

D. P. Singh

**SYMPOSIUM ON
RECENT RESEARCH TRENDS
IN
LARGE ANIMAL SURGERY**
(Oct. 27-28, 1977)

S O U V E N I R

BY

Indian Society of Veterinary Surgery and Radiology

Department of Veterinary Surgery and Radiology

HARYANA AGRICULTURAL UNIVERSITY
H I S S A R — 1 2 5 0 0 4

D. P. Singh



Office of the Vice-Chancellor
HARYANA AGRICULTURAL UNIVERSITY,
H I S S A R

Message

I am happy to learn that the Symposium on 'Recent Research Trends in Large Animal Surgery' is being held in the Department of Vety. Surgery and Radiology, H.A.U., Hissar. During the last few decades, veterinary surgery has made a commendable contribution in the improvement of livestock health in India. This symposium should provide an excellent opportunity to the scientists all over India in the field of surgery, Anaesthesiology and Radiology to exchange the information and ideas.

I wish the symposium all success.

Sd/-
(P. S. Lamba)

World Veterinary Association
Association Mondiale Veterinaire

secretariat:

70, route du Pont-Butin
1213 Petit-Lancy/Ge. Swtzerland

7th October, 1977

Dear Dr. Nigam,

Thank you for your letter of 23rd September 1977 informing us that you will be organizing a two-day symposium on 'Recent research trends on large animal surgery'. I take this opportunity to send you my best wishes for the success of this symposium.

With kind regards,

Your sincerely,
Sd/-
(Dr. M. Leuenberger)
Secretary - Treasure

PROGRAMME

27th Oct., 1977 (THURSDAY)

9-00 a.m.	Registration
9-30 a.m.	Inauguration
10-30 a.m.	Tea break

MORNING SESSION

Chairman : Dr. R. P. S. Tyagi

Repporteuf : Dr. Amresh Kumar

11-00 to 11-15 a.m.	Studies on the control of calcium homeostasis in human subjects.	Dr. R. K. Jethi
11-15 to 11-30 a.m.	Inhibitors of crystalization in the urine of normal and stone former bovines - A preliminary study.	Dr. K. L. Gera Dr. J. M. Nigam Dr. R. P. S. Tyagi
11-30 to 11-45 a.m.	Colocystoplasty versus caecocystoplasty in buffalo calves.	Dr. A. A. Khan Dr. S. P. Sharma
11-45 to 12-00 noon	Experimental trials on transplantation of ueter for management of irreparable bladder/ureter affections.	Dr. I. V. Mogha Dr. Gujraj Singh Dr. A. P. Singh Dr. A. K. Bhargava
12-00 to 12-15 p.m.	Techniques of urinary diversions in ruminant calves (<i>Bubalus bubalis</i>).	Dr. B. Prasad Dr. Rama Kumar Dr. R. P. S. Tyagi
12-15 to 12-30 p.m.	Experimental technique for creation of urine retention in buffalo calves.	Dr. S. N. Sharma Dr. B. Prasad Dr. R. N. Kohli
12-30 to 1-00 p.m.	Concluding remarks by the Chairman	
1-00 to 2-00 p.m.	Luncheon intermission.	

EVENING SESSION (*First*)

Chairman : Dr. M. N. Mannari

Rapporteur : Dr. R. L. N. Rao

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|-------------------|---|--|
| 2-00 to 2-15 p.m. | Urinary obstruction due to urolithiasis. | Dr. J. Mohanty |
| 2-15 to 2-30 p.m. | Urolithiasis in bovines. | Dr. H. N. Sharma
Dr. S. N. Gogol |
| 2-30 to 2-45 p.m. | Rupture of urinary bladder in bullocks-an experimental study. | Dr. P. E. Kulkarni
Dr. V. S. Panchabhai |
| 2-45 to 3-00 p.m. | Surgical management of urolithiasis in bovines. | Dr. K. L. Gera
Dr. J. M. Nigam |
| 3-00 to 3-08 p.m. | Observations on urinary calculi in calves, | Dr. M. S. Deshmukh |
| 3-08 to 3-15 p.m. | Repair of Ruptured Bladder in bullock | Dr. B. R. Patil |
| 3-15 to 3-00 p.m. | Concluding remarks by the Chairman | |
| 3-30 to 3-45 p.m. | Tea Break. | |

EVENING SESSION (*Second*)

Chairman : Dr. Umamaheshwaran

Rapporteur : Dr. B. Prasad

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| 3-45 to 4-00 p.m. | Study of experimentally induced intestinal obstruction and its repair in buffalo calves (<i>Bubalus bubalis</i>) - Physical signs, heamatology and blood chemistry. | Dr. R. R. Parasania
Dr. M. M. Mannari
Dr. D. M. Tadkod |
| 4-00 to 4-15 p.m. | A modified surgical technique for rumen cannulation in buffaloes and goats. | Dr. P. K. Samanta
Dr. D. B. Mukherjee |
| 4-15 to 4-30 p.m. | Everting intestinal anastomosis in sheep : An angiographic study. | Dr. A. P. Singh
Dr. G. R. Singh
Dr. I. V. Mogha
Dr. A. K. Bhargava |

Symposium on
The Recent Research Trends in
Large Animal Surgery

(October 27-28, 1977)

ORGANISING COMMITTEE

Prof. J. M. Nigam	...	<i>Director</i>
Prof. K. S. Deshpande	...	<i>Bombay Veterinary College.</i>
Dr. I. S. Chandna	...	<i>Associate Professor Radiology.</i>
Dr. K. L. Gera	...	<i>Research Scientist</i>
Dr. D. Krishnamurthy	...	<i>Research Scientist</i>
Dr. Rama Kumar V.	...	<i>Asstt. Professor (Surgery).</i>
Dr. P. K. Peshin	...	<i>Asstt. Professor (Surgery).</i>
Dr. S. C. Pathak	...	<i>P. G. Scholar</i>
Dr. D. K. Lahon	...	<i>P. G. ,</i>
Dr. Kuldip Singh	...	<i>P. G. ,,</i>
Dr. Jagvinder Singh	...	<i>P. G. ,,</i>
Dr. Sukhbir Singh	...	<i>P. G. ,,</i>
Dr. K. K. Mirakhur	...	<i>P. G. ,,</i>
Dr. V.K. Sobti	...	<i>P. G. ,,</i>

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| 4-30 to 4-37 p.m. | Paralytic ileus in she-buffaloes. | Dr. S. S. Marudwar
Dr. M. D. Narkhede
Dr. P. E. Kulkarni |
| 4-37 to 4-45 p.m. | Management of scrotal bite wounds in Camel. | Dr. D. S. Chauhan
Dr. S. S. Rathor |
| 4-45 to 5-00 p.m. | Concluding remarks by the Chairman | |

28th Oct., 1977 (FRIDAY)

MORNING SESSION (First)

Chairman : **Dr. P. E. Kulkarni**
Rapporteur : **Dr. Jayadevappa**

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|---------------------|---|---|
| 9-00 to 9-15 p.m. | Diaphragmtic hernia (some clinical observatlons). | Dr. M. N; Mannari
Dr. D. M. Tatkod |
| 9-15 to 9-30 a.m. | Diaphragmatic hernia in bovines | Dr. K. S. Deshpande
Dr. D. Krishnamurthy
Dr. J. M. Nigam
Dr. I. S. Chandna |
| 9-30 to 9-30 a.m. | Diaphragmatic herniorrhaphy in buffaloes. | Dr. Jit Singh
Dr. B. Prasad
Dr. Rama Kumar
Dr. S. S. Rathor
Dr. R. N. Kohli |
| 9-45 to 10-00 a.m. | Management of diaphragmatic hernia in buffaloes. | Dr. B. Prasad
Dr. Jit Singh
Dr. R. N. Kohli
Dr. S. S. Rathor |
| 10-00 to 10-15 a.m. | Experimental study on rumen. fistulation and different types of plugs and cannulae used there in bovines. | Dr. C. C. Wakankar
Dr. K. S. Deshpande |
| 10-15 to 10-30 a.m. | Rumenotomy : A remedy for ruminal atony associated with ruminal tympany | Dr. S. K. Pandey
Dr. M. R. Patel |
| 10-30 to 11-00 a.m. | Concluding remarks by the Chairman | |
| 11-00 to 11-15 a.m. | Tea break. | |

MORNING SESSION (*Second*)

Chairman : Dr. J. Mohanty

Rapporteur : Dr. P. O. George

- 11-15 to 11-30 a.m. Experimental thoraco-pericardiectomy and pericardioplasty in cattle. Dr. Krishnamurthy
Dr. J. M. Nigam
Dr. P. K. Peshin
- 11-30 to 11-45 a.m. Studies on cardiac surgery following traumatic pericarditis. Dr. O. Ramakrishna
- 11-45 to 12-00 noon Surgical treatment for pleurisy in buffaloes. Dr. Rama Kumar
Dr. B. Prasad
Dr. Jit Singh
Dr. R. D. Sharma
- 12-00 to 12-15 p.m. Torsion of uterus in buffaloes (A clinical analysis) Dr. Jit Singh
Dr. S. S. Rathor
- 12-15 to 12-25 p.m. Surgical management of perineal rupture in a brood mare. Dr. K. S. Deshpande
Dr. M. L. Kudale
- 12-25 to 12-35 p.m. Concluding remarks by the Chairman
Luncheon Intermission.

EVENING SESSION (*First*)

Chairman : Dr. A. K. Bhargava

Rapporteur : Maj. R. V. Rappai

- 2-00 to 2-15 p.m. Experimental study on effect of hyaluronidase in pudic nerve block in bovines. Dr. A. P. Bhokre
Dr. K. S. Deshpande
- 2-15 to 2-30 p.m. Ketamine with xylazine premedication in bovine paediatric surgery. Dr. Amresh Kumar
Dr. Harpal Singh
- 2-30 to 2-45 p.m. Clinical evaluation of experimental tenorrhaphy techniques on the superficial digital flexor of fore limb in cattle. Dr. J. G. Diwan
Dr. S. R. Hattangady
Dr. K. S. Deshpande

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| 2-45 to 3-00 p.m. | Experimental trials on the use of methylmethacrylate (Technovet 6091) as internal immobilizing agent. | Dr. Gajraj Singh
Dr. A. K. Bhargava
Dr. A. P. Singh
Dr. I. V. Mogha |
| 3-00 to 3-15 p.m. | A preliminary note on surgical transplantation of embryo in rabbits and goats. | Dr. S. N. Maurya
Dr. Amresh Kumar
Dr. S. C. Pandiyya |
| 3-15 to 3-30 p.m. | Concluding remarks by the Chairman | |
| 3-30 to 3-45 p.m. | Tea break. | |

EVENING SESSION (*Second*)

Chairman : Dr. Harpal Singh

Rapporteur : Dr. S. K. Pandey

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|-------------------|--|--|
| 3-45 to 4-00 p.m. | Functional disturbances of sesamoids (Bone) as participators in lameness /arthritis-A roentgenological review. | Dr. A. K. Bhargava |
| 4-00 to 4-10 p.m. | Studies on surgical management with particular reference to radiographic evaluation of granulomatous lymphadenitis in bovines. | Dr. D.C. Dhablania
Dr. R.P.S. Tyagi |
| 4-10 to 4-20 p.m. | Large animal surgery. | Dr. Uma Maheswaran |
| 4-20 to 4-30 p.m. | Concluding remarks by the Chairman. | |
| 4-30 to 6-00 p.m. | Business Session. | |

ABSTRACTS

1. Studies on the control of calcium homeostasis in Human subjects

— R. K. Jethi
Punjab Agricultural University
Ludhiana.

Collagen- induced *in vitro* calcification under physiological conditions has been used as a model system to study the mechanism and control of biological calcification. Normal human urine has been found to contain substances which have either the ability to strongly inhibit the rate and extent of calcifications or to stimulate the rate and extent of decalcification.

Comparison between the urine of normal subjects and kidney stone patients (admitted to the hospital attached to D.M.C.) have revealed that important quantitative and qualitative differences existed between these two groups with respect to the inhibitors of calcification and stimulators of decalcification. Kidney stone patients have been found to excrete 300-800 units of inhibitors of calcification in urine per 24 hrs compared to the normal subjects who were found to excrete 1400-1800 units/24 hrs. The units of the inhibitory substances excreted per day were found to be proportional to the volume of the urine excreted. Further, the kidney stone patients were found to not only excrete significantly less amounts of the substances which stimulate decalcification, but one of the two substances excreted by the normal persons was found to be absent in their urine. The implications of these studies in overall control of calcium homeostasis will be discussed.

2. Inhibitors of crystallisation in the urine of normal and stone former bovines-apreliminary study.

— K. L. Gera, J. M. Nigam and R. P. S. Tyagi,
Haryana Agricultural University. Hissar.

The preliminary study revealed that calcium oxalate crystalization has relation between the presence of stone and the inhibitor in the urine. In urine of normal animals crystallization was only observed after 5 hours in two animals and after 6 hours in rest of the animals. In cases of urolithiasis crystalization on fibre was observed between 2 to 3 hours. The identification of the nature of inhibitors is very important as this may throw

some light on the etiological aspect of urolithiasis. Based on the rate of calcium oxalate deposition on in the fibre, this diagnostic technique can be helpful in screening latent cases of urolithiasis.

3. Colocystoplasty versus caeco cystoplasty in buffalo calves

— *A. A. Khan and S. P. Sharma*
Rajendra Agrtultural University,
Patna (Bihar)

Colocystoplasty and caeco-cystoplasty were performed in 16 male buffalo calves using 8 animals for each. The technique involved isolation of the intestinal segment with intact blood supply from which mucosa was stripped off and sewn to partially cystectomised bladder. There was single death out of eight in colocystoplasty and one post operative complication while in caecocystoplasty, there was cent per cent success. Microscopical studies revealed complete regeneration of uroepithelium over the grafted tissue on 75 th post operative day. Although, both the techniques were worthy and feasible in buffalo calves, yet caecocystoplasty might be preferred; it was easier and a safer then the colocystoplasty.

4. Experimental trials on transplantation of ureter for the management of irreparable bladder ureter affections: part I rumen,

— *J. V. Mogha, Gajraj Singh, A. P. Singh & A. K. Bhargava,*
Indian Veterinary Research Institute, Izatnagar.

Feasibility of ureter transplantation into the rumen was studied in six animals (bull and buffalo calves) In two animals, the ureters were resected from the bladder and transplanted with the rumen. whereas in four, the ureters were transplanted with rumen along with trigonum. The bladder was approached through left para lumbar fossa under local infiltration.

It was observed that the transplantation of ureters aloner in rumen was failure and animal died on 7th day of operation. when ureters were transplanted along with trigonum attachment, healing of tissues (between bladder wall and rumen) was satisfactory till 12th day.

5. Techniques of urinary diversion in ruminant calves
(*Bubalus bubalis*)

—*B. Prasad, R. Kumar, V., and R. P. S. Tyagi,*
Haryana Agricultural University, Hissar.

Vesico-cutaneostomy, uretero-cutaneostomy, uretero-proctostomy and uretero-rumenostomy have been tried on 30 ruminant calves. Of these, vesico-cutaneostomy was considered as the best technique of urinary diversion where periodical collection of urine is required. The animals with vesico-cutaneostomy survived without complications. All animals in other groups died. Infection of ureters and kidneys was one of the major causes of death in these animals.

6. Experimental techniques for creation of urine retention in
buffaloe calves

—*Sureshwar N. Sharma, B. Prasad and R. N. Kohli,*
Punjab Agricultural University, Ludhiana.

Urine retention in 18 buffalo-calves was created by ligation of urethra, obstruction of urethra with a glass bead, with polythene tube and glass bead, with a Foley's catheter, with a LTT (Lady's Tangle Tent), by ligating the neck of urinary bladder, and by fixation of a tracheotomy tube in the bladder. Of these seven techniques obstruction of urethra with a LTT was found to be most satisfactory to create anuria and subsequent death in a few days with or without rupture of bladder. Reversibility at will was an added advantage of this technique. With other techniques partial or no retention of urine occurred and survival period varied widely (2 to 50 days).

7. Urinary obstruction due to urolithiasis

—*J. Mohanty,*
Orissa Uni. Tech. and Agri., Bhubaneswar.

Sixty-one experimental animals and clinical cases comprising of 125 calves and six bullocks were utilized in the project to study the haematological and pathophysiological changes occurring at different stages after urethral obstruction due to urolithiasis. Blood level of BUN, creatinine, inorganic phosphorus and potassium were found to gradually increase after urethral obstruction. Four types of operative techniques were tried in the experimental groups and then employed in clinical cases. Cystourethroscopy and cystotomy cum through and through catheterization were recommended

for cases in the early stages of the disease. The animals in late stages of urethral obstruction were subjected to caecal transplantation and peritoneal dialysis, partial cystectomy and urethrostomy. Even though all the techniques gave good results, cystotomy cum through and through catheterization was found to be the best. Calculi were mostly of struvite type in calves; but in bullocks a mixture of calcite and struvite was common.

8. Urolithiasis in bovines

—*H. N. Sharma and S. N. Gogoi,*
Assam Agricultural University, Gauhati.

Out of 13 cases six had frequent dribbling of urine with straining, 5 had total stoppage of urination with unsuccessful effort to urinate and 2 showed total stoppage with swelling on the ventral abdominal wall extending from umbilicus to the inguinal region. Urolithiasis in bovine male animals is commonly seen during winter season and has been attributed to lack of sufficient water intake combined with drinking of hard water, ingestion of paddy straw alone (which contains high percentage of oxalates) and vitamin A deficiency due to lack of green grasses. Treatment through cystotomy with urethrotomy under sedation with chloralhydrate-magnesium sulphate in the ratio of 10 : 5 gms. percent intravenously followed by local infiltration anaesthesia. Complete catheterization through cystotomy has been described.

9. Rupture of urinary bladder in bullocks-an experimental study

—*P. E. Kulkarni and V. S. Panchabhai,*
Punjabrao Krishi Vityapeeth,
(Maharashtra).

One of the most serious complications of obstructive urolithiasis is rupture of bladder. Experimental animals were subjected to ligation of urethra to create obstruction in the flow of urine. The period that lapses between complete obstruction and rupture of bladder has been estimated to be between 72 and 96 hours. Pulsating urethra, prolapse of rectal mucosa peculiar sitting posture were found to be additional symptoms besides those of toxæmia.

Two methods of surgical treatments 'viz'. suturing of the rent in bladder aided with indwelling catheter and passing of indwelling catheter alone, were compared. The problem of exteriorisation of the bladder and possibility of creating rents in already

thinned bladder wall while suturing can be avoided. Passing of the indwelling catheter alone is considered adequate.

Estimation of BUN during post-operative period is found to be helpful in establishing prognosis. High levels of BUN persist in cases with unfavourable prognosis.

10. Surgical management of urolithiasis in bovines

— *K. L. Gera, J. M. Nigam and R. P. S. Tyagi,
Haryana Agricultural University, Hissar.*

The study was conducted in 193 clinical cases of urolithiasis. These were recorded according to species, age, condition of the bladder and urethra. The clinical cases were categorized as follows.

- I Animals with anuria but moderately distended bladder and with seepage of urine into the abdominal cavity.
- II Animals with anuria but over distended urinary bladder and no seepage of urine into the abdominal cavity.
- III Animals with ruptured urinary bladder:
 - (a) Ruptured bladder lying in pelvic cavity.
 - (b) Pendulous bladder with areas of degenerative changes and partially filled with urine.
- IV Animals with subcutaneous infiltration of urine following urethral rupture.

Category—I.

Postscrotal urethrotomy under local infiltration anaesthesia was performed. After removal of the calculus, a polythene catheter of suitable size was pushed through-out the length of the urethra from the incised urethral opening. Sub-ischial urethrotomy was performed in some clinical cases under local infiltration anaesthesia in which the calculus was not found at the sigmoid flexure. 48 cases were recorded under this category out of which 38 recovered.

Category—II

Urine from the bladder was evacuated per-rectum. Paracentesis abdominis was carried out at left ventral abdomen. Either postscrotal, or subischial urethrotomy was performed depending upon the site of calculus. Nine cases were cured out of 17 treated animals.

Category—III

(a) Laparotomy was performed either from the left paralumbar fossa or para-anal site for the repair of the bladder in the case of bullocks. In calves the bladder was approached through left prepubic paramedian site. Rupture of the urinary bladder was recorded in 108 clinical cases. Repair of the bladder was undertaken from the left paralumbar fossa in 82 cases of bullocks, from the left prepubic paramedian approach in 20 cases of calves, from the para-anal approach in 6 bullocks. Merits and demerits of these approaches have been discussed.

(b) In cases where the bladder had become pendulous with areas of necrosis and thinning of the wall, resection of such areas and transfixation of the bladder with the lateral pelvic wall after repair was found helpful in prevention of kinking of the bladder at its neck.

Category—IV

Rupture was seen at the sigmoid flexure. Subischial urethrotomy in such cases prevented further accumulation of urine in the subcutaneous tissues.

11. Observation of urinary calculi in calves

—M. S. Deshmukh,
Principal Veterinary Officer, Khadkeshwar, Aurangabad.

Urinary calculi cases have been reported in calves. Physical signs are described. Surgical and medical treatment has been reported. Different preventive measures have been listed. Analysis of blood, water, fodder and calculi is carried out.

12. Repair of ruptured bladder in a country bullock

—B.R. Patil
*Principal Veterinary Officer, Veterinary Polyclinic,
Dhulia, Maharashtra*

A case of ruptured bladder in a bullock treated successfully under field conditions is described. The surgical technique—cystorraphy and indwelt catheterisation—has been discussed.

13. Study of experimentally induced intestinal obstruction and its repair in buffalo calves (*Bubalus bubalis*): physical signs, haematology and blood chemistry

—R.R. Parsania, M.N. Mannari & D.M. Tadkod,
Gujrat Agricultural University,
Anand.

Two groups of buffalo calves, numbering 14 in each group, were subjected to duodenal (high) and ileal (low) obstructions, respectively. The various physical symptoms were studied. Before and after operation in all the animals, the blood samples also were collected for the total erythrocyte count, haemoglobin concentration, packed cell volume, erythrocyte sedimentation rate, total and differential leucocyte count, serum sodium and potassium, serum chloride, blood urea nitrogen, serum creatinine, serum calcium, serum inorganic phosphorus, serum magnesium and blood glucose.

Out of the 14 animals where high obstruction was created, six animals died before obstruction could be relieved. Of the eight survivors, the obstruction was released by removing the ligature in 4 animals, and by performing resection followed by intestinal anastomosis by eversion technique, using cotton thread in the remaining. After the release of obstruction also the various parameters mentioned above were studied for four consecutive days.

In second group (ileal obstruction), 4 animals died before the obstruction could be relieved. The obstruction was released in 6 animals, whereas intestinal resection followed by anastomosis by eversion technique was performed in the remaining animals. All the parameters mentioned were studied upto four days after release of low and high obstruction.

Physical symptoms namely, dullness, weakness, loss of appetite, reduced ruminal motility and suspended rumination, failure to pass faeces, subnormal body temperature, increased heart rate and the changes in respiratory rate were variable and not of specific diagnostic value in its early detection. Haemococentration as reflected by an increase in the total erythrocyte count, haemoglobin concentration and packed cell volume, was more severe in duodenal obstruction than in the ileal obstruction, whereas, the leucocytosis and neutrophilia were more marked in the ileal obstruction. Similarly, the hyponatremia, hypokalemia, hypochloreaemia, hypocalcaemia, hypophosphatemia and hypomagnesemia and rise in blood urea nitrogen and serum creatinine level, hyperglycaemia, were of higher intensity in duodenal obstruction than in ileal obstruction.

The haematology and biochemical analysis were found helpful only in the confirmation of the intestinal obstruction supported by the physical signs. The eversion technique of intestinal anastomosis was found to be easy, quick and successful, and cotton thread gave excellent results as an effective suture material in intestinal anastomosis.

14. A modified surgical technique for rumen cannulation in buffaloes & goats

—*P. K. Samanta and D. B. Mukherjee,
Bidhan Chandra Krishi Viswavidyalaya, West Bengal.*

A modified surgical technique for permanent rumen fistula was developed to guard against the loss of cannula, erosion of rumen wall and leakage of rumen contents. The post operative follow up over two years did not show any of the usual complications:

The present technique involves in addition to the conventional surgical method of preparation of permanent rumen fistula (instead of suturing the rumen wall, muscle and skin collectively by interrupted suture) the use of purse-string suture of the rumen wall only around the cannula and placing two circular diaphragm guarding the rumen wall and the skin from the contact of polythene discs placed inside the rumen and outside the body.

15. Everting intestinal anastomosis in sheep: an angiographic study

—*A. P. Singh, G. R. Singh, I. V. Mogha & A. K. Bhargava,
Indian Veterinary Research Institute, Izatnagar.*

Thirty end to end enteroanastomoses were performed with closely placed everting single layer continuous lock-stitch sutures in four sheep after exteriorizing the ileum through right flank laparotomy under local infiltration. Six anastomoses were resected each on 3rd, 7th, 15th, 21st and 28th post-operative days, along with one major artery for angiographic study. The vessels of either end of resected intestinal segments were ligated, 3 to 4 ml of contrast material (conray-420) was injected and radiographs taken.

The angiograms taken on 3rd day demonstrated diffused vascular supply and ramification of minute capillaries at the anastomotic site. The 7th day, radiographs showed better visualisation of vascular capillaries, few crossings were more marked at mesentric border as compared to antimesentric border. On 15th and 21st postoperative days angiograms demonstrated no significant changes in the vascularity except for more

pronounced vascular re-establishment across the anastomotic site. The traversing vessels were also noticed at antimesenteric border. The unilateral angiograms taken on 15th day showed almost complete reunion of capillaries across the anastomosis. The 28th day, radiographs demonstrated reduced number of vessels at peripheral area of the anastomotic site while no apparent changes were observed in the center as compared to 21th day's observations.

Results of present study revealed that vascularisation of healing intestine started from 3rd day and by 15-21 day functional vascular supply has been re-established in almost entire area of anastomosis.

16. Paralytic ileus in she-Buffaloes

—S. S. Marudwar, M. D. Narkhede and P. E. Kulkarni,
Panjabrao Krishi Vidyapeeth, Akola,

Two clinical cases of paralytic ileus in she-buffaloes have been recorded. Right flank laparotomy was performed in one case under paravertebral anaesthesia and the abdominal cavity was explored. Part of the ileum was involved and distended. The portion of the gut cranial to the distension was empty and collapsed. The distended part was congested. Enterotomy was performed after exteriorisation of the part, contents were manually removed. The vent on the intestinal wall was closed using chromic cat gut No. 2/0 by double row of Lembarts' sutures. Laparotomy incision was closed by figure of '8' combined with mattress, sutures using extra coarse nylon.

The second case was diagnosed on post-mortem examination and it was found that an extensive loop of small intestine was involved in distension. The diameter of the distended loop was about 10 inches which was spread over about four feet. The intestine caudal to the distension was empty containing a small quantity of tarry mucus and gases. The distended mass was doughy and congested. On opening the distended part of intestine no foreign body was detected which could have possibly contributed towards the physical obstruction of the lumen.

17. Management of Scrotal Bite Wound in Camal

—D. S. Chauhan & S. S. Rathor
*College of Veterinary & Animal Sciences,
Bikaner*

Scrotal wounds are usually penetrating and infected mostly involving the testicular parenchyma. The cases have been treated by orchietomy under chloral-mag anaesthesia. The technique has been described.

18. Diaphragmatic Hernia (Some Clinical observations)

—*M. N. Mannari & D. M. Tadkod,*
Gujrat Agricultural University, Anand.

Reticular herniation is not restricted only to the buffaloes and period around parturition. It has also been recorded in bullocks and buffalo-calves in the present study. Tympany also plays an important role in increasing intra abdominal pressure and the resulting rent in the weakened diaphragm. There is a possibility of hereditary predisposition for the weakness of diaphragm for the occurrence of the condition. The symptoms shown by the animals during the condition are not at all defined.

19. Diaphragmatic Hernia in Bovines

—*K. S. Deshpande, D. Krishnamurthy, J. M. Nigam & S. Chandna,*
Haryana Agri. University, Hissar.

In all 470 cases of foreign body syndrome were subjected to radiological examination—87 cases, i.e., 18.5% were found to be of diaphragmatic hernia. Out of which 3, i.e., 4.6% were in bullocks and 2 were in heifers.

It is observed that radiological examination does help in diagnosis of the cases of diaphragmatic hernia. Barium meal contrast radiography proved useful in confirming the condition in doubtful cases.

Most of the cases observed in buffaloes were either associated with pregnancy or recent calving. Cases subjected to laparotomy revealed more common occurrence of the rent in the tendinous portion and to the right of the hiatus oesophageus. In 64% of the cases herniated reticulum contained one or more metallic foreign bodies.

Authors feel that the term "reticular hernia" to be more appropriate and self explanatory as the reticulum being the main organ involved giving rise to peculiar syndrome of the condition.

20. Diaphragmatic Herniorrhaphy In Buffaloes

—*Jit Singh, B. Prasad, Rama Kumar, S. S. Rathor and R. N. Kohli,*
Punjab Agricultural University, Ludhiana.

Surgical repair of diaphragmatic hernia was attempted in 86 buffaloes, out of which 67 (77.9%) recovered uneventfully. Plain and contrast radiography of reticular

area proved useful in establishing the diagnosis. Though neutrophilia in varying degree was evident, no logical conclusion could be drawn from the results of haematological examinations. A satisfactory anaesthesia was achieved by administration of 6% chloral hydrate and 5% thiopental sodium. Positive pressure ventilation during surgical repair of the diaphragm was effectively attained by mechanical respirator using oxygen/compressed air. Postxiphoid approach and continuous lockstitch sutures were employed to repair the rent in the diaphragm.

Pre-and post-operative use of hydrocortisone and fluids possibly contributed towards success of the technique.

21. Management Of Diaphragmatic Hernia In Buffaloes

*Benaras Prasad Jit Singh, R. N. Kholi and S. S. Rathor,
Punjab Agricultural University, Ludhiana.*

Observations on the management of 86 cases of diaphragmatic hernia in buffaloes are recorded. The treatment consisted of an initial laparo-rumenotomy followed by surgical repair of diaphragmatic rent after 3-10 days. Laparo-rumenotomy led to evacuation of rumen, correction of ruminal PH, removal of foreign bodies and assessment of hernial ring and reticulo-phrenic adhesions. The repair of hernial rent was done by a method developed and perfected at the institute and published earlier. Chloral hydrate and intraval sodium anaesthesia with positive pressure ventilation were employed for surgery

Evacuation of ruminal contents and correction of rumen pH helped in re-establishment of metabolic status of the animal as well as decreased the intra-abdominal tension during repair of diaphragm. Administration of haematinics, liver extracts and fluids were considered essential prior to repair of diaphragm. Pregnant and non-pregnant animals were considered separately on merit in calculating the dose of chloral hydrate and thiopental sodium. Proper oxygenation, prevention of cardiac fibrillation and creation of negative pressure in the chest were essential for the success of the surgical technique. Postoperative complications varied in individual cases which were tackled symptomatically.

22. Experimental Study On Rumen Fistulation And Different Types Of Plugs And Cannula Used Therein In Bovines

*—C. C. Wakankar & K. S. Deshpande
Konkan Krishi Vidyapeeth, Bombay (Maha.)*

Four modifications of fistulation technique were tried. Fixing of a portion of rumen to body wall and cutting the outpouched portion immediately was a better tech-

nique than excision after seven days. Taking through and through sutures; and using a clamp, because (a) it was short and stage operation; (b) Healing was quicker (8-10 days) (c) The edges of the fistula were not thickened.

A pneumatic plug was found superior to a plastic cannula, a metal zipper and an ice bag. It did not prolong or modify the surgical procedure. It was well tolerated by the animals and did not distort the fistula. It closed the fistula effectively however, it had a few disadvantages. It was not cheaper and had to be removed for each sampling. Correct inflation of the plug was also important.

23. Rumenotomy : A Remedy for Ruminal atony associated with ruminal tympany

*S. K. Pandaey & M. R. Patel.
J. N. K. V. V., Jabalpur*

Ten clinical cases of large animals (four she-buffaloes, two he-buffaloes, three cows and one bull) having absence of ruminal movement and persistent mild to severe chronic ruminal tympany are included in the present report. Six animals were suffering from frothy bloat whereas in the remaining four, gas was predominant. The animals with frothy bloat were treated with sweet oil, turpentine oil and Avlinox (I.C.I.). The gas predominant animals were treated with formaldehyde and phenol. Rumenton (Pfizer) was given orally for three days in all the animals. 500 ml of 5% glucose saline along with 25 ml of Terramycine was given intravenously for seven days in all the cases. When such treatment failed, these animals were subjected to rumenotomy.

Out of the 10 cases four showed subsequent ruminal tympany between 20 to 28 days. The above mentioned rational treatment was repeated. One of them recovered and the remaining three died. In one case a grossly observable fibrous tract linking the reticulum with pericardium via diaphragm was noticed. This tract appeared to be of chronic granulation tissues originating as a result of local tissue reaction linked with the entrance of sharp foreign body, which, however could not be traced, although a chronic and localized reticulopericarditis was observed. In remaining two animals nothing specific could be detected.

Rumenotomy and evacuation of ruminal contents have helped in early return of ruminal movement. It is presumed that the removal of ruminal contents helped in reduction of toxic substances like hydrogen sulphide, lactic acid and histamine. This has indirectly initiated the motility of the rumen. Excessive accumulation of gases and ingesta interfered with the neuromuscular junction of the autonomic nervous system. imbalance of the impulses in the nervous pathway leads to the atony of ruminal wall.

Incision of the ruminal wall in such cases might have stimulated the vagal pathway and activated the ruminal contraction. Likewise removal of ruminal contents could have eliminated the toxic products which interfered with vagal activity and restored the normal vagal function.

24. Experimental Thoraco-Pericardiotomy and Pericardioplasty in Cattle

—D. Krishnamurthy, J.M. Nigam and P.K. Peshin,
Haryana Agricultural University, Hissar

Experimental thoraco-pericardiotomy and pericardioplasty was undertaken in 20 animals of two to five years of age to study the feasibility of rib incisions for entering the thorax and to compare the pericardiotomy and pericardioplasty as a measure for treatment of traumatic or constructive pericarditis.

The rib incisions eliminated the formation of seromas and thereby helped in achieving the first intention healing as compared to the routine intercostal and rib resection techniques. Among the various types of rib incisions, the split rib technique provided maximum space to carry out all types of operations in the thorax. The only disadvantage with rib incisions was the formation of dents along the margins of rib at the site of the sutures. This complication could be avoided by applying light sutures.

Autopsy following the surgery of the pericardium showed adhesions in the chest cavity. The adhesions were firm and more in pericardioplasty and pericardial suture techniques as compared to simple pericardiotomy. Microscopic examination of the tissue at the junction of the pericardium and graft revealed infiltration of inflammatory cells. All the three types of grafts, i.e., duramater, fascia-lata and peritoneum were rejected besides the formation of adhesions.

25. Studies on Cardiac Surgery Following Traumatic Pericarditis in Bovines

—O. Ramakrishna
Andhra Pradesh Agri. Univ.
Tirupati (A.P.)

The experimental studies were conducted on 30 apparently healthy male buffalo-calves of 1½ to 2 years of age, and ten clinical cases of cows with traumatic pericarditis brought to the clinics of the College of Veterinary Sciences, Hissar. Traumatic pericarditis was induced in the experimental cases either by a seven cms. long, dechromicised straight sewing needle or a seven cms. wire with a sharp point. The needles were pushed

through the anterior wall of reticulum and diaphragm and left in the vicinity of pericardium following rumenotomy. All the animals were observed for physical and clinical symptoms of traumatic pericarditis.

Pericardiocentesis was done via the left fifth intercostal space under local infiltration analgesia. Pericardiotomy and pericardiectomy were done by standard procedures following fifth rib resection from left side. Six per cent solution of chloral hydrate solution was given intravenously in some of the animals, and was connected to Bird mark 14 positive phase ventilator after intubation. In some animals, anaesthesia was induced with ether and maintained with ether-oxygen in a semi-closed system with Boyle's apparatus. In clinical cases, all the operations were done under local infiltration analgesia. The following conclusions were drawn from the study:

- 1) Use of a pointed wire with a loop retained the wire in position and the symptoms developed within 48 to 72 hours of induction, in acute form.
- 2) Clinical symptoms included prolonged standing periods, reluctance to move, arched back, preference to right lateral recumbency, elevated temperature, increased pulse, jugular pulse and respirations. Oedema of the dependant parts was not seen in any experimental animals.
- 3) There was decrease in TEC, Hb and PCV values along with neutrophilia increased ESR and TLC in both experimental and clinical cases.
- 4) Total proteins and albumin values were lowered along with increased globulin in both experimental and clinical cases. Decrease in albumin was more conspicuous.
- 5) Haemodynamic studies on experimental animals showed no characteristic deviation from the normal.
- 6) Cardiac shadow was almost clear in all experimental animals except at the lower part, probably due to less amount of fluid in the pericardial sac. In clinical cases, the cardiac shadow was enlarged.
- 7) Local infiltration analgesia in standing animal was found ideal. Induction and recovery were smooth with chloral hydrate narcosis and ether inhalation anaesthesia. Induction was prolonged with ether, but recovery was rapid.
- 8) Aspiration of pericardial contents prior to incising the pericardium reduced the chances of contamination of the thoracic cavity by pericardial fluids.
- 9) Synthetic decaron patch coated with silicon rubber (Mediform dure substitute) produced scanty of adhesions between epicardium and surrounding structures when compared with homologous preserved peritoneum. However, the fate of these two materials have to be evaluated on long term basis.

26. Surgical Treatment for Pleurisy in Buffaloes

—*Rama Kumar, V., Beraras Prasad, Jit Singh & R. D. Sharma,*
Punjab Agricultural University, Ludhiana.

Surgical treatment of pleurisy is not reported in the literature. Pleurisy in two lactating buffaloes is recorded. Predominant symptoms included intermittent tympany, marked reduction in milk yield and brisket oedema persisting for a week. Thoracocentesis and radiographic examination were found useful for confirmation of diagnosis. Surgical drainage by thoracotomy along with administration of antibiotics, hydrocortisones and digitalis preparation provided satisfactory cure,

27. Surgical Management of a Third Degree Perineal Rupture in a Brood mare

—*K.S. Deshpande and M.L. Kudalae*
Konkan Krishi Vidyapeeth, Bombay.

Amongst the domesticated animals perineal lacerations are frequently met in mares than in other animals. This is more true in primipara mares and generally attributed to the violent expulsive efforts during the act of foaling coupled with the abnormal position of foal in the genital passage. These lacerations vary in extent and are grouped according to the severity. In the first group, the wounds are superficial and involve only the mucous membrane of vagina and vulva. In second group the entire wall of the vagina and vulva is affected but the rectum and the anal sphincter remains intact. The most difficult, i.e., the third group wherein the entire wall of the vagina & rectum together with the perineal body and sphincter are involved resulting into a common passage known as cloaca.

Such a case of third degree rupture was successfully treated in a brood mare. In this case reconstruction of both the passages was carried out at one time with the single layer of interrupted sutures taken in a fashion of '8' figure (Knot) combined with 'U' under epidural anaesthesia in a standing position. The suturing was carried out with a non-absorbable non-capillary synthetic material placed on a number two half circle taper point needles. The other factors involved in the management of such cases are also discussed.

28. Experimental Study on Effect of Hyaluronidase in Pudic Nerve Block in Bovines

—*A.P. Bhokre and K.S. Deshpande,*
Konkan Krishi Vidyapeeth, Bombay.

Hyalase (Rallis India) in combination with Planocaine (May & Baker) and Xylocaine (Suhrid Geigy) was effectively used in pudic nerve block trials conducted on 14

bovines. Hyalase shortened the average time (4.9 minutes required for onset of cutaneous anaesthesia and relaxation of penis (18.8 minutes), in addition to increased duration of relaxation of penis.

29. Ketamine With Xylazine Premedication in Bovine Padiatric Surgery

—*Amresh Kumar and Harpal Singh,
G.B. Pant Univ. Agri, & Tech,
Pantnagar (U.P).*

Twenty-four calves of 3 days to 6 months age were administered Xylazine (0.22 mg/kg. I/M) followed by Ketamine (11 mg/kg. I/M). Various surgical procedures lasting from 28 to 50 minutes were carried out. Mild salivation, adequate muscle relaxation, reduced rectal temperature, heart and respiratory rate, were observed.

EKG changes included, wandering pace maker, changes in P wave interval QRS amplitude and associated changes in 'T' wave.

Haematological changes included a slight reduction in total erythrocytic and leucocytic count, haemoglobin concentration and packed cell volume and a relative lymphocytopaenea and neutrophilia during surgical anaesthesia. A mild increase in potassium and a decrease in sodium with no marked changes in chloride concentration were observed. A significant increase in glucose level was also observed ($P > 0.05$). At 48 hours haematological and biochemical parameters returned to near pre-administration level.

It is concluded that the intramuscular administration of xylazine followed by administration of ketamine provided good muscle relaxation and surgical anaesthesia lasting from 30 to 58 minutes in cow and buffalo calves ranging from 3 days to 6 months in age. Mild changes produced in physiological, haematological and biochemical parameters are compensated within 2 to 48 hours.

30. Clinical Evaluation of Experimental Tenorrhaphy Techniques on the Superficial Digital Flexor of Fore-Limb in Cattle

*J. G. Diwan, S.R. Hattangady and K.S. Deshpande,
Konkan Krishi Vidyapeeth, Bombay.*

Thirty experimental tenorrhaphies were performed by three methods namely, Batson's method, Koch-Mason method, and Bunnell criss-cross method by using stainless steel wire, silk and Vetafil. Superficial digital flexor tendons of left forelimb of

Bull calves were transected and sutured. For the comparative evaluation of these techniques and suturing materials four factors were considered namely, the dropping of fetlock, the local swelling, lameness and the extent of healing.

The Bunnell criss cross method was found to be efficient as compared to Koch-Mason's and Batson's methods. Stainless steel wire was found to be better than silk and vetafil. Silk, however, was found to be more efficient as compared to vetafil.

31. Experimental Trials on the use of Methylmethacrylate (Technovet 6091) as Internal Immobilizing Agent

Gaj Raj Singh, A. K. Bhargava, A. P. Singh & I. V. Mogha
Indian Veterinary Research Institute, Izatnagar.

A total number of 14 trials were conducted in different bones of various species of animals to evaluate the use of Technovet-6091 (Methylmethacrylate) as an internal immobilizing agent. The fractures were created experimentally after exposing the particular bone under either local or general anaesthesia taking all aseptic precautions. Both the ends of fractured fragments of bone were dried and freshly prepared. Technovet-6091 dough was applied around the fractured site after proper reduction of the fragments. The Technovet dough was applied in a thick layer extending sufficiently above and below the fracture line to hold the fragments in alignment. A mild pressure was applied all around. After five minutes a mild force was applied to check the mobility at fractured site in which case the material was removed and the procedure was repeated again. The wound was then closed as usual and no external immobilization was provided except in two cases where plaster of paris cast was applied for few weeks.

The animals were maintained for varying intervals upto nine months. The results were evaluated by clinical, radiological, and histopathological examinations.

This method achieved solid fixation of fractures immediately with consequent alleviation of pain, early active Joint motion and early weight bearing. However, in two cases failure of fixation was observed.

The radiographic observation at various intervals revealed no apparent foreign body reaction. However, the radiolucent material was present as such, embedded in osseous callus, the fracture line was clearly visible. True fracture healing probably does not occur. The histopathological examination failed to reveal any signs of foreign body reaction. There was excessive fibrous tissue and periosteal proliferation encapsulating the material. The trabecular pattern extending in the area of implant was not demonstrated confirming the radiological findings

On the basis of the results of present study it could be concluded that Technovet 6091 is an inert material and may be used as an internal immobilizing agent in selected cases. However, it requires further investigations to prove its feasibility in fracture repairs.

32. A Preliminary Note on Surgical Transplantation of Embryo in Rabbits and Goats

*S. N. Maurya, Amresh Kumar & S.C. Pandiya,
G.B Pant Univ. Agri, & Tech. Pantnagar (U.P.).*

Surgical transplantation of embryo was attempted in 10 adult female rabbits. Ten adult rabbits served as donors. Rabbits (donors and recipients) were super-ovulated with Pregnant Mare's Serum Gonadotrophin (PMS-G) and Human Chorionic Gonadotrophin (HCG). Donors were mated with sires of proven fertility. Thirty six hours after HCG administration, laparotomy was performed through a mid-line incision, 3.0 cm behind the umbilicus either under thiopental sodium or a combination of Triflupromazine and Ketamine. Embryos were collected through the fimbriated end of the oviduct by injection of flushing fluid (TCM-199) through the uterine end. The flushing fluid was collected into petriplates and was examined for the presence of embryos under the dissecting microscope. Morphologically normal embryos were picked by a small Pasteur pipette along with a small amount of TCM-199. Two embryos were transferred into each uterine horn of the recipient. The laparotomy wound was closed in the usual manner. Rate of embryo recovery in 10 donors was 60 per cent. Seven recipients completed full gestation

Embryo transplantation was performed in 5 adult goats. Seven adult goats were used as donors Oestrus was synchronized with progesterone and the superovulation was induced with PMS-G and HCG. Donors were mated with buck of proven fertility and embryos were collected after about 36 hours of HCG administration through the left flank incision in standing position. Embryos were collected through the fimbriated end of the oviduct as in the case of rabbits. One embryo was transferred into each uterine horn of the recipient through the left flank incision in standing position. The recovery of embryos in 7 donors was 40%. Two recipient goats became pregnant.

33. Functional Disturbances of Sesamoids (Bone) as Participators in Lameness/Arthritis-A roentgenological review,

*A.K, Bhargava,
Indian Veterinary Research Institute, Izatnagar.*

The role of radiography in the evaluation of the functional disturbances of sesamoids have been described. The possibility more definite prognosis on the basis of accurate

radiographic interpretation is postulated. Advantage of early differential diagnosis by way of possibility of more proficient treatment is stressed

34, Studies on Surgical Management with Particular Reference to Radiographic Evaluation of Granulomatous Lymphadenitis in Bovines

—D. C. Dhablania & R. P. S. Tyagi,
Punjab Agri. University,
Ludhiana.

The clinical signs varied according to the chronicity of a case. Initially it commenced as an abscess in the lymph nodes but organised granulomatous masses as big as man's head were observed in the advanced cases. Wounds in the mouth provided the points of entry of the infection.

The relative prevalence of the disease was higher in buffaloes compared to cattle. The males of cattle and females of buffaloes were commonly affected. A higher incidence was recorded in young animals as compared to the older animals.

The afferent lymphatics of mandible were derived from the lower lip, gums and adjacent tissues and those of parotid from the dental pad lips and muzzle of the upper jaw. There were no lymphatic connections between the mandibular and parotid lymph glands and their afferents drained into the atlantal lymph gland.

Angiography in the affected animals aided in the visualisation of the vascular pattern of granulomatous masses. The organised granuloma were vascular and encroached on the common carotid artery.

The normal lymph glands were homogenously opacified with a smooth contour. In the clinical cases, lymphangiography revealed variable destruction of the lymph glands, collateral channels and lymphatic obstruction. In advanced cases a complete lymphatic blockade was observed.

The histopathological examination revealed purulent exudate with abundance of polymorphonuclear cells and later giant cells and macrophages with predominance of fibroblastic reaction were observed. The lymphatics were found to be dilated and had fibrinocellular thrombi. There was absence of collagen, reticulum and elastic fibres in the vicinity of abscess and moderate to excessive at the periphery.

The organisms identified and characterised by morphological, cultural and biochemical tests were classified as *Actinobacillus Sps E. coli*, *Staphylococcus* and unidentified Gram negative organisms.

The surgical treatment for the condition has been described,

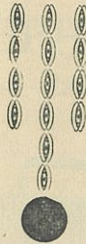
35. Large Animal Surgical Research in the Madras Veterinary College during the last decade

—V. Uma Maheswaran
Madras Veterinary College, Madras.

The research work carried out in different disciplines of the surgery has been detailed.



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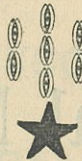


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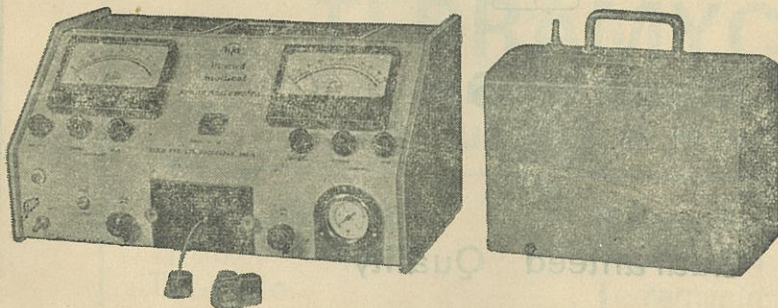
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