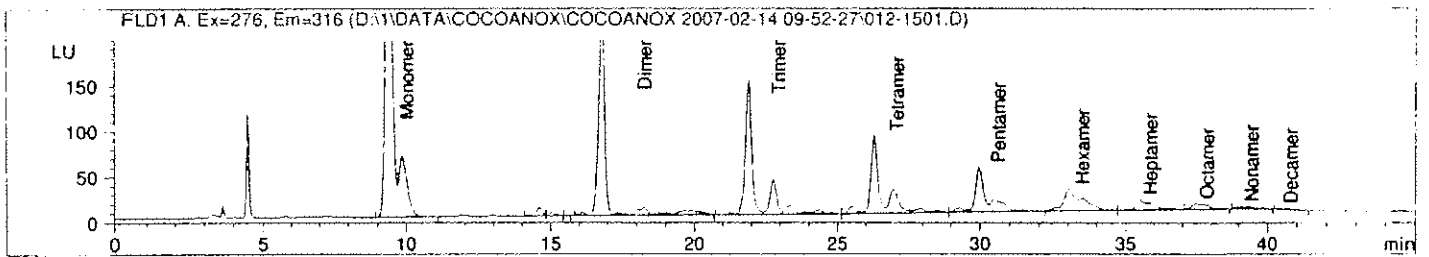
Exhibit 3

Data File D:\1\DATA\COCOANOX\COCOANOX 2007-02-14 09-52-27\012-1501.D

Sample Name: B2

```

=====
Acq. Operator   : J Hammerstone           Seq. Line : 15
Acq. Instrument : Instrument 2             Location  : Vial 12
Injection Date  : 2/15/2007 1:10:16 AM    Inj       : 1
                                           Inj Volume: 5 µl
Acq. Method    : D:\1\DATA\COCOANOX\COCOANOX 2007-02-14 09-52-27\SHORTPRO_MSS.M
Last changed   : 2/15/2007 1:08:56 AM by J Hammerstone
                (modified after loading)
Analysis Method : D:\1\METHODS\COCOANOX EPI.M
Last changed   : 4/3/2007 11:36:35 AM
                (modified after loading)
Method Info    : Flavonols / Procyanidins by Normal Phase HPLC on Lichrosphere Silica
Sample Info    : MSS-JH-012-001-B-2 0.4005 mg =>mL
=====
    
```



ESTD Percent Report

```

=====
Sorted By      : Signal
Calib. Data Modified : 4/3/2007 11:30:59 AM
Multiplier     : 1.000e-2
Dilution       : 5.0000
Sample Amount  : 4.00500e-1 [grams]
Use Multiplier & Dilution Factor with ISTDs
    
```

Signal 1; FLD1 A, Ex=276, Em=316

RetTime [min]	Type	Area LU	Amt/Area *s	Amount %	Grp	Name
10.033	BBA+	8143.59131	2.65400e-4	26.982636		Monomer
18.270	BBA+	3791.46802	2.65400e-4	12.562492		Dimer
22.936	BVA+	3200.32349	2.65400e-4	10.603818		Trimer
27.083	VVA+	2339.79419	2.65400e-4	7.752577		Tetramer
30.611	VVA+	1491.15747	2.65400e-4	4.940739		Pentamer
33.491	VVA+	1045.14465	2.65400e-4	3.462939		Hexamer
35.867	VVA+	460.28207	2.65400e-4	1.525079		Heptamer
37.854	BBA+	232.32242	2.65400e-4	0.769767		Octamer
39.467	BBA+	94.13748	2.65400e-4	0.311911		Nonamer
40.792	BBA+	11.19667	2.65400e-4	3.70986e-2		Decamer

Totals : 68.949057

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

Data File D:\1\DATA\COCOANOX\COCOANOX 2007-02-14 09-52-27\012-1501.D

Sample Name: B2

```
=====
Acq. Operator   : J Hammerstone                Seq. Line :   15
Acq. Instrument : Instrument 2                  Location  : Vial 12
Injection Date  : 2/15/2007 1:10:16 AM         Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\1\DATA\COCOANOX\COCOANOX 2007-02-14 09-52-27\SHORTPRO_MSS.M
Last changed    : 2/15/2007 1:08:56 AM by J Hammerstone
                  (modified after loading)
Analysis Method : D:\1\METHODS\COCOANOX EPI.M
Last changed    : 4/3/2007 11:36:35 AM
                  (modified after loading)
Method Info     : Flavonols / Procyanidins by Normal Phase HPLC on Lichrosphere Silica
Sample Info     : MSS-JH-012-001-B-2  0.4005 mg =>mL
=====
=====
*** End of Report ***
=====
```

Exhibit 4

Exhibit 5

Display Report - All Windows Selected Analysis

Analysis Name: 064-0401.D **Instrument:** LC-MSD-Trap-XCT_ultra_II **Print Date:** 4/5/2007 5:38:01 PM
Method: FASTDIO.LMS.M **Operator:** Administrator **Acq. Date:** 4/5/2007 4:31:26 PM
Sample Name: Sample A Fct 8
Analysis Info: MSS-JH-012-001-A fractionated on sephadex LH-20 FCT 8

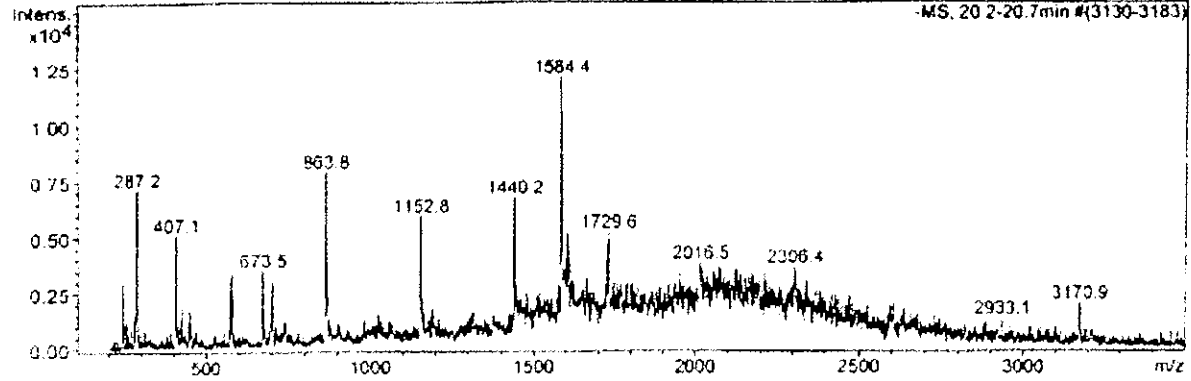
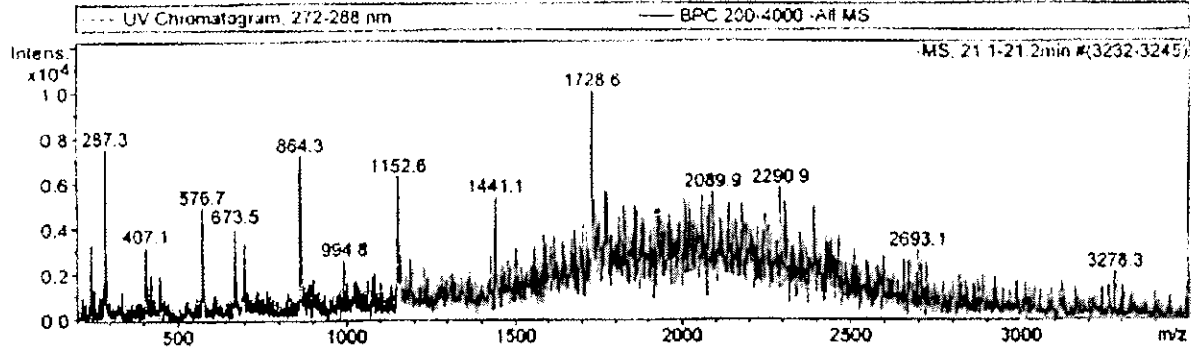
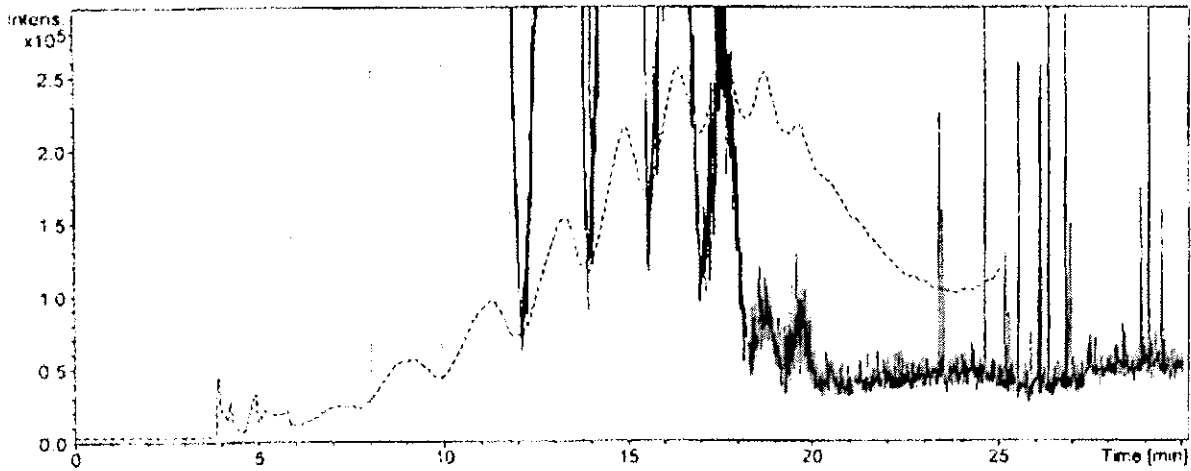


Exhibit 6

Display Report - All Windows Selected Analysis

Analysis Name: 003 0801.D Instrument: LC/MSD-Trap-XCT_ultra_II Print Date: 2/24/2007 12:10:57 PM
Method: THEOCAF.M Operator: Administrator Acq. Date: 2/21/2007 3:53:27 PM
Sample Name: Sample B
Analysis Info: MSS-3H-012-001 101.9mg sample in 100 mL

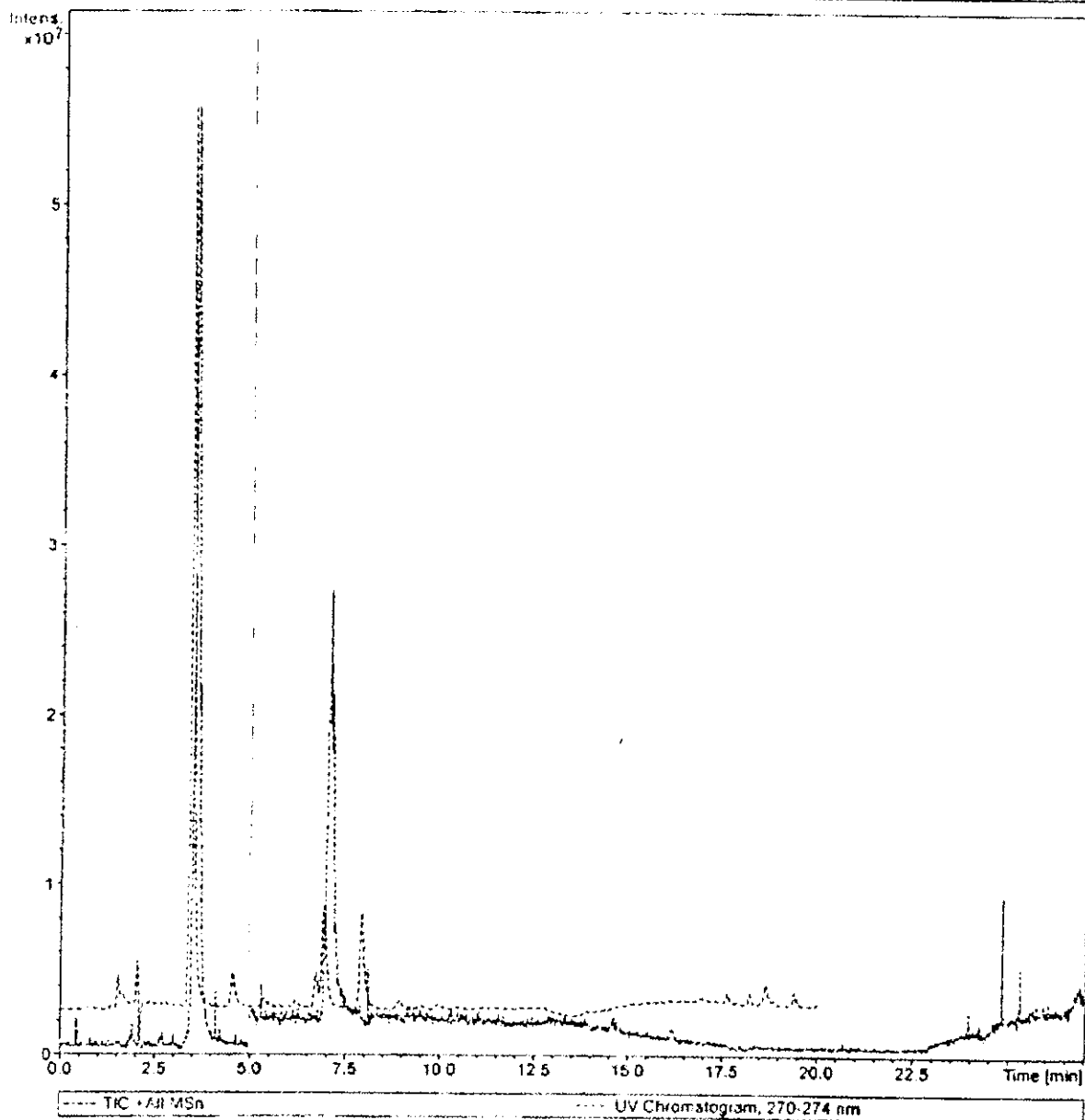


Exhibit 7

Display Report - All Windows Selected Analysis

Analysis Name: 002-0701.D **Instrument:** LC-MSD-Trap-XCT_ultra_II **Print Date:** 2/24/2007 12:09:28 PM
Method: THEOCAF.M **Operator:** Administrator **Acq. Date:** 2/21/2007 3:26:04 PM
Sample Name: Sample A
Analysis Info: MSS-JH-012-001-A 113.8mg sample => 100 mL

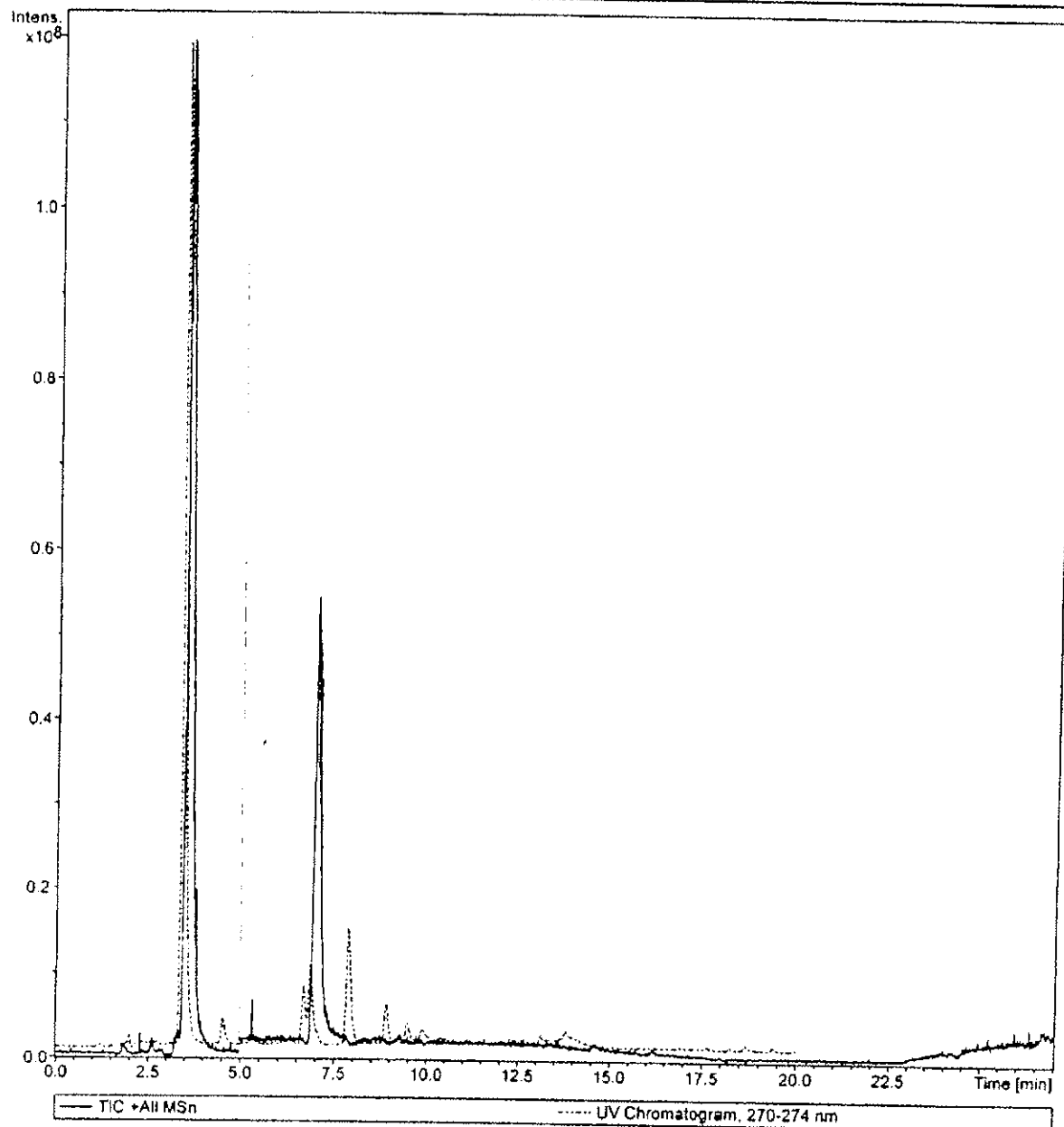


Exhibit 8

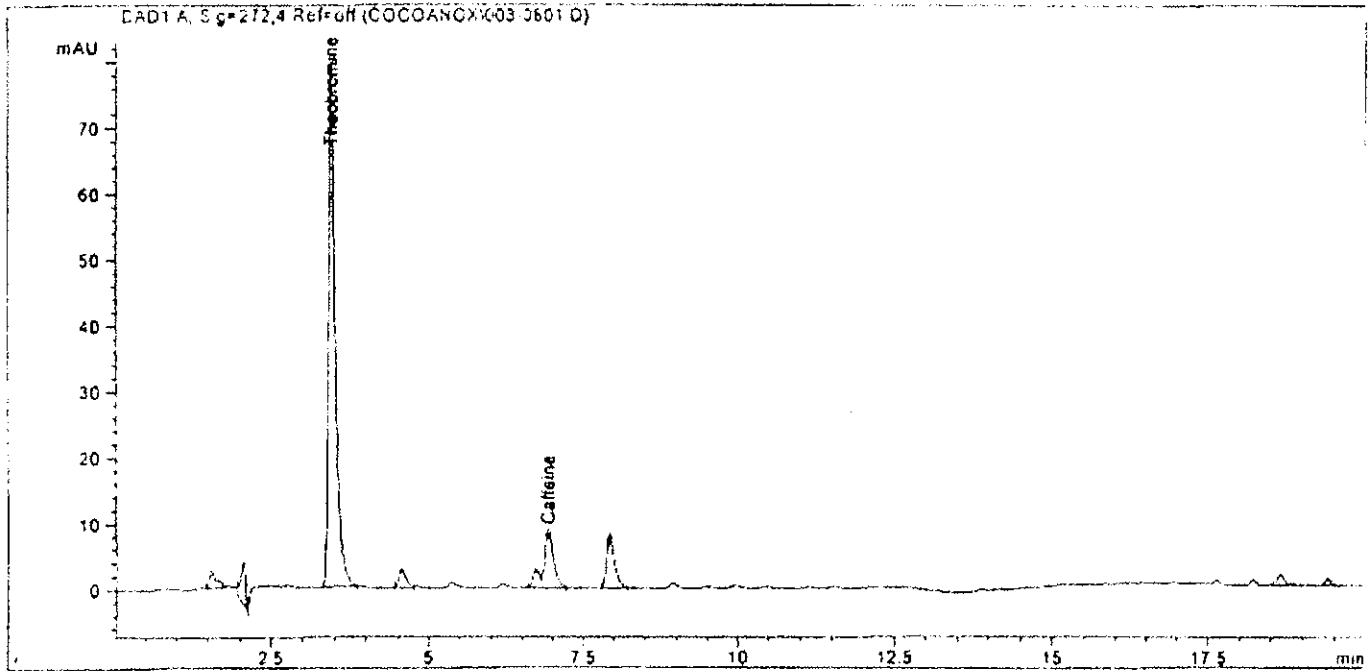
Data File D:\DATA\COCOANOX\003-0801.D
 Sample Name: Sample B

```

.....
Acq. Operator   : Hammer                      Seq. Line :    8
Acq. Instrument : Instrument 1                 Location  : Vial 3
Injection Date  : 2/21/2007 3:53:26 PM      Inj       :    1
                                           Inj Volume: 5 µl

Acq. Method     : D:\METHODS\THEOCAP.M
Last changed    : 2/21/2007 3:53:10 PM by Hammer
Analysis Method : D:\METHODS\THEOCAP.M
Last changed    : 2/24/2007 12:30:39 PM by Hammer
Method Info     : Theobromine/Caffeine
                  5µm Hypersil CDS 125 x 2.0mm
                  Column Temp 40C
                  Water w/ HOAC - ACN Gradient
    
```

Sample Info : MSS-JH-012-001-X-101.9µg sample -> 100 mL



External Standard Report

```

.....
Sorted By      : Signal
Calib. Data Modified : 2/24/2007 12:28:36 PM
Multiplier     : 1.0000
Dilution       : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs
    
```

Signal 1: DAD1 A, Sig=272,4 Ref=off

RetTime [min]	Type	Area [mAU*s]	Amt/Area	Amount [mg/mL]	Grp	Name
3.428	BR	585.23901	2.88893e-5	1.69072e-2		Theobromine
6.920	VB	83.84242	3.16739e-5	2.65561e-3		Caffeine

Totals : 1.95628e-2

Exhibit 9

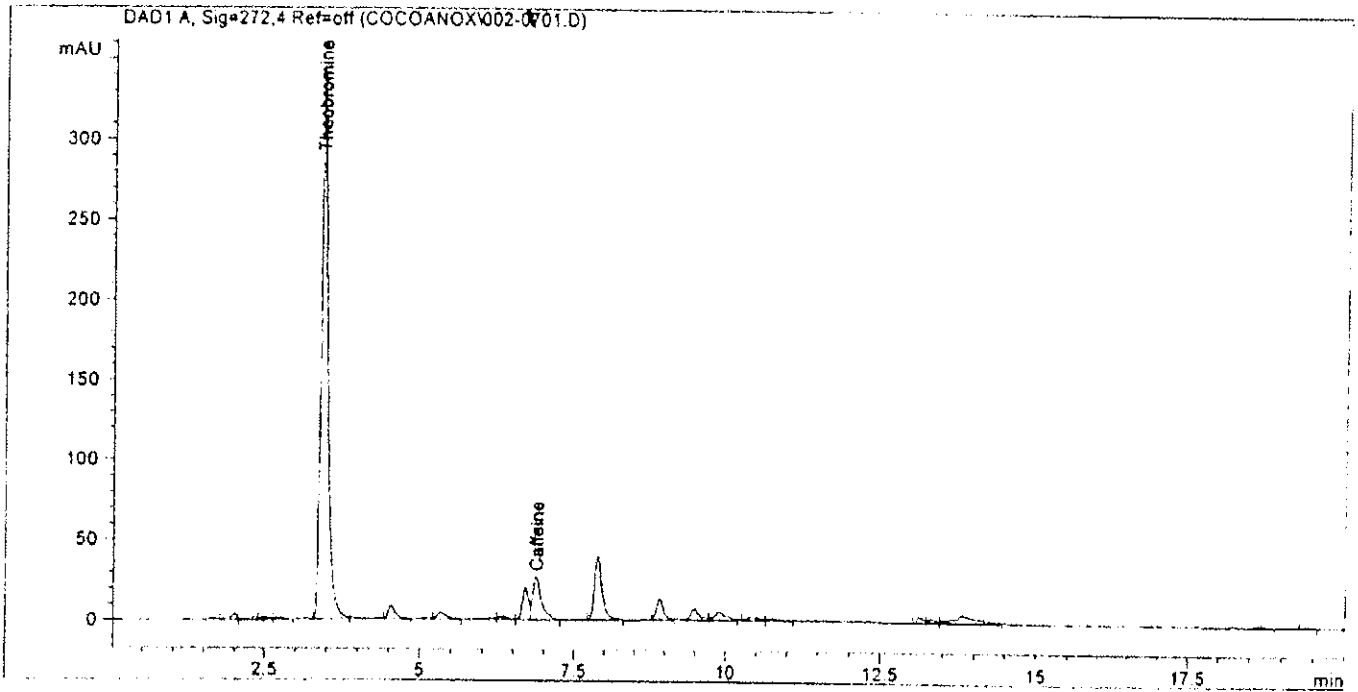
Data File D:\DATA\COCOANOX\002-0701.D
 Sample Name: Sample A

```

=====
Acq. Operator   : Hammer                               Seq. Line :    7
Acq. Instrument : Instrument 1                         Location  : Vial 2
Injection Date  : 2/21/2007 3:26:04 PM                Inj       :    1
                                                    Inj Volume: 5 µl

Acq. Method     : D:\METHODS\THEOCAF.M
Last changed    : 2/21/2007 3:25:48 PM by Hammer
Analysis Method : D:\METHODS\THEOCAF.M
Last changed    : 2/24/2007 12:28:36 PM by Hammer
Method Info     : Theobromine/Caffeine
                  Sum Hypersil ODS 125 x 2.0mm
                  Column Temp 40C
                  Water w/ EOAC - ACN Gradient
    
```

Sample Info : MSS-JH-012-001-A 113.8mg sample -> 100 mL



External Standard Report

```

=====
Sorted By      :      Signal
Calib. Data Modified : 2/24/2007 12:28:36 PM
Multiplier     :      1.0000
Dilution       :      1.0000
Do not use Multiplier & Dilution Factor with ISTDs
    
```

Signal 1: DADI A, Sig=272,4 Ref=off

RetTime [min]	Type	Area [mAU*s]	Amt/Area	Amount [mg/mL]	Grp	Name
3.414	BB	2512.32202	2.89971e-5	7.28249e-2		Theobromine
6.868	VB	266.64642	3.23285e-5	8.62029e-3		Caffeine

Totals : 8.14452e-2

Exhibit 10

File : C:\msdchem\1\DATA\Cocoanox\B1NEAT.D
Operator : Hammerstone
Acquired : 27 Feb 2007 16:47 using AcqMethod Solvent residual method.M
Instrument : Instrument #1
Sample Name: MSS-JH-012-001 B Rep 1 - 1.0029g
Misc Info : Tray1.VT32- Rear
Vial Number: 6

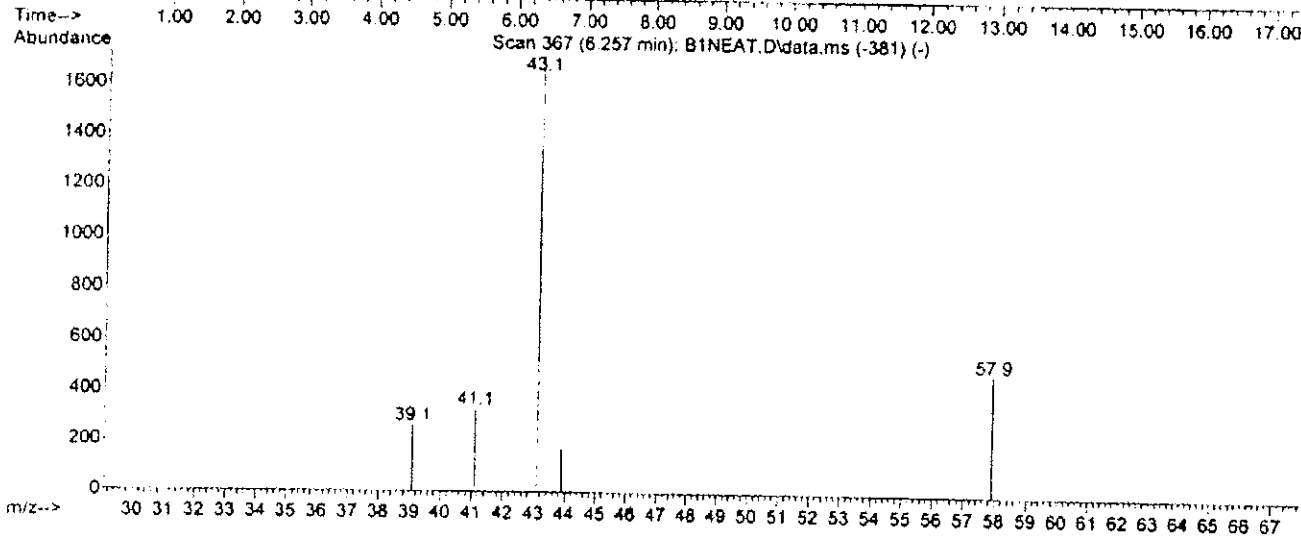
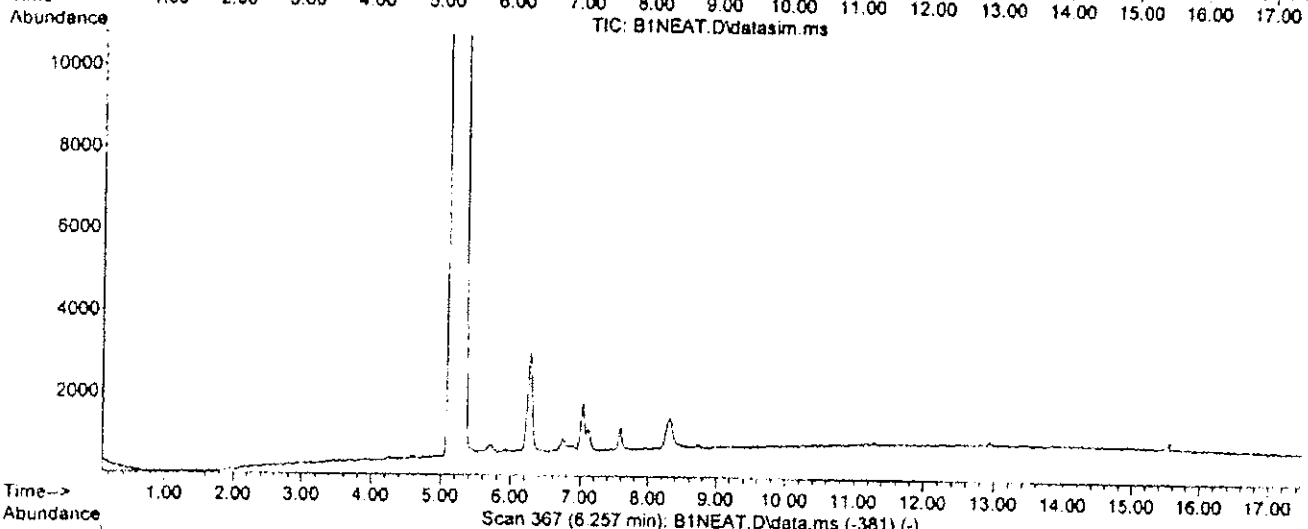
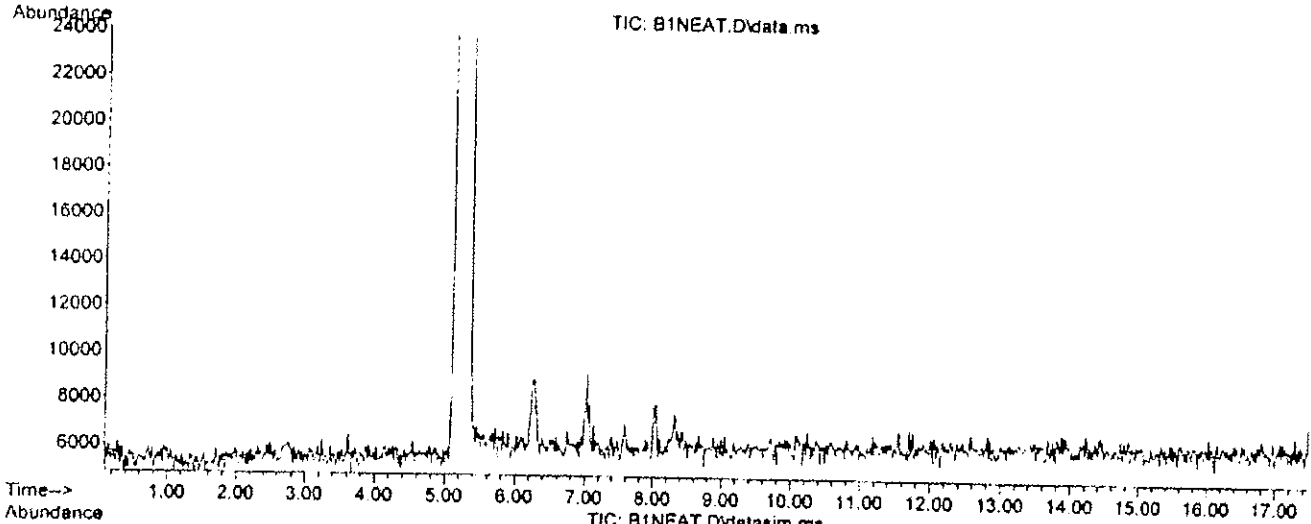


Exhibit 11

File : C:\msdchem\1\DATA\Cocoanox\A1NEAT.D
Operator : Hammerstone
Acquired : 27 Feb 2007 16:11 using AcqMethod Solvent residual method.M
Instrument : Instrument #1
Sample Name: MSS-JH-012-001-A Rep 1 - 1.0150g
Misc Info : Tray1,VT32- Rear
Vial Number: 6

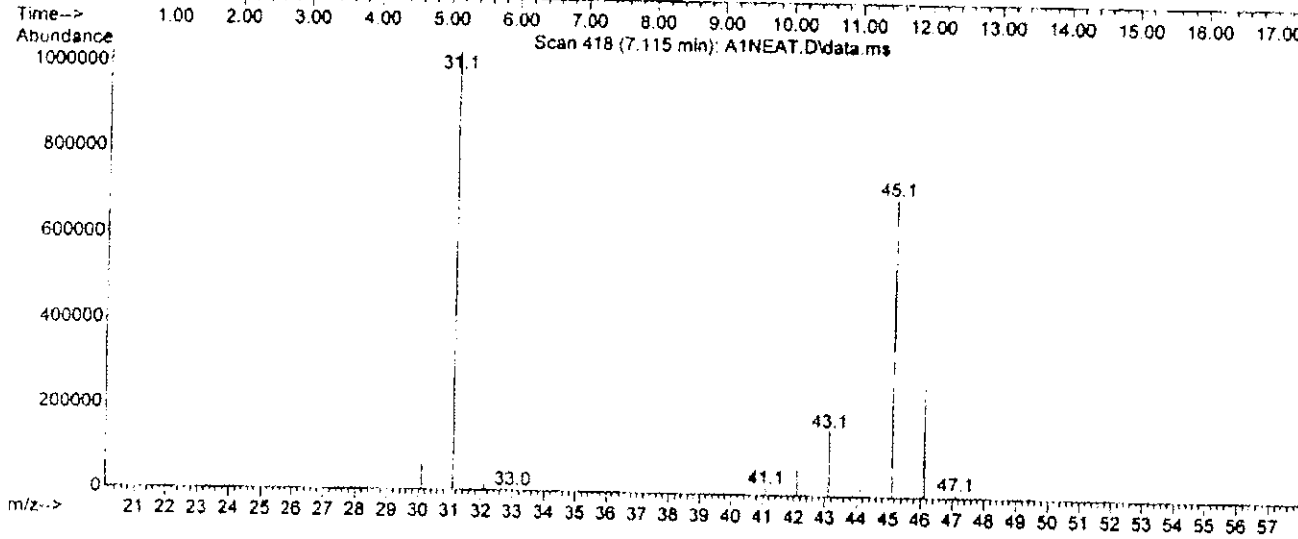
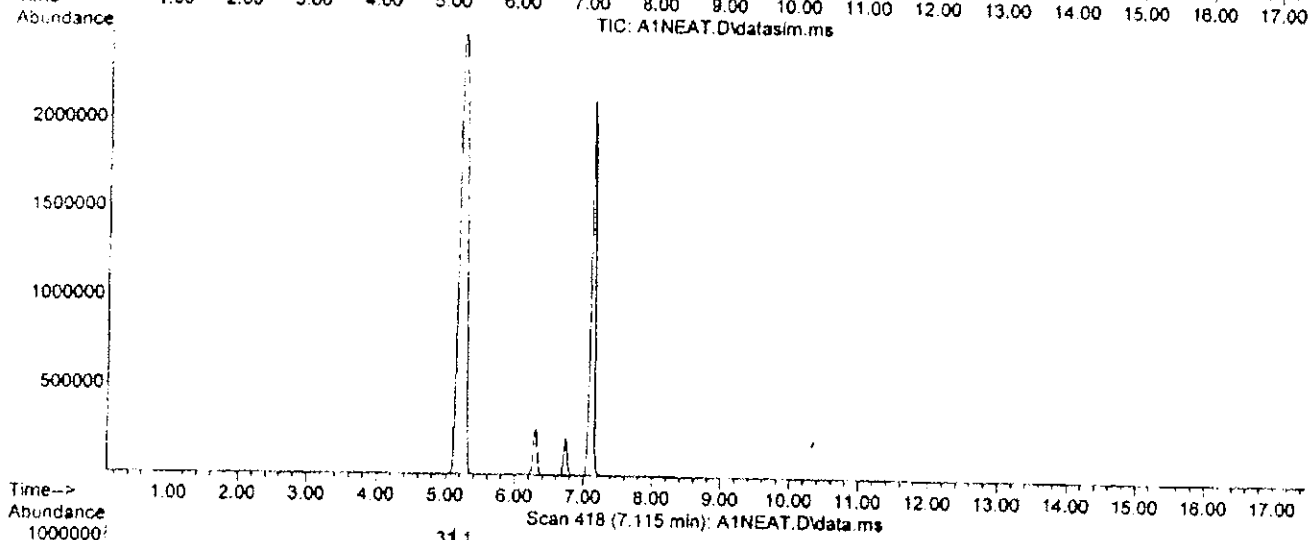
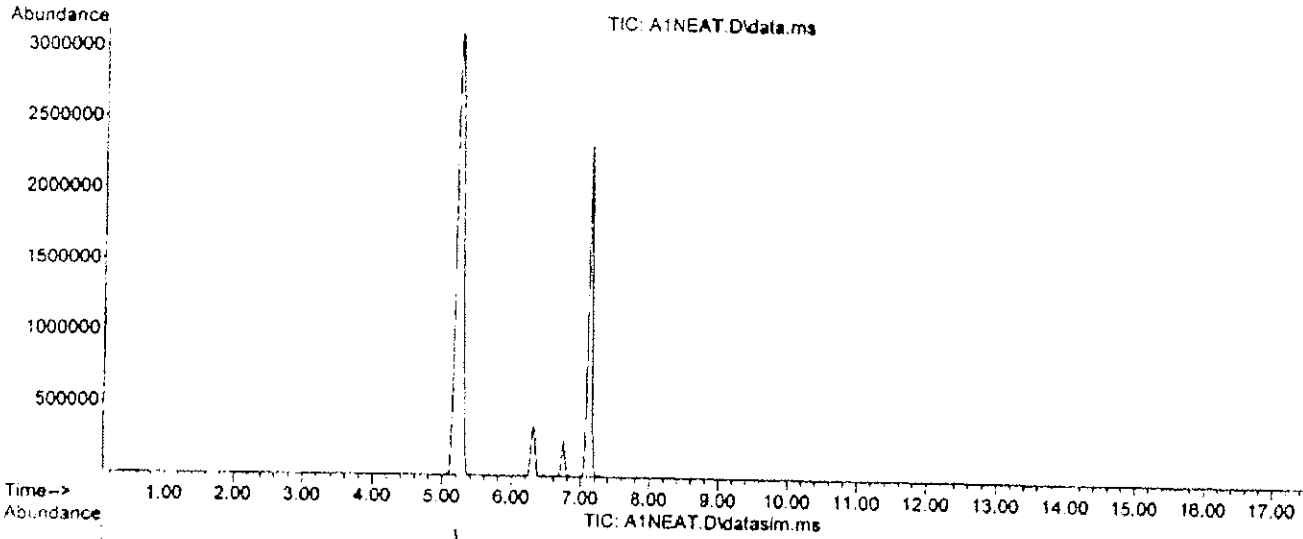


Exhibit 12



natraceutical

CERTIFICATE OF ANALYSIS

**CCX REDUCED FAT
12% POLYPHENOLS**

Lot N°:	L01251	Analysis N°:	
Date of production:	20/12/05	Shelf life:	12/2007
Date of analysis:	10/04/06	Certificate date:	05/05/06
Contract N°:			

Parameters	Specifications	Results
Description		
Botanical name	THEODROMA CACAO	
Part of plant used	COCOA NB	
Colour	BROWN-VIOLET	
Appearance	POWDER	
Physicochemical profile		
Loss on drying (AOAC)	≤ 0.0 %	0.0 %
Fat content (AOAC)	10.0 - 12.0 %	11.0 %
pH (AOAC)	5.0 - 7.0	5.7
Nutritional profile		
Total polyphenols (catechin) (UV-Vis)	≥ 12.0 %	17.9 %
Microbiological profile		
Total viable aerobic count (AOAC)	≤ 8,000 c.f.u./g	4 100 c.f.u./g
Yeasts and moulds (AOAC)	≤ 100 c.f.u./g	38 c.f.u./g
Enterobacteriaceae (AOAC)	≤ 10 c.f.u./g	ABSENT
E. Coli/g (AOAC)	ABSENT	ABSENT
Salmonella / 25g (AOAC)	ABSENT	ABSENT
Suggested storage conditions		
Storage	STORE FROM 4 TO 20°C IN ORIGINAL SEALED PACKAGE AVOID EXPOSURE TO LIGHT, HEAT AND AIR 2 YEARS UNDER SUGGESTED STORAGE CONDITIONS	
Shelf life		

Approved by:	Quality Control Dept.	Quality Control Manager
Signature:		



47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100