**Editor’s Report:** The response to the inaugural issue of this newsletter has been very exciting. At the time of publication of this second issue we have heard from several hundred of you from nearly every state. Your ideas, articles, and words of support are stimulating and encouraging. Thank you. Keep them coming!

**1988 ANATOMY AND PHYSIOLOGY WORKSHOP**

During the week of June 6-10, 1988, a National Anatomy & Physiology Workshop for instructors of college courses in anatomy and physiology will be conducted at Triton College, near Chicago, Illinois.

On Monday and Tuesday of the workshop, instant updates by area university and medical school researchers will be presented in the following areas: immunology, exercise physiology, nutrition, cardiovascular physiology, respiratory physiology, and digestive physiology. A meeting to consider the development of an anatomy and physiology organization will also be conducted during this two-day seminar session. Special laboratory workshops on Wednesday and Thursday will emphasize computer utilization in physiology, chart recorders which interface with computers, blood analysis and urinalysis techniques, electrophoresis, and laboratories for studying changes in body functions during exercise. Participants will also have opportunities to work with projected human cadavers, identifying structures of the limbs and ventral cavity. On the final day of the workshop, participants may choose to visit either a drug company, a medical center, or an area hospital to view new technologies currently being used in the medical setting. Time will also be set aside for instructor networking, sharing of innovative approaches to teaching, and examining future trends in anatomy and physiology. Although enrollment in the two-day seminar session is not limited, maximum participation for the week workshop will be 80.

The registration fee for the two-day instant updates is $75.00, and for the week workshop, $150.00. Lodging will be available at nearby dormitories for a cost of $20-$25/night, breakfast included.

For further information, please contact either Bob Anthony, Director, or Jay Omori, Coordinator, at Triton College.

**PROFESSIONAL ORGANIZATIONS**

**AAHAP?**

Discussions at The First Human Anatomy and Physiology Workshop held at Triton College in June 1987 and responses to The Anatomist/Physiologist national newsletter have indicated a growing interest in forming a national professional organization which would promote the professional interests of those of us who teach human anatomy and physiology. There have been suggestions that we consider forming such an organization this June 1988 at the Second Human Anatomy and Physiology Workshop at Triton College. Perhaps you would share your interests with us regarding a possible American Association of Human Anatomist/Physiologists or AAHAP.

**THE AMERICAN PHYSIOLOGICAL SOCIETY**

I was pleased to see the inaugural issue of The Anatomist/Physiologist and your efforts to fill an existing vacuum in the education area. Communication with instructors of anatomy and physiology at the undergraduate level is necessary and important.

As you probably are aware, the APS has provided a forum for educational material through The Physiology Teacher, and most recently, as articles published in the Society’s newsletter The Physiologist. At present, the Society is planning to reinstate the educational aspect of The Physiologist with a supplement of articles that are of interest to scientists and teachers interested in physiology education. The inaugural issue will appear in 1988 to be followed on a regular basis. I hope that we can share information about individuals interested in education so we can enhance educational activity in this area.

You might also be interested to know that the Society is in the process of modifying a videotape developed by The Physiological Society entitled, Physiology, An Inside View, that can be utilized as a recruitment and educational tool for instructors of physiology.

**Martin Frank, Ph.D.**

Executive Director

The American Physiological Society

In addition to the possibilities outlined by Marty in his letter, you might want to consider the possibility of your group meeting jointly with the American Physiological Society at its fall meeting. In 1988 we are meeting in Montreal on October 9-14 and in 1989 in Rochester, Minnesota on October 15-19. It is possible that you could run a separate meeting to the extent that you have an agenda you wish to address, but then your members could avail themselves of the workshops and scientific sessions of the APS meeting.

This is only one possible way that our groups might work together. The main purpose of this letter is to let you know that we are interested in helping in any way we can.

**Harvey V. Sparks, Jr., M.D.**

President

The American Physiological Society
NATIONAL ASSOCIATION OF BIOLOGY TEACHERS

The interest and concerns of college teachers have always been a focus of NABT. We currently have two Sections of our organization concerned with programs and services for college teachers (the Two-Year Community College Section and the Four-Year College Section). NABT Sections have traditionally participated in planning the convention program, developing special projects and workshops, and influencing the content of our journal, The American Biology Teacher. Sections can be organized not only by teaching level, but also by specialty and we urge those of you who are NABT members to consider forming an anatomy/physiology Section.

Most importantly, however, I'd like to invite each one of you to join NABT, the only organization devoted exclusively to the concerns of biology teachers. We are not just concerned with teaching and curriculum at the secondary school level. We have programs and support projects at all levels of the educational structure. Our Board well represents the college community; and every other year our president is chosen from the post-secondary school membership.

Besides our Journal and newsletters, members are able to communicate with one another via our electronic bulletin board. The board is well structured and easy to use. All you need is a modem; NABT supplies communications software for most PC models for the initial fee of $25.00. In addition to its electronic mail capabilities, there are special conferences for the Two-Year College and Four-Year College Sections, book and magazine reviews, a questions and answers section, and a host of general bulletins and lab experiments ready for downloading. It has become an efficient and effective means for networking and dialogue among teachers in our profession.

Patricia J. McWethy
Executive Director, NABT
Reston, VA

SOCIETY FOR COLLEGE SCIENCE TEACHERS

Having been a long-time anatomy/physiology professor (over 15 years including cadaver anatomy), I am very excited about some of the things you are doing and personally would like to be involved as well as encouraging you to interact with the SCST.

Hopefully you and your organization will become interested in the SCST and you might even be able to join us in St. Louis at our national convention.

Dr. William M. Frase
President
Society for College Science Teachers
University of Cincinnati
Cincinnati, OH

Bill Frase, SCST President, was enthusiastic about forming an anatomy/physiology "division" or committee within SCST. I suggest that you float the idea in the next issue of the A/P. Some materials about the Society are included in the enclosed Abstracts volume. Another inducement is that SCST has designated time on the program at NSSTA national and regional meetings. We could easily devote specific portions of that time to HAP papers.

Michael P. Donovan
Society for College Science Teachers
Southern Utah State College
Cedar City, UT

AIDS

THE SPREAD OF AIDS IN LABORATORY TEACHING SITUATIONS

It is unlikely that anyone reading this is unaware of the AIDS (Acquired Immune Deficiency Syndrome) crisis, or does not know that the virus is most commonly spread in certain high risk groups (male homosexuals and intravenous drug users). What may not be realized by some is that there are risks of accidentally spreading the AIDS virus in teaching situations, especially in anatomy and physiology laboratories, or in biology classes where students type their blood.

Any occasion where body fluids are handled can create a potential for transmitting the AIDS virus. For example, exercises in which blood is removed from one individual will give rise to opportunities for someone else to come in direct contact with that blood. These might include experiments in which blood is drawn to study various metabolites, e.g., CO₂, O₂, glucose, proteins, etc. Transmission could then occur following an accidental spill. Already cases have been reported in which spilled blood has entered health care workers via an open scratch and/or acne lesions.

The handling of contaminated equipment also provides an opportunity for the virus to be transferred. Syringes, needles, lancets, scalpels, razor blades, and broken glassware would seem to create the greatest problem. Not only are these items a source of virus-containing fluids, but they also provide a means of introducing the virus into the host. Students and instructors are obviously at risk, but so are technicians, stockroom helpers, and custodians who may come in contact with virus-contaminated equipment.

The necessity for education about such hazards should be clear from these examples as well as from hearing about cases of health professionals, policemen, firemen, and paramedics who have been infected accidentally. Furthermore, the development of guidelines for dealing with the potential dangers of AIDS in teaching/research situations should be in high priority. A set of such guidelines has been developed by the CDC for other professions.

But, until such procedures are developed for teaching situations, some simple measures can be taken to minimize the dangers of the accidental spread of this disease. The first of these is to advise students about potential risks. The warnings need not be done in a manner which creates fear and paranoia, but rather a reaffirmation of the principles involving the transmission of this virus or any pathogen organism. It should be stressed that care and patience greatly reduce the likelihood of accidents. The second measure to be taken is the use of latex gloves, lab coats, and face masks. This apparel may be required in situations where not previously necessary. For the inevitable spills, bleach or some other suitable disinfectant should be available and used. Containers of the disinfectant should also be provided for the disposal of any and all equipment that has been in contact with potential virus-containing fluid(s).

Above all, do not make the assumption that students will know as much about these matters as they should. My experience has been that even some professional biologists have not thought about the potential risks to which they are subjecting themselves and others. Also, those in positions of responsibility for teaching/research should make every effort to obtain updated information.
about the virus, guidelines for protecting against the infection, and legal liabilities. The Center for Disease Control is probably the best source.

Finally, by spending a few minutes discussing the spread of the AIDS virus we will perhaps reinforce the public education messages which some students are already taking in a very cavalier manner.


3. Centers for Disease Control. Atlanta, Georgia 30333.
Ronald W. Wilson, Ph.D.
Professor of Natural Science
Michigan State University
East Lansing, Michigan

PREVENTING AIDS IN THE LAB
The Centers for Disease Control (CDC) has published a supplement to the Morbidity and Mortality Weekly Report, August 21, 1987, Vol. 36, no. 2S, entitled “Recommendations for Prevention of HIV Transmission in Health-Care Settings.” These precautions also apply to clinical laboratory settings. The CDC recommends “universal precautions,” which assumes that all patients and specimens are potentially infectious and are handled accordingly. Below is a list of recommendations taken from the CDC guidelines for laboratory procedures.

1. Unless the student is processing his or her own specimen, gloves should be worn to handle all specimens and contaminated instruments or to clean up blood spills.

2. Face shields or protective eyewear should be worn if mucous membrane contact with blood or body fluid is anticipated.

3. All procedures and manipulations should be performed carefully to minimize the creation of droplets or aerosols. A biological safety cabinet (class I or II) or other primary containment device is required whenever procedures are conducted that have a high potential for creating aerosols or infectious droplets, such as centrifuging, sonicating or blending.

4. Mechanical pipetting devices should be used for the manipulation of all liquids in the laboratory. Mouth pipetting must not be allowed.

5. Only single-use, disposable lancets and needles should be used. Never recap, bend, or break once used. A puncture-proof container should be conveniently available for the disposal of lancets, needles, and other sharp instruments.

6. A laboratory disinfectant should be used to clean laboratory surfaces before and after procedures, and should be available for quick cleanup of any blood spills. A disinfectant with tuberculocidal activity or a fresh (1:10) household bleach solution can be used.

7. All reusable instruments, such as hemocytometers, well slides, reusable pipettes, should be disinfected and thoroughly washed with soap and hot water.

8. All persons should wash their hands before leaving the laboratory and remove protective clothing (lab coats).

Steven J. Englebard, M.D., M.P.H.
Assistant Director
Division of Disease Prevention
Arizona Department of Health Services
Phoenix, Arizona

TEACHING TECHNIQUES
THE USE OF COMPUTERS IN PHYSIOLOGY LABS
The use of the computer in our physiology labs has greatly increased the students’ enjoyment and their interest in the lab experiments.

A few years ago we were in the market for a major change and upgrading of our antiquated physiograph. We were about ready to buy $30,000 worth of new solid-state tabletop physiographs when an article from Intelioutil came across my desk. Intelioutil advertised several physiology programs which caught our interest. One program in particular, the Cardiocomp, uses the computer for taking EKGS. Another program, the Physiogrip, is used for muscle fatigue and nerve stimulation.

The Cardiocomps and computers were received very well in the classroom and students actually enjoyed doing the labs. Every student had the opportunity of doing their own EKG. The computer printout with the cardiovascular values and EKG tracings were then used by the students to reinforce the concepts previously learned in lecture.

Aside from these programs being an excellent teaching tool, there were some bugs that needed to be worked out. One particular problem with the Cardiocomp was the electrodes and attaching them to the appropriate site. The ones from Intelioutil were too messy and just did not do the job. We experimented with several of the disposable type electrodes and found one that worked reasonably well. This electrode has the gelatin already in place and a small tab to one side for attaching the cables. We also modified our cables; one end has a small alligator clip for attaching to the small tab on the electrode. The cables are easy to modify to any electrode you want.

The Physiogrip works well after a little getting used to. We had trouble getting the correct spring tension on the handle. The spring needs to be adjusted so that there is a baseline on the monitor and enough tension on the appropriate finger for a response. Each Physiogrip has its own idiosyncrasies. The nerve and muscle stimulators were another fun lab. These solicited all kinds of responses from the stimulated students.

Over all, we have felt that these programs have been very beneficial to our students. We presently have four programs of each and four computers with plans to purchase three more of each in the future.

James L. Gellespie
Biology Lab Technician
Fresno City College
Fresno, California

USING CADAVERS TO TEACH HUMAN ANATOMY IN A SMALL COLLEGE
The ideal way to teach human anatomy labs is to have a small group of students doing their own cadaver dissection. This is not feasible in small colleges because of expense and space limitations. So students usually dissect cats.

In this paper, I would like to discuss the method we use at Winona State University. Here we use proscribed cadaver demonstrations along with cat dissections. This compromise allows students many of the benefits of cadaver dissections without the space and expense problems.

Our present teaching method involves demonstrations on two prospected cadavers. Usually three demonstrations
are arranged each quarter at the conclusion of the Muscular, Circulatory and Internal Organ System units. The demonstrations are given when students have thoroughly learned the structure and relationships of the organs by dissecting their own cats (two students per cat). The instructor then demonstrates the organs to groups of about twelve students. Names, relations and functions of organs are reviewed. Special attention is given to the differences between cat and human organs. Later in the lab period, students are encouraged to review the organs demonstrated in small groups. This allows them to get a closer look than they could in the large group. Notes on the cadaver demonstration and a checklist are distributed to facilitate this review. We also encourage review by asking laboratory practical questions on the cadavers.

Initially, we had a single male cadaver. This specimen was dissected so that muscles, thoracic organs and abdominal organs could all be demonstrated. In order to do this, we had to leave half of the chest wall and abdominal wall intact. This compromise resulted in the destruction of some muscles and difficulty in fully viewing some internal organs.

Currently we use two cadavers. A male is used to demonstrate muscles and male reproductive organs. The female cadaver has had the entire chest and abdominal wall removed. Circulatory, internal and female reproductive organs are demonstrated on this specimen. We find the present system to work much better than a single cadaver, but the expense and space required for two tanks may make it impossible for some schools. We got along perfectly well for several years with a single cadaver.

We have found that almost all students accept the cadaver demonstrations very well. We thoroughly prepare the students for the first demonstration by discussing where the cadavers come from and how they are embalmed. We emphasize that students must treat the cadavers respectfully. The students' intense curiosity along with this preparation helps them get over any initial difficulties they have in viewing a dead body.

The cadavers were obtained from the University of Minnesota Department of Anatomy with the cooperation of David Lee. We had to demonstrate that we could maintain good security, that we would be respectful of the bodies, and that we would make good use of them for teaching purposes.

The cadavers were prepared at the University by the usual "heavy duty" embalming procedure used for medical school specimens. The specimens were delivered intact in heavy plastic bags. We planned and carried out our own dissections (without previous human dissection experience). The dissection for purposes of demonstration is very time consuming, but is a great learning experience in itself.

The cadavers are each kept in its own stainless steel tank. Each tank is about three feet by six feet long. We wheel the tanks out to an open area for demonstrations and then store them in a corner. We keep the tanks secure with hasps and padlocks when not in use.

The cadavers are kept immersed in a solution of 25% ethylene glycol and 1/4% formaldehyde in water. During viewings, a lever mechanism allows us to hoist the cadavers out of the fluid. This method allows the cadavers to be kept for repeated viewings over a period of years. It is also more aesthetically pleasing than the usual embalming method because ethylene glycol is odorless and the formaldehyde in the room is minimal.

This method of preservation was developed by Dr. Calvin Fremling for the Nasco Company, which uses a similar method to preserve animal specimens. Our first male cadaver was well preserved after five years. It was finally replaced because of discoloration produced by a mold inhibitor we no longer find necessary. Some arm muscles also had become torn by repeatedly turning the cadaver over. The present specimens are in their second and third years and are doing well.

I would like to give interested readers some idea of the initial and maintenance costs involved. The big item, of course, is the tank, which lists at about $3,500. Next comes the partial cost of preparing the body, which is paid to the medical facility involved. We estimate this cost at about $500. This expense might be anticipated to occur every five years or so. The only other expense is a yearly change of ethylene glycol; 15 gallons at about $6.00 per gallon.

As you can see, the expense is not great after the initial purchase of the tank. If a reasonable number of students take the course, the expense is small compared to the yearly cost of cats.

We have found the benefits of having the cadaver demonstrations have been great. It has allowed students to get a much better perspective on the structure and relations of human organs. I also have the impression that the cadavers have added considerably to the status of our anatomy courses and have made students more serious about learning anatomy.

If I can be of help to anyone who might be considering getting cadavers for your school, please let me know.

Dr. David Dapkus
Department of Biology
Winona State University
Winona, MN

MORE EFFICIENT AND EFFECTIVE HISTOLOGY INSTRUCTION

Anatomy professors know too well the strain on laboratory time (not to mention instructor endurance and accomplishment) posed by histology sessions. Textbook photos, chalk diagrams, and 35mm slides of cellular assemblages just don't adequately prepare beginning students to understand what they see when they examine tissue under a microscope. And so after a lengthy orientation effort using such aids, we are still left spending most of the lab period repeatedly sprinting to every microscope station, reciting over and over for each student the rudimentary explanations and clarifications needed for every step in their progress. Meanwhile, students awaiting our intermittent headway through the sea of raised hands waste a lot of time and begin to feel frustrated, bored or inadequate; and we feel frustrated by the little time that each student actually gets to spend in productive microscopy. Such instructional gauntlets prime anatomy professors to easily recognize the impact that would emanate if we could project onto TV monitors, distributed through the laboratory, the field of view seen through a microscope.

This technology is called videomicroscopy. The field of view is transmitted by a compact, high-resolution TV camera mounted onto the camera ocular of the instructor's microscope. Running the signal through a videopointer unit allows you to superimpose images of arrows, circles and the like onto the microscopic scene displayed on the TV screen. The pointer image can be moved over the cellular scene by a "joystick" to focus student attention onto specific cells or salient areas while you explain features and interrelationships.

A $4500 videomicroscopy system was installed in Clarion University's
human anatomy laboratory at the Venango Campus about two years ago. With it, our students' orientation and progress through histology studies now take only a third or less of the time that it used to take with traditional aids like 35mm photomicrographs. Beyond the savings in time, the quality of the instruction and orientation is improved; the students can view on the screen a specimen that is identical to that on their own microscopes' stages, eliminating confusion that arises from differences between text illustrations and the student's study specimen; and you can show the entire class the specimen's appearance at various magnifications, pointing out which features are best seen at which magnifications; you can demonstrate special lighting adjustments they may need to bring out certain details; exhibit particular portions of the slide that may pose interpretive problems—in short, orient everyone simultaneously and get them all quickly moving into the day's bench work. The time saved became invested into more productive interaction with the students, answering more probing questions, and periodically returning to the videomicroscopy system to help the whole class integrate concepts.

Instructional efficiency and effectiveness are not the only beneficiaries of videomicroscopy; student achievement increases. Scores on our practicums for identifying organ tissue types increased after we began to use videomicroscopy as an instructional aid (mean score for lab groups of 18 rose 13%, up from a 67% mean before the videosystem to 80% correct after its use began). That one year's increase was marginally significant (approximately 0.06) according to the Mann-Whitney U Test.1 Clevenstine and Humphreys4 reported a more significant effect (0.001) on achievement when the impact of videomicroscopy was assessed via a multiple choice format. During this, our second, year of using videomicroscopy at Clarion, we augmented the class time video instruction with a series of instructor-produced videomicroscopy cassette for student autotutorial review of lessons.1 The review tapes contain essentially the same instruction that was given during class, including videopointer and voice narration to guide the student. Such tapes can be recorded while projecting the microscopic field of view onto a monitor screen if the signal is run through a VCR before it goes into the monitor. The tapes are left in the lab next to a VCR so that students may review and/or repeat their histology studies whenever they want. This autotutorial use of videomicroscopy brought the mean histology practicum score up to 95% correct (significant beyond 0.01) when compared to the 80% achieved when just class time use was made of the technology, and the 67% achieved when no videomicroscopy was used. We plan to assess the impact of this teaching aid on student attitudes, as well as achievement, using larger student groups in more carefully controlled situations. But our existing experience in the classroom, and our preliminary objective data, give us confidence to enthusiastically recommend this technology as a major impact on the learning accomplished during histology laboratories.

Videomicroscopy's instructional benefits can be extended beyond the home institution. Through the help of a Title II EESA grant (#48-7003) awarded by the PA Department of Education, we expanded our videomicroscopy facilities this past summer so that area school teachers could use our lab to prepare their own videopointer and voice-narrated instructional microscopy tapes for use in their classroom VCRs. The versatility of this technology permits teachers to prepare tapes that are precisely tailored to their own particular classroom circumstances and curricular objectives. Segments of the instructional tapes were shot through dissecting scopes, standard transmitted light microscopes, and phase contrast objectives. Tapes have now been produced by teachers of grades from 3 through college. We encourage any institution with videomicroscopy facilities to similarly reach out to area schools. It is an easy way to produce large impacts on science education at all levels. The reports of excited third graders who have discovered a whole new world—of seventh graders who don't want to leave class for the lunch hour so they can continue watching a videomicroscopy tape and try to find similar creatures under their own microscope—of parents asking for an open house so they can see what their children are so excited about—provide a satisfying reward for the time invested helping the teachers produce their tapes. Feel free to contact us at Venango Campus if you need more detailed information about equipment, costs, applications of this technology, etc.

3. Partial funding for the equipment expansion needed for the autotutorial program was provided by a grant from the Clarion University Foundation.

**William R. Beizer and Kate H. Eggleton**  
*Clarion University—Venango Campus*  
*Oil City, PA*

**SYSTEMATIC ESSAY WRITING IN HUMAN PHYSIOLOGY**

I'll never forget the first lecture I delivered as a new full-time instructor in college, for a non-majors general biology course. It was a three-hour night class, and for this occasion, I prepared a lecture on the origin of life, drawing on my knowledge gained in graduate school, readings, and ruminations on the subject. The lecture, I thought as I delivered it, was brilliant. I could hear the thunderous applause in my imagination when it was completed. At the conclusion, a well-dressed student (the vice-president of the student body, I later learned), came up to me. "That was a very interesting lecture, Professor Fox, very interesting," he said, "but there's just one little thing I don't understand." "What is that?" I answered, beaming, and refraining from adding "my son" (though our ages were very close). He answered: "It's just this: are molecules in cells, or are cells in molecules?" The world as I had known it ceased to exist.

Though students who take my human physiology courses have a better foundation than the one described, this experience illustrates the fact that, even in courses that have prerequisites, there can be a yawning gap between the expectations of the instructor and the cognitive abilities of the students. I believe that this gap can be bridged—and thus communication established between student and instructor—through the process of student essays. In addition, essays force students to think in a logical, linear, fashion, which is so necessary in the sciences and the health professions. (Creativity may involve "right brain" leaps of intuition, but this must be superimposed upon a foundation of knowledge and logic in order to be productive.)

When I was a student, all of my physiology courses had essay exams. These, however, were upper division and graduate courses, and the standards of those courses (I learned) cannot be transferred to the allied-health human physiology course that I teach. When I
first began to teach human physiology courses to nursing, P.E., and other students with comparable backgrounds, I made up exams that I thought were challenging, interesting, and fun. The students did not agree. After two semesters of disappointing results I went to the other extreme and converted to objective, machine-scored exams. I frankly felt guilty about giving this type of exam in a physiology course, and after a couple more semesters, began to add essay questions to the otherwise objective exams. This has evolved into a systematic program of essay writing which is now an integral part of my human physiology course.

Since most of the students who enroll in my classes have trouble with essays, I provide them with "training wheels": the essays that will be given on lab quizzes and exams are taken from among a number that are assigned from their lab manual and lecture textbook. In lab, students turn in weekly lab reports which include three to six essays and then take a weekly quiz which includes one of those essays (as well as objective questions). The essay is worth 5 out of 15 total quiz points, so if they have difficulty early in the semester they won't necessarily completely bomb the quizzes. Limiting the essays to 5 points also limits the amount of time I have to spend reading them (I accept—in fact, encourage—the use of flow charts and arrows where appropriate, so that grading the essays is not like grading English essays). In lecture exams, similarly, two essays (5 points each, out of a total of 50 points) are included. These come from

their assigned chapters, and the students can work on these at home between major exams.

Is this "spoon-feeding"? Of course. But this sort of thing seems to be needed to get my students to begin to think rather than to simply memorize. Aren't they just memorizing the answers to essays that they wrote at home, possibly in collaboration with others? Maybe, but I don't believe it is possible for a person to rote-memorize the answers to several essay questions; in order to do well on the quiz or exam they have to understand what they're writing. At least, take-home essays give the students a useful framework for individual and group study. Also, the take-home questions can be slightly reworded or combined to make exam questions; after a while, students don't notice that you're doing this (that the training wheels are gone), and the question of spoon-feeding becomes irrelevant.

It is gratifying to see the improvement in essay writing and logical thinking as the semester progresses. Also, I can now be in tune with what my students know and how well they understand the course material on a weekly basis. The gap that can exist between an instructor's expectations and a student's reality—which was revealed to me so starkly after my first biology lecture—need not occur if systematic essay writing is introduced into the physiology course.

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SLIDES & SEMINARS ENHANCE A&P COURSES

I would like to tell you about an instruction method/style that I have used successfully in teaching anatomy and physiology for almost two decades.

I break the traditional fifteen-week semester into three five-week-long units. At the onset of each segment, I distribute to each student a listing of text and source book readings (including pages), the laboratory exercises they will perform, a series of objectives that they will attempt to meet, and an in-depth, multipaged outline of the lectures that will be given over the next four weeks. Early each week I deliver one 60-minute presentation that I continuously support with 2° by 2° projection slides. I obtain these visuals from medical and pharmacological organizations, biological supply houses, and textbook manufacturers. Slides not available from a commercial source (a rare occurrence) are photographed from books or, in the case of charts or graphs, are drawn on cards, reduced in size, and copied on clear acetate film on a duplicating machine. The acetate is then cut out and placed in plastic slide frames. The slides are arranged in a circular projection tray in a sequence that exactly follows the lecture. During the presentation the slides are shown to constantly reinforce the verbal portion of the lecture. With the aid of their outlines, the students are able to follow a very in-depth presentation in this

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A SIMPLE DEMONSTRATION OF HOW THE HEART VALVES WORK

It is easy to explain that the valves of the heart function to insure a unidirectional flow of blood through the heart. It is quite another matter to explain how the semilunar and atrioventricular valves work. Two simple demonstrations make this task easier, more efficient, and fun.

The atrioventricular valves can be demonstrated by holding your arms out parallel to the ground with the elbows bent at a 90 degree angle so that the fingers on each hand touch. The elbows represent the portion of the valve cusps attached to the wall of the heart. The fingertips represent the margins of the cusps. You should be able to drop your forearms, keeping the elbows oriented as if they were attached to the heart wall, to represent an opened valve. Two strings, one attached to each hand, represent the chordae tendenae. Each foot should be placed on the opposite end of each string to represent the attachment of the chordae tendenae to the papillary muscles. When the arms are in the position that represents the opened valve, the strings should be slack. However, when the forearms are raised so the valves are in the closed position, the string should stop the hands as they come together. The string should keep the forearms in a horizontal and overlapping position to represent closed valves. It is further possible to demonstrate how paralysis of a papillary muscle results in an incompetent valve. Paralysis of a papillary muscle, in effect, causes the chordae tendenae to be longer than normal because the papillary muscles fail to contract and pull down on them while the valves are closed. This can be demonstrated by lengthening one of the strings attached to one hand. When the forearms are lifted to demonstrate closure of the valves, the hands don't overlap. Instead, one is above the other, which suggests that valve closure is not complete. The valve is "incompetent" or "leaky."

The semilunar valves can be demonstrated by cutting out a piece of paper in the shape of a quarter moon. It can be quickly taped to the wall so that it forms a pouch. You can then brush your hand over it in one direction, and the paper is pushed to the side. But when you brush your hand over it in the opposite direction, a pocket is formed. It is easy to see how such pocket-like flaps could overlap to completely occlude a blood vessel, as the semilunar valves do.

If you teach physiology, or if you have weird parties, try these demonstrations. I think you'll find that they work.

Rod Seeley
Idaho State University
Pocatello, Idaho

Dr. Stuart J. Fox
Pierce College
Woodland Hills, CA
BOOK REVIEWS


I found the anatomograms to be especially useful for introducing new material. They do, however, also provide a good method of review as do the Bioanalogies and the labeling worksheets.

The crossword puzzles provide the student with the game approach to learning new material and because medical terminology and abbreviations are used as fillers, the student is reviewing the terms throughout the year.

The format is pleasing, and the game approach has had a highly motivating effect on my students.

Laura M. Campriani, R.N. Portage Lakes Joint Vocational School District Greensburg, Ohio

We have spent considerable time evaluating Body Games and found it to be a refreshing change from the stereotype adjunct material to Anatomy and Physiology.

We feel this book provides a means of review and broadens the spectrum between lecture, laboratory, and the laboratory manual. It is an advantage to us because the system's approach is our method of helping students gain an overall perspective of the subject and how all parts of the body function together to make a healthy organism.

In our opinion the drawings are well placed and provide the student an enjoyable and meaningful experience in anatomy.

Many students are constantly seeking ways to help themselves learn Human Anatomy and Physiology. This book is an example of a well-considered learning aid, and we plan to add it as an optional book in our bookstore.

Don Hovenstine, Health Science Stark Technical College Canton, Ohio

LETTERS TO THE EDITOR

Regarding future issues of the newsletter, we have had good success in procuring some laboratory equipment from local hospitals. If this idea is worth sharing, we'd be glad to write about it for others to read.

Marise Hsuess and Ray Cook Waukesha County Technical College Pewaukee, WI

About three years ago, due to the demand, we began offering both the first and second semesters of A&P (ZOO 227 & zoo 228 at our school) each semester, so we have two different groups of students each semester, each in their own sequence. I start one group (227) in the fall, then another group (227) in the spring. This has helped some pre-nursing students especially in arranging their classes including microbiology and chemistry along with my classes.

Donald W. (Don) Puder College of Southern Idaho Twin Falls, Idaho

I have been teaching a two-semester Human Anatomy and Physiology course since 1978. I presently use an electronic bulletin board on our mainframe system, for lecture notes, notices, and exam-type exercises.

Louis A. Gatto, Ph.D. State University College at Cortland Cortland, New York

I was very impressed with the first edition of the newsletter and I totally support the concept of providing such valuable information to instructors. I wish you and the staff luck and success in the future.

Gerard J. Tortora Bergen Community College Paramus, NJ

EMPLOYMENT OPPORTUNITIES

In the next issue of The Anatomist/Physiologist National Newsletter we will be listing openings for Anatomist/Physiologists. Please submit official descriptions of openings for us to include at that time. Thank you.

Editor
Here's your new copy of

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