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# Arthroscopy in Horses

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### Maintenance\* Energy Requirements

Body Weight		Kcal/Day
kg	lb	
1	2	132
3	6.5	301
5	11	441
10	22	742
20	44	1248
30	66	1692
40	88	2099
50	110	2482
60	132	2846

\*Maintenance refers to a healthy dog that is not growing, pregnant, lactating or stressed, and is living in comfortable surroundings.

## Home-Cooking Diets

The diets shown below have been formulated and developed by Dr. D. S. Kronfeld, University of Pennsylvania, and are reprinted here with his permission.

### 1. Maintenance Diet

- Ingredients:
- 2/3 cup rice, uncooked
  - 1/3 cup meat (beef, pork, lamb, boneless poultry, or boneless fish)
  - 1/8 cup (= 1 oz) liver
  - 3 teaspoons bone meal
  - 2 teaspoons corn oil
  - 1/2 teaspoon iodized salt

**Cooking Instructions:** Place rice, bone meal, corn oil, and iodized salt in 2/3 to 1 cup boiling water. Stir, cover, and simmer 20 minutes. Add meat and liver, stir, cover, and simmer 10 minutes. Cool.

**Feeding Instructions:** The amount of diet shown above provides 800 kcal. This is a sufficient daily intake for a 10 kg (about 23 lb) dog. The diet should be fed in at least 2 *divided* feedings.

### 2. Bland/Hypoallergenic Diet

- Use lamb (trim excess fat) or skinless poultry as source of meat.
- Use chicken as source of liver.

### SOME COMMON DIET INGREDIENTS

Food	Unit	Grams	Water %	Kcal	Protein	Fat	CHO
					----- % ME -----		
Cottage Cheese, 4% lg curd	1 cup	225	79	226	50	40	10
1%	1 cup	226	82	154	73	12	16
Cheddar Cheese	1 oz	28	37	115	26	74	tr
Milk, 3.3%	1 cup	244	88	148	22	49	30
2%	1 cup	244	89	125	26	36	38
1%	1 cup	244	90	107	30	25	45
Ice Cream	1 cup	133	61	270	7	47	47
Yogurt, plain	8 oz.	227	85	145	33	25	44
Egg, whole large, raw	1 egg	50	75	82	29	66	5
scrambled	1 egg	64	76	91	26	69	4
Corn Oil	1 tbs	14	0	126	0	100	0
Sardines, canned in oil	3 oz	85	62	161	50	50	0
Steak, round lean & fat	3 oz	85	55	213	45	55	0
Heart, beef	3 oz	85	61	157	69	29	3
Liver, beef	3 oz	85	56	189	47	43	11
Chicken, broiled	6.2 oz	176	71	231	73	27	0
canned	3 oz	85	65	162	44	56	0
Turkey, chopped	1 cup	140	61	257	68	32	0
Rice, instant, cooked	1 cup	165	73	176	9	tr	91
long grain, cooked	1 cup	205	73	216	7	tr	93
raw	1 cup	185	12	653	7	1	91
Spaghetti, cooked	1 cup	130	64	193	15	5	81

### 3. "High" Protein and "High" Fat Diet

Use 1/3 cup rice and 2/3 cup meat.

**NOTE: ALL OTHER INGREDIENTS REMAIN AS ABOVE.**

**NOTE: This diet still contains 800 kcal. Only the proportions of carbohydrate, fat, and protein have changed.**

### 4. Low Fat Diet

Use skinless poultry or very lean meat (e.g., beef heart) as meat source.

**NOTE: Do not reduce corn oil; it provides essential fatty acids.**

**NOTE: This diet still contains 800 kcal. Only the proportions of carbohydrates, fat, and protein have changed.**

**NOTE: These diets should not substitute for a visit with your veterinarian. The diets, and further variations, have best results when used under the supervision of a veterinarian.**

## Arthroscopy in Horses

The operating room at New Bolton's C. Mahlon Kline Center is quite dark, the only source of light being a television screen which shows the interior of a joint. A group of students listens attentively as the surgeon explains the TV image and the procedure he is about to do. The patient, a horse, lies quietly in anesthetic sleep. Arthroscopic surgery is being performed. This scene, unthinkable six or seven years ago, happens almost daily at New Bolton Center and at other veterinary hospitals.

"Arthroscopy now is a routine procedure when a horse with a joint injury is presented," said Dr. Dean Richardson, assistant professor of surgery at the University of Pennsylvania School of Veterinary Medicine. "It is one of the greatest advances in orthopedic surgery." The arthroscope, a relatively new instrument, was developed in its modern form in the 1950s. Human orthopedics adopted it widely as a diagnostic tool in the mid-seventies, and it was soon utilized in veterinary medicine. Beginning in 1981, it was used for orthopedic surgery in large animals. New Bolton Center began using the arthroscope on clinical cases in 1982, and now about 200 arthroscopies a year are performed here. Prior to the devel-

opment of the instrument, major surgery was necessary to remove chips or debris from a joint. The joint had to be opened widely, involving more trauma to the surrounding tissues. Also, this procedure required a lengthy recovery time.

An arthroscope is a slender optical instrument that permits the surgeon to look into the joint without opening it, and to remove small chips and other debris. "The joint can be accurately examined through a small incision," said Dr. Richardson. "Lesions and conditions not detectable by radiographs can be seen. The procedure is not as traumatic as an arthrotomy and the recovery time is quicker."

The arthroscope is inserted through a protective, rigid small tube or canula. Fiberoptics within the arthroscope permit illumination of the joint interior, and a camera attached to the instrument allows the clinician to examine the interior of the joint. The lens is at an angle so that rotation of the scope permits a wider area of visualization. The incision for the arthroscope is very small, as the instrument is only four millimeters in diameter. When arthroscopy is performed, the joint is kept filled with a sterile fluid to keep the soft tissues from collapsing into the joint space. The fluid runs constantly to keep the

space clean of blood and to maintain distension of the joint. When instruments are used, they are inserted through a second small incision. These instruments are specially designed with long, narrow shanks. They can be manipulated in the tight joint space under arthroscopic visualization. The surgeon needs bimanual dexterity and has to be trained in the interior anatomy of the joints. "With the arthroscope you get a more complete view than in open joint surgery," said Dr. Richardson. "Also, you can manipulate the joint and get different views to help evaluate the extent of the damage."

"We use it for both diagnosis and treatment," said Dr. Richardson. "Infected joints can be examined and flushed out, bone chips or damaged cartilage can be removed, and one can examine multiple joints while the animal is anesthetized a single time." He explained that the joints most often examined are the carpal joints, the fetlock, and hock and stifle joints. The stifle and hock joints, in particular, are prone to osteochondritis dissecans lesions, and these cartilage chips cause lameness. Although the majority of horses undergoing the procedure have a specific problem identified before surgery, the arthroscope can be an invaluable tool in identifying the source of lameness when other means such as radio-

# In Memory of Philip B. Hofmann

**P**hilip B. Hofmann, a senior member of the School's Board of Overseers, died on December 30, 1986, at the Miami Heart Institute.

Mr. Hofmann and his wife, Georgia, have had a long and close association with the Veterinary School and the University.

In 1970, the Hofmanns established the Georgia and Philip Hofmann Research Center for Animal Reproduction at New Bolton Center. Mr. Hofmann, a graduate of the Wharton School, received the General Alumni Society Award of Merit and an honorary Doctor of Humane Letters degree from the University. The Wharton School presented him with the Wharton Gold Medal, and, in 1984, the Veterinary School bestowed on Mr. Hofmann and his wife its Centennial Medal.

For 43 years Philip Hofmann was associated with Johnson & Johnson, beginning as a shipping clerk and rising through the ranks of the corporation to chairman and chief executive officer. A marketing genius and entrepreneur, he was a chief architect in building Johnson & Johnson to its present great scale and stature.

An avid horseman, Mr. Hofmann competed in the show ring, at hunter trials, and in three-day events and stadium jumping. Together with his wife, Georgia, he established a racing stable, Wycombe House Stud, and bred and raced the champion sprinter, Gold Beauty, an Eclipse Award winner, and five other stakes winners.

Mr. Hofmann was a moving force in American coaching competition, and he headed the first Johnson Park International Driving Show, held in New Brunswick, New Jersey, in 1970. He was the founder and president of the American Driving Society and served on an international committee to formulate international rules for driving competition. He was elected to the Coaching Club of England, and in 1974 he was the first American driver to represent this country in world-championship driving competition. In 1973, Mr. Hofmann organized the Liberty Run, a two-day coach trip from Wall Street to Independence Hall.



Mr. Philip Hofmann, whip, and Mrs. Hofmann on the Liberty Run from New York City to Philadelphia in 1973.

The Four-in-Hand coach, carrying 2,000 pieces of mail and passengers, traveled along the old post route. The run was completed in 34 hours, with an overnight stop in Princeton, New Jersey.

During his long association with the sport of horses, Mr. Hofmann served as founder and first president of the U.S. Combined Training Association, director of the American Horse Show Association, chairman of the executive committee at Monmouth Park, president of the Florida Thoroughbred Breeders Association, trustee of the Thoroughbred Breeders Association, and member of the executive committee of the American Horse Council. He was also a United States Equestrian Team Honorary Life Member.

In 1986, Mr. Hofmann retired from competitive driving after suffering a heart attack while training for the Royal Windsor Horse Show in England. Queen Elizabeth II honored him at this show for his service to the sport and presented him with a silver-mounted, inscribed Four-in-Hand whip.

Philip Hofmann is survived by his wife, Georgia, and two daughters, Judith and Carol.



graphs and synovial fluid analysis have failed.

Dr. Richardson explained that arthroscopy is not a panacea. "It helps prevent the joint problem from worsening. In order to alleviate the disease, we must determine the cause or underlying injury and eliminate it as much as possible." Arthroscopy has shortened recovery time and lessened the danger of infection or cosmetic blemishes as the incisions are very small. The animal is more comfortable and can resume its work or training sooner when compared to the traditional arthrotomy.

In veterinary medicine, arthroscopy is used primarily in horses. Occasionally, such surgery is also performed on cattle. It is not routinely used in the treatment of small animals as the joints are smaller, though recently researchers have employed the technique when studying changes in the stifle joint of dogs with damage to the ligaments.

According to Dr. Richardson, arthroscopic techniques may be expanded to include the use of the recently purchased laser in the treatment of joint disorders.

—H.W.

## Continuing Education Courses for Animal Health Technicians

This summer, Harcum Junior College will be holding two continuing education conferences for Animal Health Technicians. Both will be day-long conferences and will be held on Harcum's easily accessible suburban campus in Bryn Mawr, Pennsylvania.

The first conference will be held on SATURDAY, JUNE 6, 1987. Areas to be covered include: aquatic veterinary medicine, small animal neurology, diagnostic radiology, and zoonoses. Tuition for this conference is \$25.

The second conference will be held on SATURDAY, JULY 18, 1987. It will be a hands-on conference in Intermediate Hematology Wet Labs, and participants are encouraged to bring problem slides with them. This conference is limited to 10 participants, so early registration is encouraged. Tuition for this conference is \$35.

For registration information, please call 215-525-3554. The deadline for registration is May 11, 1987.

## Israel and Anna Live Endowment Fund

Dr. Israel Live (V'34) has established the Israel and Anna Live Endowment Fund. Its proceeds are to be used annually towards support of a fourth-year student designated by the dean.

Dr. Live, emeritus professor of microbiology, has been on the faculty of the School since 1934. He is the first graduate of the School to receive a graduate degree. In 1936 he was awarded the M.A. degree, and he received his Ph.D. degree in 1940.

## Warhol Painting Donated

Henry S. McNeil, Jr., a member of the School's Board of Overseers, presented a painting by Andy Warhol to the School. The painting, part of Warhol's series "Images of a Child," depicts a parrot.