premiums annually for the best original papers sent in to the Society on Telegraphic or Electrical Subjects during the Session by any person not being a member of the Council of the Society. The 1st Premium will be called the Society's Premium, value 10*l.*; 2nd, the Paris Electrical Exhibition Premium, value 5*l.*; 3rd, the Fahie Premium, value 5*l.* The Premiums will consist of books or scientific apparatus. The first Premium will be awarded in 1883 for the best papers sent in between this date and the end of May next.

DR. F. A. FOREL, of Morges, informs us that the supposed lacustrine canoe referred to in NATURE, vol. xxvi. p. 67, was really a simple trough made out of a log, for the reception of spring water.

THE additions to the Zoological Society's Gardens during the past week include a Spotted Cavy (*Cœlogenys paca*) from South America, presented by Mr. V. Gibbs; a Red Brocket (*Cariacus rufus* ♂) from Trinidad, presented by Mr. H. Sandbach; a Black-breasted Sparrow (*Passer diffusus* ♂), a White-throated Seed Eater (*Crithaga albogularis*) from South Africa, presented by Mr. J. Abrahams; a Horned Lizard (*Phrynosoma cornutum*) from Texas, presented by Capt. E. C. B. Walker; three Midwife Toads (*Alytes obstetricans*), fourteen Alpine Newts (*Triton alpestris*) from Belgium, presented by M. G. A. Boulenger; a Lesser White-nosed Monkey (*Cercopithecus petaurista* ♀) from West Africa, a Jackass Penguin (*Spheniscus magellanicus*) from the Falkland Islands, two Cape Crowned Cranes (*Balearica chrysopelargus*) from South Africa, a Flamingo (*Phœnicopterus antiquorum*) from North Africa, two Bernicle Geese (*Bernicla leucopsis*), two White-fronted Geese (*Anser albifrons*), a Ruddy Sheldrake (*Tadorna rutila*), a Herring Gull (*Larus argentatus*), European, a Bordeaux Snake (*Coronella girondica*), South European, deposited; a Koala (*Phascolarctos cinereus*) from Australia, two Javan Peafowls (*Pavo spicifer* ♂ ♀) from Java, purchased; a Collared Fruit Bat (*Cynonycteris collaris*), born in the Gardens.

## OUR ASTRONOMICAL COLUMN

THE COMET.—The following orbit of the present comet has been calculated by Mr. Hind, from observations at Harvard College, U.S., on March 19, Josephstadt (Vienna) on April 19, and one by Prof. Millosevich, at the Collegio Romano, Rome, on May 21; parallax and aberration were taken into account:—

Perihelion passage, June 10·52442 Greenwich M.T.

| | ° ′ ″ | |
|---|---|---|
| Longitude of perihelion ... ... | 53 55 18·0 | From M. Eq., 1882·0. |
| ,, ascending node... | 204 53 56·9 | |
| Inclination... .. ... ... ... | 73 46 39·8 | |
| Log. of perihelion distance ... | 8·782864 | |

Motion—direct.

From these elements we find the positions near perihelion passage thus—

| | | R.A. | Decl. | Distance from Sun's centre. In R.A. | In Decl. | Intensity of Light. |
|---|---|---|---|---|---|---|
| | d. h. | ° ′ | ° ′ | ° ′ | ° ′ | |
| June | 10 0 | ...74 58·4 | ...+23 41·9 | ...−3 33 | ...+0 40 | ... 82·6 |
| | 10 6 | ..75 50·8 | ...+22 34·5 | ...−2 56 | ...−0 29 | ..104·5 |
| | 10 18 | ...78 0·2 | ...+20 29·2 | ...−1 18 | ...−2 36 | ...105·2 |
| | 11 0 | ...79 16·1 | ...+19 40·4 | ...−0 17 | ...−3 26 | ... 87·6 |

The intensity of light on May 21 has been taken as unity. The comet was then judged to have the brightness of a star of 5·6m. On May 18 Mr. G. Knott estimated it a little higher than 6·0, which fairly accords. Whence theory would raise it to over an average first magnitude at perihelion. With due precautions which will occur to most observers who have large refractors, it is now seen to be by no means improbable that the comet may be observed in full daylight, on June 10 and 11. Still it may be well to remark that as compared with the first comet of 1847, observed at noon, close to the sun, on March 30, by Mr. Hind, with a 7-inch refractor, stopped down to about 3 inches, the theoretical intensity of light at perihelion is not quite half as great; thus calling the brightness unity when the comet was first glimpsed with the naked eye, the brightness of the present comet at perihelion will be 186, while that of the comet of 1847 was 408.

By the above orbit the comet traverses the plane of the ecliptic at the ascending node 0·038 within the earth's track.

DOUBLE STARS.—No. 6 of "Publications of the Cincinnati Observatory" has been issued. It contains micrometrical measures of double stars made with the 11-inch refractor in 1879–80, consisting partly of observations preliminary to the formation of a general catalogue of known double stars situated between the equator and 30° south declination, and partly of observations of objects which Mr. Burnham has found to need re-observing. The cases of notable differences from previous measures are collected in the introduction. Mr. Ormond Stone is doing excellent work with his refractor, which appears to have been much improved since the object-glass was re-figured by Messrs. Alvan Clark and Son.

THE VARIABLE STAR U GEMINORUM.—Mr. G. Knott, writing from Cuckfield on May 29, states that he had caught a maximum of this apparently capricious variable on May 27 or 28; on both nights it was about 9·9 m. This, compared with the previous maximum noted by the same observer on February 28, gives a period of eighty-eight days.

Prof. Schönfeld finds that a star R.A. 16h. 13m. 36s., Decl. −7° 21′·0 for 1855 is variable.

A star in R.A. 19h. 17m. 33s., Decl. −21° 32′·3 for 1850, must be variable to a great extent—6·5 to 9·0 at least.

## TEMPERATURE REGULATORS

BEFORE proceeding to the consideration of some of the means adopted for controlling temperature, more or less perfectly, it will be as well to notice two instruments, because although they are in reality only indicators, yet the latter is always referred to as a regulator.

Hall's aërometer[1] consists of a glass bulb 4½ c.i. in capacity, attached to a long tube whose capacity is 1 c.i. This tube is inserted into another of nearly equal length, and supported on a stand. The first tube admits of being sustained within the second at any given height by means of a spring. The outer tube is charged with mercury or water, according to circumstances, and the bulb and inner tube are arranged to contain, at the normal pressure and temperature, 5 c.i. of air. Any changes, therefore, in the atmospheric conditions will affect the level in the inner tube, and can be allowed for accordingly.

Doyere's regulator[2] (1848), which is on the same principle, consists of a glass bulb, to the bottom of which a fine tube is attached. This tube is bent, then carried upwards for a certain distance, is then bent again to form an inverted U-tube, the extremity is again bent upwards, and terminates in an open bulb. The lower bulb and the quill-tube are partly filled with water, the surface of which in the tube indicates by its change of position the alterations in the volume of the air contained in the bulb. The principle on which Fresenius' cast-iron drying-disk is constructed is the same which long ago led to the use of sand-baths, for it is obvious that if a large mass must be warmed before the heat can reach the substance, a rapid rise in temperature is impossible. The number of substances which can be conveniently dried at the temperature of boiling water, and the number of chemical operations which require that temperature, have led to the construction of every variety of water-bath and water-oven. With a temperature not much above the boiling point of water, the increase may be obtained by using solutions of various salts; but with these the evils of bumping and crystallisation are so great that Sprengel (1869)[3] replaced the water in a water-oven by sulphuric acid having a specific gravity of 1·55, and for that purpose constructed a leaden one of the following description: The outside case of the double-walled air-bath is a 6½-inch cube, the inside a 5-inch cube. The worm, made of about 30 feet of leaden piping of ⅜-inch diameter, is 15 inches high and 4 inches wide. The coils of the worm are kept apart from each other ⅛ inch by means of solder, and the worm is kept in its upright position by two iron supports soldered to the sides of the air-bath.

Laspeyres[4] (1874), using the same liquid, constructed two pieces of apparatus. One was a glass flask so arranged that

[1] *Q. J. Sci.* v. 52 (1818) Faraday's manip. 375.
[2] *Ann. Chim. Phys.* [3] xxviii. 5 (1850) Gerhardt 1,105.
[3] *Journ. Chem. Soc.* xxvi. 458 (1873). [4] *Pogg. Ann.* clii. 132 (1874).

the substance could be heated in a test-tube; and the other consisted of a platinum vessel so constructed that the substance could be inserted into a horizontal tube.

Although Laspeyres in the article just quoted argues most conclusively that an absolutely constant temperature cannot be maintained by controlling the gas-supply, and Jac. Myers concludes his considerations on the subject by saying, "For so long must we give up the hope of being able to regulate these temperatures at pleasure," yet the subject of temperature-regulators is one to which so many have at various times turned their attention, that a comparison of the different methods is not without interest. Most of the instruments constructed may be classified under one or another of the following heads, viz., as modified:—

Air thermometers, with mercury or other fluid arranged to control supply of gas:—(*a*) in which the mercury employed becomes more or less heated while in use; (*b*) in which the mercury or other fluid does not become heated.

Mercurial thermometers (*a*) acting directly on gas-supply; (*b*) acting on gas-supply through the intervention of electric arrangements.

Vapour-tension thermometers.

*Air Thermometers* (*a*).—Kemp's regulator (1852) consists of a glass tube, at one end of which an elongated bulb is blown; the part of the tube near the bulb is then bent so that the open end of the tube and the bulb are parallel.[1] Sufficient mercury is then introduced to partly fill the bulb, the remainder being occupied by air. To the open end of the tube is cemented a brass cap, which is provided at the side with the gas inlet tube, and in the centre with a stuffing box, through which the brass outlet tube slides. The temperature is adjusted by moving this tube up or down as the case may be.

Bunsen's modification made the apparatus more compact, but not so simple or easy of construction.[2] It consists of a glass cylinder whose lower part is closed, and serves as air-vessel which communicates with the upper portion by a tube reaching nearly to the bottom. In the upper portion is inserted a wide glass tube which is provided with a side-tube, and which dips into the mercury. Fastened to the upper end of this tube is the gas-supply tube, which is rather shorter, and which has a fine opening in it. The position of these tubes is adjusted by the screw-thread in a brass cap, which works on a corresponding thread in the supply tube. The two parts of the apparatus are held together by a spring (in the newer patterns this is replaced by a pin working in a groove).

His low-temperature regulator has a much larger air-chamber, so as to increase its sensitiveness.[3] It is also provided with a side-tube fitted with a stopcock, so that mercury may be added or drawn off at pleasure. Guthrie[4] (1868) constructed a regulator on Kemp's principle, but attached the top of the vertical tube to the bottom of an U-tube which the gas had to traverse, so that the mercury on rising checked the flow. The adjustment consisted of a side tube (bent at a right angle) attached to the vertical tube; in that tube a glass rod could be raised or depressed, being held in its position by passing through a perforated cork. Müncke's[5] (1876) is very similar to Bunsen's, but the brass cap and fittings are entirely dispensed with, as the gas-supply pipe works stiffly through a perforated cork which fits the top of the tube

*Air Thermometers* (*b*).—Schorer[6] (1870) used for an air-vessel a test tube 60 mm. × 14 mm., fitted with an india-rubber cork, and connected by a narrow tube with one limb of an U-tube, partly filled with mercury, the other limb being fitted with the control arrangement of Bunsen's pattern.

Clowes[7] (1871) constructed an apparatus on the same principle, but added a small outlet tube at the bottom of the U-tube, so that by means of an india-rubber tube, which is closed by a screw clip, the mercury level in the U-tube may be adjusted. In his apparatus the gas exit consisted of a glass tube passing through a perforated cork.

Jeannèl[8] (1872) used a metallic air-vessel of 300-400 c.c. capacity, communicating, as in Schorer's, with an U-tube (charged, however, with glycerine instead of mercury). The pressure of the air in the vessel is regulated by means of an india-rubber ball, which is fitted (by means of a T-piece and stopcock) to the connecting tube. The flow of gas is controlled by means of a float in the other limb of the U-tube, which approaches or recedes from the end of the gas-delivery tube. The float is held steady by a guide needle, which is fixed to the upper extremity by means of sealing-wax. He mentions Steling's regulator, but gives no reference.

[1] Williams, "Chem. Manip.," 49.
[2] Desaga's "Price List," Fig. 614.
[3] Desaga, Fig. 1,078.
[4] *Phil. Mag.* xxxvi. 30 (1868); Strecker's "Jahresb.," 78 (1868).
[5] *Ding. Polyt. Journ.* 219, 72 (1876).
[6] *Fres. Zeit. Anal. Chem.* ix. 213 (1870).
[7] *Journ. Chem. Soc.* xxiv. 639 (1871).
[8] *Ann. Chim. Phys.* [4], xxv. 386 (1872).

Martenson[1] (1872) used an air-chamber 14 c.m. long × 2 c.m. diam., and connected it by means of a fine tube with a modified U-tube charged with mercury. The rough adjustment is made by a fine opening in the narrow tube, which is closed by slipping an india-rubber tube over it, and the final adjustment is made by means of the gas-delivery tube, which works air-tight through a cork. A side branch to the U-tube serves as a by-pass.

J. Myers[2] (1872).—In this apparatus the air-vessel consists of four tubes 15 c.m. long × 2 c.m. diam. connected together by small tubes, and which then communicate with a regulator similar to that which Schlösing uses.

Cresti[3] (1878) employs a glass apparatus consisting of a horizontal air-vessel 15 c.m. long × 2 c.m. diam.; to this is attached at right angles a glass regulator of the Bunsen-Kemp pattern, the communication between the two being made by a capillary tube which enters the upper part of the air-chamber of the regulator. It is however a form of regulator which would require to be well screened from draughts, as so much of it is exposed.

*Mercurial Thermometers* (*a*).—Carmichael's[4] (1870) arrangement consists of a tube 40 cm. long by 6 mm. diameter, closed at one end, so that when filled with mercury it forms an elongated thermometer. This is bent according to the bath in which it is immersed, but is so arranged that the open end is vertical; near this end is affixed a side tube of 2 mm. diameter. This tube, after bending upwards, bifurcates. Into the open end of the larger tube a cork is fitted, through a hole in which a glass rod slides. This rod serves as a regulator to adjust the level of the mercury in the side tube.

In Hannay's[5] (1874) arrangement the principle is the same as in the preceding, except that the adjustment is effected by means of a piston in the side tube, which is graduated, while the main tube is bifurcated. It is open however to the objection that the gas has to pass over heated mercury.

Schlösing[6] (1870) used a very fine tube of considerable length (suitably bent) as the mercury reservoir, and led the open end of it into one of the horizontal arms of a T-piece. The other horizontal arm carried the inlet-pipe of the gas, which passed to the burner through the vertical arm. The escape of the mercury from the reservoir was prevented by a piece of sheet india-rubber, which was tied over the end of the tube. As the mercury expanded it forced this elastic cap to assume a globular form, and thus checked the supply of gas. The quantity of mercury in the reservoir was adjusted by means of a side-tube provided with a stop-cock (Fig. 4). The outer tube of Fig. 1 is replaced by a four-branched bulb which contains the extremities of the reservoir and of the gas entrance tube; but these are separated by a small wooden disk with a handle attached, which is fixed in the upper branch, and which rests lightly on the india-rubber sheet. The diameter of the gas tube no longer depends on that of the india-rubber; it can be larger, and the opening gaining in circumference can be diminished to become so narrow that the slightest movement of the disk closes it. Total extinction of the flame is prevented by a small radial groove on the disk.

Reichert[7] (1872) constructed his regulator by expanding the top of the thermometer tube so as to form an elongated bulb. In the top of this bulb was fixed the gas-inlet tube, which nearly reached the lower extremity of the bulb. A side tube served as gas-exit. The adjustment was effected by means of a screw which worked in a cap cemented on to a side tube in the stem of the thermometer.

Milne-Edwards[8] (1872) describes a regulator similar to Reichert's, but does not specify what shape or description of bulb he employs.

Schäfer's[9] (1874) is essentially the same as the preceding, except that the inlet tube is a small steel tube with slit at lower extremity.

[1] *Pharm. Zeit. f. Russ.* xi. 136 (1872); *Chem. Centr.*, 513 (1872); *Journ. Chem. Soc.* xxvi. 471 (1873).
[2] *Deut. chem. Ges. Ber.* v. 859 (1872); *Chem. News*, January 10, 1873.
[3] *Gazz. Chim. Ital.* viii. 292 (1878); *Journ. Chem. Soc.*, abst., 294 (1879).
[4] *Chem. News*. November 3, 1871.
[5] *Journ. Chem. Soc.* xxvii. 206 (1874).
[6] *Ann. Chim. Phys.* [4] xix. 205 (1870); *Fres. Zeitsch.* ix. 477 (1870).
[7] *Pogg. Ann.* clxiv. 467 (1872); *Fres. Zeitsch.* xi. 34 (1872).
[8] *Ann. Chim Phys.* [4] xxv. 390 (1872).
[9] *Quart. Journ. Micro Sci.* 394 (1874).

Page[1] (1876).—The regulating arrangement is the following: A piece of glass tube about seven-sixteenths of an inch diameter and 1½ inch long is fitted at one end with a short round cork; through the centre of this cork a hole is bored, so that the stem of the thermometer just fits in it; the other end of this glass tube is closed by a short tightly-fitting india-rubber cork, which is pierced by a fine brad-awl through its centre. Into the hole thus formed is forced a piece of fine glass tubing three inches long and small enough to fit loosely inside the stem of the thermometer. The gas enters by this fine tube.

Fletcher[2] (1876) stated that he had for some time used a similar regulator, but that the thermometer had an iron bulb capable of containing two or three pounds of mercury. He also reversed the direction of the gas.

*Mercurial Thermometers* (*b*).—Scheibler[3] (1865) devised the following arrangement. In the bath or chamber which is being heated is placed an electric thermometer; this communicates with an electro-magnet which is inclosed in a small metallic chamber through which the gas for the burner has to pass. When by a rise in temperature the circuit is closed, the hinged armature of the magnet is brought into contact with the opening of the gas inlet-tube, and is not liberated until a fall in the temperature breaks the circuit.

O. Zabel[4] (1867) placed in communication with an electric thermometer a contrivance which consisted of two electro-magnets acting on a hinged metallic screen. The completion of the circuit by a rise in temperature placed the screen over the flame, and thus checked the heat.

J. Maistre[5] (1866) recommended an electric thermometer connected with an electro-magnet, the armature of which could remove the gas-burner from under the bath, or which could be connected by means of a lever with the gas-supply tap.

Springmühl[6] (1871) arranged an electro-magnet with a hinged armature, so that on the completion of the circuit a weight attached to a lever closed the gas-tap, which was not opened until the release of the armature liberated a spring which acted in the opposite direction.

*Vapour-tension Thermometers.*—Appold's[7] consists of a glass tube having a bulb at each end. The tube is filled, as also about half of each bulb, with mercury; the lower bulb containing ether to the depth of half an inch, which floats on the mercury. The tube is secured to a plate of boxwood, supported on knife-edges, on which it turns freely. At the end of the plate, underneath the higher bulb, is a lever, which controls the supply-valve of a gas-stove or the damper of a furnace. With a rise in the temperature the increased tension of the ether-vapour drives more mercury into the upper bulb; this end then falls. With a diminished temperature the reverse action takes place.

Andreae's[8] (1878) is like Kemp's and various others, on the principle of an U-tube with one limb closed. It is, however, rendered more sensitive by the introduction of a certain quantity of a volatile liquid into the air space. It must be borne in mind that the liquid must be selected according to the temperature required, as it is obvious that the regulator cannot be used in any case where it has to be heated beyond the boiling-point of the liquid.

Benoit[9] (1879) constructed an apparatus in which he regulated the temperature by adjusting the pressure on the volatile liquid contained in the bulb. The following is the arrangement:—A small reservoir, which can be shaped to suit the oven or bath in which it is placed, holds the volatile liquid. This is connected by means of a tube from the bottom, to which is attached an india-rubber tube, to a regulator of the same pattern as that used by Reichert. The regulator is fixed on a board which can be raised or lowered, and is provided with two side tubes for adding or drawing off mercury at will.

*By-pass.*—Since it is obvious that in cases where the quantity of gas required to pass through the regulator is large, any perceptible increase in the pressure or the supply from the main must be accompanied by a rise in the temperature of the bath, it is advisable therefore to adjust the by-pass tap so that as small a quantity as possible shall have to pass through the regulator. Here, however, experience must decide how wide a margin must be left to the control of the regulator, for in some districts the difference between the day and evening pressures is so great that adjustment becomes a matter of great difficulty. In some laboratories, especially when near a suburban gas-works, the day pressure is so low and the evening pressure is so high that unless a pressure regulator be interposed between the main and the temperature regulator, the by-pass cannot be used.

Bunsen's[1] thermostat is the vessel in which he maintains a constant temperature, and which is used by him in his vapour density method. It consists of a sheet-copper cylinder, from which at seven places equally distant from each other project pairs of copper rods 7–8 mm. thick, which are riveted and brazed into it. These rods are heated by gas flames, and the temperature is adjusted by moving the burners to or from the cylinder; but in order to maintain it as constant as possible, the apparatus must be carefully screened and the heights of the flames kept nearly equal by means of a gas-regulator, and the flames must reach a height sufficient to keep both the copper rods in the middle part of the flame, and not to have the upper rod heated only by the extreme point of the flame.

Hipp's[2] (1868) regulator, which is described by Hirsch (and is therefore sometimes referred to as Hirsch's), consists of a bent compound metallic strap, *steel* on the outside and brass on the *inside*. The ends thus approach with a falling temperature. The one end is fixed securely inside the air-bath, and the free end communicates by means of a fine copper wire with a regulating screw which connects it with a bent rod carrying the gas-control valve.

*Flow of Liquid.*—Dupré and Page[3] (1869). The water-bath contains a coil of metal-tube like an ordinary condenser. The lower end of this coil is connected with a second and smaller worm, which is contained in a small water-bath. The latter is heated by a lamp and kept gently boiling. The lower end of this second worm is bent upwards and terminates in a long funnel. Any water poured into this funnel will pass first through the worm surrounded by boiling water, and be thus heated, and then through the tube in the water-bath containing the specific-gravity bottle. By regulating the flow of water the temperature of this water-bath can be raised quickly, or kept constant at any desired point.

Stricker and Burdon-Sanderson[4] (1870).—In this apparatus, which is especially arranged for heating the stage of a microscope, the temperature is adjusted by regulating the flow of boiling water, through the hollow stage, by means of a compression clamp. As the water in the small boiler is kept at a constant level by means of an overflow, the supply when once adjusted remains uniform.

The exceedingly accurate method of maintaining a constant temperature by controlling the pressure under which a liquid in an outer casing is made to boil, is one that depends so essentially on pressure that its consideration must be reserved for the paper on Pressure-regulators.

J. T. BROWN

[1] *Journ. Chem. Soc.* i. 24 (1876). [2] *Journ. Chem. Soc.* i. 488 (1875).
[3] Carl Repert, "Exp. Phys." iv. 122 (1868); *Fres. Zeit. Anal. Chem.*, vii. 88 (1868).
[4] *Ding. Polyt. Journ.* 186, 202 (1867); *Fres. Zeit. Anal. Chem.* vii. 239.
[5] *Les Mondes*, x. 271 (1866).
[6] *Ding. Polyt. Journ.* ccii. 242 (1871); *Fres. Zeit. Anal. Chem.* xi. 431.
[7] *Proc. Roy. Soc.* xv. 144 (1866). [8] *Ann. Phys. Chem.* iv. 614 (1878).
[9] *Séance de la Soc. Franc. de Phys.*, 6 (1879).

[1] *Liebig's Ann.* cxli. 273 (1867); *Phil. Mag* xxxiv. 1 (1867).
[2] Carl Repert. "Exp. Phys." iv. 201 (1868); *Dingl. polyt. Journ.* cxci. 366 (1869).
[3] *Phil. Trans.* clix. 608 (1869). [4] *Q. J. Micro. Sci.*, 366 (1870).

## UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—The establishment of the Waynflete Professorship of Physiology was provided for by the late University Commission, it being arranged that the emoluments of the post should be paid out of the funds of Magdalen College, to which college the Professor is to be attached as a Fellow. Magdalen College had already shown interest in the development of physiology, and has for some years past maintained a physiological laboratory, in which Mr. Yule, Fellow of the College, has given courses of instruction in Practical Physiology, open to all members of the University, and his lectures have been attended by all candidates for honours in physiology, such instruction not having been available elsewhere in Oxford. Since the passing of the new statutes, the Linacre Professorship has become confined to Human and Comparative Anatomy, and there has been no University representative of physiology. The want of a Professor of Physiology has lately been very strongly felt, especially as the number of candidates in the subject has much increased. It is understood that Magdalen College, acting on the representations of the University to that effect, has determined to apply such surplus funds as are avail-