Министерство образования и науки Украины
Севастопольский национальный технический университет

МЕТОДИЧЕСКИЕ УКАЗАНИЯ
к практическим занятиям по дисциплине
«Аннотирование и реферирование технических текстов с русского языка на английский язык»
(употребление запятой в техническом тексте)
для студентов 5 курса
специальности 6.020303 «Перевод»
дневной формы обучения

Севастополь
2009

УДК 800
Практика письменной речи (употребление запятой в техническом тексте): Контрольные задания к практическим занятиям по дисциплине «Практика письменной речи» для студентов 5-го курса специальности 6.020303 «Перевод» дневной формы обучения /Сост. Л.М. Абросимова, доцент кафедры ТПП, М.В. Павлова. - Севастополь: Изд-во СевНТУ, 2009 г. - 20с.

Цель тестовых заданий - проверить и закрепить правила использования запятой в различных функциях в текстах научно-технической направленности. Предназначено для студентов 5-го курса направления «Перевод», изучающих дисциплину «Аннотирование и реферирование технических текстов с русского языка на английский», а также для студентов технических специальностей, магистров, аспирантов и всех тех, кто интересуется вопросами пунктуации английского языка. Тестовые задания состоят из четырех вариантов, каждый из которых включает три задания. Первое задание направлено на обучение распознавания отдельных функций запятой. Второе и третье задания предусматривают расстановку запятой в предложениях в соответствии с этими функциями.
К упражнениям прилагаются ключи.

Методические указания рассмотрены и утверждены на заседании кафедры теории и практики перевода (протокол № 01 от 25.09.2009г.)

Допущено учебно-методическим центром СевНТУ в качестве методических указаний.

Рецензент: канд. пед. н., доцент кафедры ПРГЯ Клепикова Т.Г.

CONTENTS

Test

Variant 1

I. Group the following sentences according to the rules of comma use, characteristic of the technical texts:

a. commas with introductory elements and appositions;
b. commas in compound sentences;
c. commas in complex sentences;
d. commas with homogeneous sentence parts and in enumerations;
e. commas with prepositional phrases;
f. commas with absolute constructions.

1. The rapid expansion of physics in the last few decades was made possible by the fundamental developments during the first third of the century, coupled with recent technological advances, particularly in computer technology, electronics, nuclear-energy applications, and high energy particle accelerators.

2. The first artificial high-energy emissions were produced in 1932 by the British physicist Sir John Douglas Cockcroft, who used high-voltage generators to accelerate protons.

3. Higher-voltage sources were first made possible by the invention, also in 1932, of the Van de Graaff generator.

4. To obtain more detailed information in this matter, the use of more energetic projectiles is necessary.

5. A bigger accelerator, reaching 3 GeV, was built in the early 1950s at the Brookhaven National Laboratory in Upton, New York.

6. It is now commonly known as the Geiger-Muller counter, and although small and convenient, it has been largely replaced by faster and more convenient solid-state counting devices.

7. An ionizing particle passing between the plates breaks down the gas, forming sparks that delineate its path.

8. In 1931 Pauli, in order to explain the apparent failure of some conservation laws in certain radioactive processes, postulated the existence of electrically neutral particles.

9. Gauge theory, in principle, can be applied to any force field.

10. Such theories solve a number of problems, but they are still only highly theoretical constructs.

11. The sharp, discrete energy becomes broadened into energy bands.

12. A principal characteristic of most solids is their crystalline structure, with the atoms arranged in regular and geometrically repeating arrays.

II. **Insert commas if necessary.**

1. Much current research is devoted to producing a controlled rather than an explosive fusion device which would be less radioactive than a fission reactor.

2. In December 1993 significant progress was made toward this goal when researchers at Princeton University used the Tokamak Fusion Test Reactor to produce a controlled fusion reactor that output 5.6 million watts of power.

3. First detonated in 1952 it is a weapon much more powerful than the fission bomb.

4. However the Tokamak consumed more power than it produced during its operation.

5. A number of modern electronic devices notably the transistor developed by the American physicist John Bardeen are based on these semiconductor properties.

6. If the forbidden band is narrow a few fast electrons may be able to jump across yielding a semiconductor.

7. In this case the energy-band spacing may be greatly affected by minute amounts of impurities such as arsenic in silicon.

8. Metals on the other hand are bonded by a so-called electron gas or electrons that are freed from the outer atomic shell and shared by all atoms and that define most properties of the metal.

9. For this reason many physicists are exploring the possibilities of so-called supersymmetry theories which would directly relate fermions and bosons to one another by postulating further particle twins to those now known differing only in spin.

10. Doubts have been expressed about such efforts but another approach known as "superstring" theory is attracting a good deal of interest.

11. Such theories solve a number of problems for the physicists who are working on unified filed theories.

12. The electron proton neutron photon and all the particles discovered since 1932 are collectively called elementary particles.

III. In the following passage we have deliberately introduced some errors in punctuation. Remove all misused commas, add any that are needed, and leave those that are correctly used.

Fermi and many collaborators attempted a series of experiments to produce elements beyond uranium, by bombarding uranium with neutrons. They succeeded and now at least a dozen such transuranium elements have been made. As their work continued an even more important discovery was made. Irene Joliot-Curie, the German physicist Otto Hahn, and the Austrian physicist Lise Meitner, found, that some uranium nuclei broke into two parts, a phenomenon, called nuclear fission. At the same time a huge amount of energy was released by mass conversion as well as some neutrons. These results suggested, that there is a possibility of a self-sustained chain reaction, and this was achieved by Fermi, and his group in August, 1942, when the first nuclear reactor went into operation. Technological developments followed rapidly; the first atomic bomb was produced in 1945, as a result of a massive program under the direction of the American physicist, J. Robert Oppenheimer, and the first nuclear power reactor for the production of electricity went into operation in England in 1956 yielding 78 million watts.

Variant 2

I. Group the following sentences according to the rules of comma use, characteristic of the technical texts:

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e. commas with prepositional phrases;
f. commas with absolute constructions.

1. Second, the forward-going No-254 specimen is steered through a fragment mass analyzer where it follows a course favoring only such heavy nuclei.

2. Since their discovery in the 1670s, an incredible amount has been learned about microorganisms and their importance in human health, agriculture, ecosystem functioning, and global biochemical circles.

3. For example, though there are certainly at least 10 million species of bacteria, only a few thousand have been formally described.

4. In the brain, multiple developmental events are simultaneously orchestrated resulting in the innervation of pre- and postsynaptic partners as discrete neural coordinates.

5. Given the close anatomical and functional relationships between glia and neurons, it is possible to generalize other neural circuits, whereby glia act as key regulators.

6. However, the work of Ango et al., together with that of other colleagues in this field, is starting to provide a conceptual framework for understanding how these processes could be orchestrated in vivo.

7. Despite these challenges, we can develop effective binning methods for complex communities.

8. If these challenges are met, ESS has the potential to rewrite much of what we thought we knew about the phylogenetic diversity of microbial life.

9. Unfortunately, many, if not most, key microbes have not yet been cultured.

10. And when using the large insert approach, functions can be predicted from sequences.

11. The worm egg-laying motor neuron HSNL forms synapses, with its postsynaptic target muscles active.

12. Also, during the development of the mammalian cortex, the subplate neurons display a similar guidepost function to arrange the marriage between the thalamic axons.

II. Insert commas if necessary.

1. We don't know of any such object but physicists have detected small regions of space characterized by a very slightly negative energy density.

2. Second the forward-going No-254 specimen is steered through a fragment mass analyzer where it follows a course favoring only such heavy nuclei.

3. Astronomers have demonstrated this principle by canceling the image of the star Betelgeuse leaving behind the faint glow of a surrounding dust nebula.

4. UCLA scientist Phil Kuekes hopes to grow computers in chemical

solution by building up arrays of atoms or molecules linked together with tiny wires perhaps eventually carbon nanotubes.

5. Such a computer could be tiny energy efficient and capable of new tricks such as being able to sense and respond to its environment through chemically activated switches.

6. In a typical magnetic resonance imaging (MRI) device a powerful magnet polarizes hydrogen nuclei inside water molecules to a few parts in a million.

7. This magnetic resonance effect can produce high-quality non-invasive images of liquids in large magnetic fields but is not effective for gases because of their low density and hence weak radio signals.

8. One of these techniques is "spin-exchange optical pumping" a process in which circularly polarized laser light transfers its spin to rubidium vapor.

9. The Harvard-Smithsonian innovation is to carry out laser-polarized helium-3 MRI with low magnetic fields of 20 gauss compared to the usual 15,000 gauss in conventional MRI machines.

10. Furthermore low magnetic fields and resonant frequencies will aid the imaging of porous materials and the interior of metals.

11. Einstein's special theory of relativity asserts that no physical object can travel faster than the speed of light.

12. If you combine negative energy with positive energy you get nothing very different from the explosion you get when you combine matter and antimatter.

III. In the following passage we have deliberately introduced some errors in punctuation. Remove all misused commas, add any that are needed, and leave those that are correctly used.

In 1935, the Japanese physicist, Yukawa Hideki, developed a theory, explaining how a nucleus is held together, despite the mutual repulsions of its protons, by postulating the existence of a particle intermediate in mass between the electron and proton. In 1936, Anderson and his coworkers discovered a new particle of 207 electron masses in secondary cosmic radiation; now called the mu-meson or muon, it was first thought to be Yukawa's nuclear "glue". Subsequent experiments by the British physicist Cecil Frank Powell and others, led to the discovery of a somewhat heavier particle of 270 electron masses, the pi-meson or pion which was eventually identified, as the missing link in the Yukawa's theory. Many additional

particles have since been found in secondary cosmic radiation, and through the use of large accelerators. They include numerous massive particles classed as hadrons (particles, that take part in the "strong" interaction, which binds atomic nuclei together), including hyperons and various heavy mesons with masses ranging from about one to three proton masses.

Variant 3

I. Group the following sentences according to the rules of comma use, characteristic of the technical texts:

a. commas with introductory elements and appositions;
b. commas in compound sentences;
c. commas in complex sentences;
d. commas with homogeneous sentence parts and in enumerations;
e. commas with prepositional phrases;
f. commas with absolute constructions.

1. If we are too stringent, most bins will include only a few fragments.

2. Modeling and understanding of this ecosystem are greatly enhanced by the demonstration of this complementary division of labor, in comparison to simply knowing that amino acids, vitamins, and cofactors are made by "symbionts".

3. As with the Internet, ESS is a global portal for looking at what occurs in a previously hidden world.

4. It was not until comparisons were made between closely related organisms that we began to understand events that occurred on shorter time scales, such as translation and DNA metabolism.

5. Similarly, the initial comparison of ESS data involves comparison of widely-different environments, yielding insights into the general structure of communities.

6. This method allows microorganisms in a sample to be phylogenetically types based on the sequence of their RNA genes, genes that are present in all cell-based organisms.

7. Rather than counting species, this approach focuses on "phylotypes," which are defined as organisms whose RNA sequences are very similar to each other.

8. However, this efficiency comes with limitations, most of which are complemented or circumvented by the randomness and breadth of ESS.

9. Metals, on the other hand, are bonded by a so-called electron gas, or electrons that are freed from the outer atomic shells.

10. Electrical resistance usually decreases with decreasing temperature, and for certain materials, called superconductors, it becomes extremely low, near absolute zero.

11. In making these synaptic choices, cellular contact with other neurons is not sufficient for synapse formation.

12. Although glia constitute 90% of cells in the human brain, they seldom share the limelight with their neuronal cousins.

II. Insert commas if necessary.

1. Kohn's solution was "density-functional theory" which describes atomic and molecular bonding not by accounting for the motions of all the participating electrons but rather by specifying the effective density of electrons making the whole problem much more computationally tractable.

2. Rather the curvature of a space-time incorporating a negative-energy density is such that one can arrive quickly at distant places using sub-light speeds.

3. In the *C. elegans* nerve ring two interneurons RIA and ATY reliably innervate each other at stereotyped locations.

4. Once the target field is reached however axons still encounter many potential synaptic choices.

5. A variety of approaches have been developed some of which are described in Table 2.

6. We then could infer from those data that one of the symbionts synthesizes amino acids for the host while the other synthesizes the needed vitamins and cofactors.

7. What if instead as in the sharpshooter example we are trying to have each bin include every fragment that came from a particular species knowledge which may be useful for predicting community metabolic potential?

8. To make matter more complex the stringency needed will vary for different taxa present in the sample.

9. But if we are too relaxed we will create artificial constructs that may prove biologically misleading such as grouping together sequences from

different species.

10. In addition the lessons learned here can be applied to other aspects of metagenomics.

11. We will begin to learn about shorter time scale processes such as migration speciation extinction responses to disturbance and succession.

12. The question of how synapse specificity is directed is a formidable one in its own right.

III. In the following passage we have deliberately introduced some errors in punctuation. Remove all misused commas, add any that are needed, and leave those that are correctly used.

Gauge theory in principle can be applied to any force field, holding out the possibility, that all the interactions or forces can be brought together into a single unified field theory. Such efforts inevitably evolve the concept of symmetry. Generalized symmetries extend to particle interchanges, that vary from point to point in space and time. The difficulty for physicists is, that such symmetries while mathematically elegant do not extend scientific understanding of the underlying nature of matter. For this reason many physicists are exploring the possibilities of so-called supersymmetry theories which would directly relate fermions and bosons to one another, by postulating further particle "twins" to those now known differing only in spin. Doubts have been expressed about such efforts but another approach, known as "superstring" theory, is attracting a good deal of interest. In such theories fundamental particles are considered not as dimensionless objects. but as "strings", that extend one-dimensionally to lengths of no more than 10-35 meters. Such theories solve a number of problems for the physicists, who are working on unified field theories but they are still only highly theoretical constructs.

Variant 4

I. Group the following sentences according to the rules of comma use, characteristic of the technical texts:

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f. commas with absolute constructions.

1. In the "arranged marriage mode" however, a third cell can function as a guidepost to coordinate the innervation.

2. The guidepost cell attracts both pre- and postsynaptic partners, enabling them to choose each other.

3. During synaptogenesis, proper synapse formation depends on pairing the right partners at the right density.

4. They may be electrically neutral, positive, or negative, but never have more than one elementary electric charge.

5. Glia provide trophic support that is essential for neuron survival and homeostasis, and they regulate the production of neurons by modulating neuronal precursor divisions.

6. The Nobel citation quoted P.A.M. Dirac to the effect that although the basic quantum laws governing large parts of physics and chemistry are known, progress will still be obstructed by the fact that the pertinent equations are too difficult to solve.

7. The researchers expect that with adaptive optics, a ground-based nulling system could be used to image Jupiter-sized planets around nearby stars beyond the sun.

8. An all-nano computer performing simple computations, Heath believes, is a couple of years away.

9. The low-field imaging (with helium-3 polarizations of about 20%) provided 1 mm spatial resolution, comparable to high-field MRI using either the conventional hydrogen approach or spin-polarized noble gas.

10. We don't know of any such object, but physicists have detected small regions of space characterized by a very slightly negative energy density (the so called Casimir effect).

11. If you combine negative energy with positive energy you get nothing, very different from the explosion you get when you combine matter and antimatter.

12. The actual paths of ionized particles were first observed by the British physicist Charles Wilson in a cloud chamber, where water droplets condensed on the ions produced by the particles during their passage.

II. Insert commas if necessary.

1. Most of the time the product nucleus fissions immediately but in a small

fraction of the collisions a nucleus of nobelium (element 102) is formed.

2. Using green fluorescent protein bacterial artificial chromosome transgenic reporter mice Ango et al. were able to determine the role of BG in directing the innervation of stellate and Purkinje cells.

3. On a cellular level one might ask how pre- and postsynaptic cells reliably meet each other and choose each other as partners.

4. It turns out that a pair of nearby glia cells serve as guideposts for the innervation of these two interneurons.

5. While the circuitry of the vertebrate brain is subject to the activity-dependent refinement growing evidence suggests that the wiring events are genetically hard-wired at early stages of development.

6. We know remarkably little about the cellular and molecular mechanisms that coordinate this process of synaptic specificity.

7. The theory postulated three kinds of quarks but later experiments especially the discovery of the J/psi particle called for the introduction of three additional kinds.

8. During development this process occurs almost simultaneously in trillions of synapses and the disruption of any of these neurodevelopmental steps affects synaptic communication.

9. In considering the different binning methods and their limitations the first question is about the object of binning.

10. Making sense of it requires one to sort through massive random fragmented collections of bits of information.

11. For example the accelerator at the Stanford Linear Accelerator Center in Stanford California accelerates electrons down a straight "runway" 3.2 km long.

12. They all obey conservation law involving quantum numbers such as baryon number strangeness and isotopic spin.

III. In the following passage we have deliberately introduced some errors in punctuation. Remove all misused commas, add any that are needed, and leave those that are correctly used.

The natural elements run out at uranium (92 in the Periodic Table) but physicists can go further by artificial means. At Argonne's ATLAS accelerator projectile calcium nuclei plow into target lead nuclei. Most of

the time, the product nucleus fissions immediately, but in a small fraction of the collisions a nucleus of nobelium (element 102), is formed. The very heavy isotope No-254 with 102 protons and 152 neutrons has a relatively long lifetime of 55 seconds but it is difficult to study, since it is produced amidst a welter of fission products from other nuclei. At Argonne the detection process is twofold. First the No-254 is created within a device, called the Gammasphere, a 10-foot-across spherical ball, lined with gamma-ray detectors which sample the high-energy photons cast off by the newly created highly excited (and often rapidly spinning) nuclei. Second the forward-going No-254 specimen is steered through a fragment mass analyzer, where it follows a course, favoring only such heavy nuclei. Eventually it buries itself in a silicon detector, where it is identified by its characteristic decays into lighter nuclei. The signals from the silicon detector are coordinated with those, from the upstream Gammasphere so that the gammas, which came from the nobelium, can be attributed to that nucleus alone.

KEYS

V-l

Ex. I

I.d, 2.c, 3.a, 4.f, 5.a, 6.b, 7.a, 8.e, 9.a, 10.b, 11. d, 12.e

Ex. II

1. Much current research is devoted to producing a controlled, rather than an explosive, fusion device, which would be less radioactive than a fission reactor.
2. In December 1993 significant progress was made toward this goal when researchers at Princeton University used the Tokamak Fusion Test Reactor to produce a controlled fusion reactor that output 5.6 million watts of power.
3. First detonated in 1952, it is a weapon much more powerful than the fission bomb.
4. However, the Tokamak consumed more power than it produced during its operation.
5. A number of modern electronic devices, notably the transistor, developed by the American physicist John Bardeen, are based on these semiconductor properties.
6. If the forbidden band is narrow, a few fast electrons may be able to jump across, yielding a semiconductor.
7. In this case the energy-band spacing may be greatly affected by minute amounts of impurities, such as arsenic in silicon.
8. Metals, on the other hand, are bonded by a so-called electron gas, or electrons that are freed from the outer atomic shell and shared by all atoms, and that define most properties of the metal.
9. For this reason, many physicists are exploring the possibilities of so-called supersymmetry theories, which would directly relate fermions and bosons to one another by postulating further particle twins to those now known, differing only in spin.
10. Doubts have been expressed about such efforts, but another approach known as "superstring" theory is attracting a good deal of interest.
11. Such theories solve a number of problems for the physicists who are working on unified filed theories.
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Ex. III

Fermi and many collaborators attempted a series of experiments to produce elements beyond uranium by bombarding uranium with neutrons. They

succeeded, and now at least a dozen such transuranium elements have been made. As their work continued, an even more important discovery was made. Irene Joliot-Curie, the German physicist Otto Hahn, and the Austrian physicist Lise Meitner found that some uranium nuclei broke into two parts, a phenomenon called nuclear fission. At the same time, a huge amount of energy was released by mass conversion, as well as some neutrons. These results suggested that there is a possibility of a self-sustained chain reaction, and this was achieved by Fermi and his group in August 1942, when the first nuclear reactor went into operation. Technological developments followed rapidly; the first atomic bomb was produced in 1945 as a result of a massive program under the direction of the American physicist J. Robert Oppenheimer, and the first nuclear power reactor for the production of electricity went into operation in England in 1956, yielding 78 million watts.

V-2

Ex. I

1.a, 2.d, 3.a, 4.d, 5.f, 6.a, 7.a, 8.c, 9.a, 10. f, 11.e, 12.a

Ex. II

1. We don't know of any such object, but physicists have detected small regions of space characterized by a very slightly negative energy density.
2. Second, the forward-going No-254 specimen is steered through a fragment mass analyzer where it follows a course favoring only such heavy nuclei.
3. Astronomers have demonstrated this principle by canceling the image of the star Betelgeuse, leaving behind the faint glow of a surrounding dust nebula.
4. UCLA scientist Phil Kuekes hopes to grow computers in chemical solution by building up arrays of atoms or molecules linked together with tiny wires, perhaps eventually carbon nanotubes.
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7. This magnetic resonance effect can produce high-quality, non-invasive images of liquids in large magnetic fields, but is not effective for gases because of their low density and hence weak radio signals.
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V-3

Ex. I

1.c, 2.d, 3.e, 4.e, 5.a, 6.b, 7.c, 8.a, 9.a, 10. b, 11. f, 12. c

Ex. II

1. Kohn's solution was "density-functional theory," which describes atomic and molecular bonding not by accounting for the motions of all the participating electrons, but rather by specifying the effective density of electrons, making the whole problem much more computationally tractable.
2. Rather, the curvature of a space-time incorporating a negative-energy density is such that one can arrive quickly at distant places using sub-light speeds.

3. In the C. elegans nerve ring, two interneurons, RIA and AIY, reliably innervate each other at stereotyped locations.
4. Once the target field is reached, however, axons still encounter many potential synaptic choices.
5. A variety of approaches have been developed, some of which are described in Table 2.
6. We then could infer from those data that one of the symbionts synthesizes amino acids for the host, while the other synthesizes the needed vitamins and cofactors.
7. What if instead, as in the sharpshooter example, we are trying to have each bin include every fragment that came from a particular species, knowledge which may be useful for predicting community metabolic potential?
8. To make matter more complex, the stringency needed will vary for different taxa present in the sample.
9. But if we are too relaxed, we will create artificial constructs that may prove biologically misleading, such as grouping together sequences from different species.
10. In addition, the lessons learned here can be applied to other aspects of metagenomics.
11. We will begin to learn about shorter time scale processes such as migration, speciation, extinction, responses to disturbance, and succession.
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V-4

Ex. I

1.a, 2.f, 3.e, 4.b, 5.b, 6.b, 7.b, 8.a, 9.e, 10.b, 11.e, 12.c

Ex. II

1. Most of the time the product nucleus fissions immediately, but in a small fraction of the collisions, a nucleus of nobelium (element 102) is formed.
2. Using green fluorescent protein bacterial artificial chromosome transgenic reporter mice, Ango et al. were able to determine the role of BG in directing the innervation of stellate and Purkinje cells.
3. On a cellular level, one might ask how pre- and postsynaptic cells reliably meet each other and choose each other as partners.
4. It turns out that a pair of nearby glia cells serve as guideposts for the innervation of these two interneurons.
5. While the circuitry of the vertebrate brain is subject to the activity-dependent refinement, growing evidence suggests that the wiring events are genetically hard-wired at early stages of development.
6. We know remarkably little about the cellular and molecular mechanisms that coordinate this process of synaptic specificity.
7. The theory postulated three kinds of quarks, but later experiments, especially the discovery of the J/psi particle, called for the introduction of three additional kinds.
8. During development, this process occurs almost simultaneously in trillions of synapses, and the disruption of any of these neurodevelopmental steps affects synaptic communication.
9. In considering the different binning methods and their limitations, the first question is about the object of binning.
10. Making sense of it requires one to sort through massive, random, fragmented collections of bits of information.
11. For example, the accelerator at the Stanford Linear Accelerator Center in Stanford, California, accelerates electrons down a straight "runway," 3.2 km long.
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Ex. III

The natural elements run out at uranium (92 in the Periodic Table), but physicists can go further by artificial means. At Argonne's ATLAS

accelerator, projectile calcium nuclei plow into target lead nuclei. Most of the time the product nucleus fissions immediately, but in a small fraction of the collisions, a nucleus of nobelium (element 102) is formed. The very heavy isotope No-254, with 102 protons and 152 neutrons, has a relatively long lifetime of 55 seconds, but it is difficult to study since it is produced amidst a welter of fission products from other nuclei. At Argonne the detection process is twofold. First, the No-254 is created within a device called the Gammasphere, a 10-foot-across spherical ball lined with gamma-ray detectors, which sample the high-energy photons cast off by the newly created, highly excited (and often rapidly spinning) nuclei. Second, the forward-going No-254 specimen is steered through a fragment mass analyzer where it follows a course favoring only such heavy nuclei. Eventually it buries itself in a silicon detector where it is identified by its characteristic decays into lighter nuclei. The signals from the silicon detector are coordinated with those from the upstream Gammasphere, so that the gammas which came from the nobelium can be attributed to that nucleus alone.