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# MEREDITH CAMPBELL MEMORIAL LECTURE

## AMERICAN UROLOGIC ASSOCIATION

## NEW ORLEANS, LOUISIANA

## MAY 13, 1990

I FIRST HEARD THE NAME MEREDITH CAMPBELL WHEN I WENT TO BOSTON IN THE SPRING OF 1946 TO LEARN SOMETHING ABOUT A NEW FIELD THAT WAS DEVELOPING CALLED CHILD SURGERY. MEREDITH CAMPBELL, TO US ON THE HOUSE STAFF AT THE BOSTON CHILDREN'S HOSPITAL, WAS A NAME THAT CONJURED UP THE MAGIC OF SURGERY,--RIGHT UP THERE WITH NAMES LIKE WILLIAM E. LADD AND SIR DENNIS BROWN.

NOT EVEN THE MOST FANCIFUL FLIGHT OF IMAGINATION WOULD HAVE LED ME TO DREAM OF GIVING THE MEREDITH CAMPBELL MEMORIAL LECTURE ALMOST HALF A CENTURY LATER. BUT HERE I AM, AND HONORED INDEED TO BE AMONG YOU AND TO HONOR THE MEMORY OF THIS PIONEER IN UROLOGY AND ESPECIALLY THAT OF CHILDREN.

**IN 1946, WE WHO WERE ON THE CUTTING EDGE OF A NEW DISCIPLINE, LATER TO BE KNOWN AS PEDIATRIC SURGERY, CONSIDERED OURSELVES TO BE WORKING IN A FIELD OF ULTIMATE SURGICAL SOPHISTICATION.**

**EVEN HAD THAT BEEN TRUE FOR DISCIPLINES IN ADULT SURGERY, THE ATTENTION GIVEN TO CHILDREN WITH SURGICAL PROBLEMS WAS A DISGRACE.**

IN INSTITUTIONS WHICH HAD BEEN DEVOTED TO THE CARE OF CHILDREN, WHERE PIONEERING ADVANCES WERE MADE IN MEDICAL PEDIATRICS, THE SURGERY OF CHILDREN LAGGED FAR BEHIND. PEDIATRIC ORTHOPEDICS WAS IN A WAY FAR ADVANCED OVER OTHER PEDIATRIC SURGICAL SUB-SPECIALTIES. EARLY GIANTS IN THAT FIELD, LIKE WILLARD AND NICHOLSON, SPENT MOST OF THEIR TIME REPAIRING THE RAVAGES OF CHILDHOOD DISEASES NO LONGER ENCOUNTERED.

POLIO, TUBERCULOSIS OF THE BONE, AND OSTEOMYELITIS, FILLED MOST OF THE BEDS IN SPECIALTY INSTITUTIONS CONCERNED WITH THE ORTHOPEDIC CHALLENGES OF CHILDHOOD. ONE SUMMER WHEN I WAS IN COLLEGE, I FELT EXTRAORDINARILY FORTUNATE TO WORK UNDER THE AEGIS OF FRANK S. CHILDS, AN ORTHOPEDIC SURGEON WHO, AMONG OTHER THINGS, WAS THE CHIEF OF SURGERY AT THE ST. CHARLES HOSPITAL FOR CRIPPLED CHILDREN, A 400-BED INSTITUTION IN PORT JEFFERSON, NEW YORK.

MY CLINICAL DUTIES WERE SIMPLE: CHANGE EVERY OSTEOMYELITIS DRESSING ON EVERY CHILD ONCE A WEEK. I STARTED AT 8:00 A.M. MONDAYS, WORKED A 10-HOUR DAY, AND USUALLY WAS FINISHED BY SATURDAY AFTERNOON.

THERE WERE NO SULFONAMIDES, NO ANTIBIOTICS. IODOFORM GAUZE AND BALSAM OF PERU FILLED THE LARGEST CONTAINERS ON THE DRESSING CARTS.

IN A HOSPITAL LIKE THE CHILDREN'S HOSPITAL OF PHILADELPHIA IN THE DAYS BEFORE WORLD WAR II, SHARING THE LIMELIGHT WITH ORTHOPEDICS, WAS OTORHINOLARYNGOLOGY, WITH TONSILLECTOMY BEING THE MOST FREQUENT SURGICAL PROCEDURE OF AN ELECTIVE NATURE; THE SURGICAL EMERGENCIES WERE RADICAL MASTOIDECTOMIES AND THE DRAINAGE OF PERITONSILLAR ABSCESSES.

UROLOGIC PROCEDURES AT THAT SAME INSTITUTION WERE CONFINED TO THE HAPHAZARD MANAGEMENT OF GROSSLY OBVIOUS UROLOGIC ANOMALIES BY PROCEDURES WHICH SHOULD HAVE BEEN TEMPORIZING BUT REMAINED THROUGHOUT THE LIFE OF THE CHILD, USUALLY SHORTENED, HOWEVER, BY INFECTION.

EVERYONE WAS AN EXPERT IN CIRCUMCISION. THERE WERE PROBABLY MORE GOMCO CLAMPS IN THE HOSPITAL THAN THERE WERE ABDOMINAL RETRACTORS.

THE REAL CHALLENGE OF GENERAL PEDIATRIC SURGERY OF THE 1950S LAY IN THE CONGENITAL DEFECTS INCOMPATIBLE WITH LIFE BUT AMENABLE TO SURGICAL CORRECTION, SUCH AS ESOPHAGEAL ATRESIA, OMPHALOCELE, IMPERFORATE ANUS, DIAPHRAGMATIC HERNIA, AND INTESTINAL OBSTRUCTION. THE MORTALITY FOR A SIMPLE COLOSTOMY WAS IN THE NEIGHBORHOOD OF 90%.

**THE THOUGHT OF GIVING GENERAL ANESTHESIA TO A CHILD STRUCK TERROR TO THE HEARTS OF MOST SURGEONS, BUT INSTEAD OF THIS BEING AN IMPETUS TO RESEARCH INTO THE UNIQUE RESPONSES OF INFANTS AND SMALL CHILDREN TO PHARMACOLOGICALS, ANESTHETIC AGENTS, AND BLOOD LOSS AND REPLACEMENT, OPERATIONS WERE POSTPONED OR NEVER DONE RATHER THAN FACE THE PROBLEMS OF HIGH MORTALITY FROM ANESTHESIA.**

IN 1946, WILLIAM E. LADD, THE PIONEER OF PEDIATRIC SURGERY IN THE UNITED STATES HAD RETIRED FROM THE BOSTON CHILDREN'S HOSPITAL AND HARVARD MEDICAL SCHOOL. A CHAIR HAD BEEN ENDOWED IN HIS NAME, FUNDED BY $6,000. ROBERT E. GROSS OCCUPIED IT IN THE CLOSING WEEKS OF 1946, AND THE BOSTON CHILDREN'S HOSPITAL WAS THE ONLY PLACE IN THE UNITED STATES WHERE ONE COULD SAY THERE WAS ANYTHING LIKE A TRAINING PROGRAM IN CHILD SURGERY.

THERE WERE A FEW MEN AROUND THE COUNTRY WHO WERE BEGINNING TO MAKE A DIFFERENCE IN CHILD SURGERY: OSWALD WYATT IN MINNEAPOLIS, HERBERT COE IN SEATTLE, AND ORVAR SWENSON IN BOSTON. I WAS THE SIXTH PERSON IN THE UNITED STATES TO CALL HIMSELF A CHILD SURGEON, AND THE FIRST TO PRACTICE THE SPECIALTY TO THE EXCLUSION OF ADULT PATIENTS.

I BEGAN TO OPERATE AT THE CHILDREN'S HOSPITAL IN PHILADELPHIA IN DECEMBER OF 1946, ACTING, INDEED, AS THE SURGEON IN CHIEF, A TITLE I DID NOT GET UNTIL 1948. TAGUE CHISHOLM JOINED OSWALD WYATT IN MINNEAPOLIS SHORTLY AFTER THAT, AND WILLIS POTTS BEGAN HIS CAREER IN CHICAGO. LATER STALWARTS SUCH AS SANDY BILL, BILL CLATWORTHY, AND LUTHER LONGINO WERE STILL MEMBERS OF THE HOUSE STAFF AT BOSTON CHILDREN'S HOSPITAL.

I LEARNED, EARLY ON, THAT IT WAS EASIER TO PUT CHILDREN UNDER ANESTHESIA THAN IT WAS TO WAKE THEM UP. HENCE, A LOT OF MY TIME IN THE FIRST TWO YEARS IN THIS NEW FIELD WAS DEVOTED TO THE DEVELOPMENT OF TECHNIQUES AND SAFEGUARDS IN PEDIATRIC ANESTHESIA. INDEED I SPENT MORE CONCERN AND EFFORT THERE THAN I DID IN SURGERY. MANY THINGS WERE ACCOMPLISHED, NOT THE LEAST OF WHICH WAS THE DEVELOPMENT OF SAFE ENDOTRACHEAL ANESTHESIA, EVEN FOR NEWBORNS. MUCH OF THE EQUIPMENT WE USED, WE MADE OURSELVES.

NEOPRENE HAD JUST BEGUN TO REPLACE RUBBER TUBING. THERE WAS NO SUCH THING AS POLYETHYLENE OR TYGON PLASTIC TUBING. NICETIES SUCH AS BUTTERFLY NEEDLES HAD NOT BEEN INVENTED. TO START AN INTRAVENOUS IN A SCALP VEIN ON A NEWBORN WAS TRULY A CHALLENGE, BUT KEEPING IT RUNNING BY BUILDING MECHANICAL SUPPORTS TO HOLD IN PLACE A RIGID NEEDLE ATTACHED TO A GLASS SYRINGE WAS AN ACCOMPLISHMENT IN STRUCTURAL ENGINEERING.

AND YET HERE AND THERE ABOUT THE COUNTRY CHILDREN WERE BEGINNING TO GET A FAIR SHAKE IN SURGERY.

**BEFORE GRADUATING FROM CORNELL UNIVERSITY MEDICAL COLLEGE IN 1941, I HAD SECURED A TWO-YEAR INTERNSHIP AT THE PENNSYLVANIA HOSPITAL IN PHILADELPHIA AND WAS ASSURED BY I.S. RAVDIN THAT I WOULD EVENTUALLY BE A HARRISON FELLOW IN GENERAL SURGERY AND SURGICAL RESEARCH.**

THE WAR IN EUROPE, AND THE PRESUMPTION THAT WE WOULD SOON BE IN IT, LED TO THE REDUCTION OF MY TWO-YEAR ROTATING INTERNSHIP TO ONE YEAR. ON THE DAY AFTER PEARL HARBOR, I.S. RAVDIN CHOPPED AT LEAST THREE YEARS OFF MY SURGICAL TRAINING BY NOT ONLY APPOINTING ME TO THE HARRISON FELLOWSHIP I ANTICIPATED, BUT HIS MILITARY CONNECTIONS WITH THE ARMY MEDICAL CORPS ENABLED HIM TO DECLARE ME ESSENTIAL TO THE UNIVERSITY OF PENNSYLVANIA FOR THE DURATION OF THE WAR.

MY FIRST INTEREST IN CANCER HAD DEVELOPED WHEN I WAS A MEDICAL STUDENT AT CORNELL. DURING THE SUMMER BETWEEN MY JUNIOR AND SENIOR YEARS, I WORKED WITH HAYES MARTIN, CHIEF OF THE HEAD AND NECK SERVICE AT MEMORIAL HOSPITAL, ON A NUTRITIONAL SURVEY OF CANCER PATIENTS FROM HIS SERVICE. THE THESIS OF THE PROJECT WAS THAT AVITAMINOSIS B CONTRIBUTED TO THE RAVAGES OF CANCER OF THE FLOOR OF THE MOUTH, PALATE, PHARYNX, ETC.

MEMORIAL HOSPITAL HAD JUST MOVED TO ITS NEW LOCATION OPPOSITE CORNELL AND THE NEW YORK HOSPITAL, AND IT WAS THE CENTER FOR CANCER, IN THE BROADEST SENSE OF THE TERM, ON THE EAST COAST. THE HOSPITAL'S DIRECTOR WAS C.P. RHOADES, BUT JAMES EWING, WHO IS REGARDED BY MANY AS THE FATHER OF MODERN CANCER RESEARCH AND THERAPY IN THE UNITED STATES, WAS STILL IN A POSITION OF AWESOME AUTHORITY IN THE HOSPITAL.

THE DAY CAME WHEN I HAD TO PRESENT WHAT I HAD DONE BEFORE MEMORIAL'S CANCER RESEARCH ADVISORY COMMITTEE. THE FACT THAT TWO NOBEL LAUREATES SAT ON THAT COMMITTEE DID NOT MAKE IT ANY EASIER. IN THOSE DAYS I SUFFERED FROM AN INCAPACITATING TYPE OF MIGRAINE BROUGHT ON BY THE RELAXATION OF TENSION. MY 10-MINUTE PRESENTATION WAS FOLLOWED BY SUCH A SENSE OF RELIEF THAT THE SCOTOMA I DEVELOPED IMMEDIATELY WAS SO BRIGHT THAT I COULD BARELY FIND MY WAY OFF THE PLATFORM.

BY THE TIME I REACHED THE BACK OF THE AUDITORIUM, I FELT AS THOUGH SOMEONE HAD BURIED A HATCHET IN THE RIGHT SIDE OF MY SKULL.

IN PREPARATION FOR THAT OCCASION, IT WAS NECESSARY TO PRESENT MY FINDINGS IN A PRELIMINARY FASHION TO OLD DR. EWING. EWING ASKED ME IF I THOUGHT THE IRRITATION OF THE MUCOSA OF THE MOUTH FROM SUCH THINGS AS DENTURES, PIPE STEMS, AND SO FORTH, MIGHT CONTRIBUTE TO CANCER.

WHEN I REPLIED IN THE AFFIRMATIVE HE SAID: "WELL, IF YOU'RE RIGHT, HORSES OUGHT TO HAVE CANCER OF THE JAW ALL THE TIME." I REPLIED: "AS A MATTER OF FACT, MY GRANDFATHER'S HORSE DIED OF CANCER OF THE JAW BUT, ON THE OTHER HAND, I'VE ONLY KNOWN TWO HORSES WELL." TO THAT REPLY, EWING QUIPPED, "THAT'S NOT A BAD SERIES; 50 PERCENT."

I LEFT CORNELL, MEMORIAL HOSPITAL, AND NEW YORK CITY TO GO TO PHILADELPHIA, WITH THE PROMISE THAT AFTER APPROPRIATE SURGICAL TRAINING I WOULD RETURN TO MEMORIAL TO BE THE SURGICAL LIAISON IN THEIR TRAINING PROGRAM WITH CORNELL AND THE NEW YORK HOSPITAL.

IF THERE WAS SUCH A THING AS ONCOLOGY IN THOSE DAYS, I HAD NOT YET HEARD ABOUT IT.

IN THE THIRD YEAR OF MY HARRISON FELLOWSHIP, WHICH WAS ESSENTIALLY THE SURGICAL RESIDENCY AT THE HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA, I WAS ADMITTED TO THAT HOSPITAL AS A PATIENT WITH A SEVERE STREP THROAT, MAKING IT VERY DIFFICULT TO SWALLOW.

THE WAR WAS OVER IN EUROPE. THINGS WERE WINDING DOWN IN THE PACIFIC BASIN. MOST OF THE UNIVERSITY'S SURGICAL STAFF WAS STILL IN THE ARMY RUNNING THE 20TH GENERAL HOSPITAL IN ASSAM. I WAS WAKENED FROM A DEEP SLEEP ABOUT 5:00 A.M. BY I.S. RAVDIN BURSTING INTO MY HOSPITAL ROOM, IN THE UNIFORM OF A COLONEL (HE WAS MADE GENERAL BEFORE RETURNING TO INDIA).

"CHICK! WHAT DO YOU WANT TO DO WITH YOUR LIFE?"

I DON'T KNOW HOW I GATHERED MY THOUGHTS TOGETHER, BUT I CROAKED OUT SOMETHING THAT SOUNDED LIKE THIS: "WELL, DR. RAVDIN, I HAVE COME TO LOVE THE UNIVERSITY OF PENNSYLVANIA, THIS HOSPITAL, AND PHILADELPHIA. I'D LIKE TO STAY HERE. THERE'S ONE WEAK SPOT IN YOUR PROGRAM, AND THAT'S THE CANCER CLINIC. IF YOU'LL GIVE THAT TO ME, I'LL DEVELOP IT AND MAKE IT SING FOR YOU."

RAV REPLIED: "HOW WOULD YOU LIKE TO BE SURGEON IN CHIEF OF THE CHILDREN'S HOSPITAL INSTEAD?" I DIDN'T THINK LONG BEFORE REPLYING: "THAT'S MY SECOND CHOICE." THAT BRIEF ENCOUNTER IS THE REASON I'M HERE TALKING TO YOU TODAY.

**TO SAY THAT CHILD SURGERY WAS AN UNPOPULAR DEVELOPMENT IN THE FIELD OF SURGERY IN 1946 IS A GROSS UNDERSTATEMENT. GENERAL SURGEONS FELT THAT THE LOG OF SURGERY HAD BEEN SPLINTERED ENOUGH; THERE WERE ENOUGH SUB-SPECIALTIES WITHOUT CONTEMPLATING A NEW ONE.**

**BUT THE INSULT ADDED TO THAT POTENTIAL INJURY WAS THAT CHILD SURGEONS SAID THEY COULD DO ANY SURGERY IN CHILDREN BETTER THAN ANATOMICAL SPECIALISTS BECAUSE OF THEIR UNDERSTANDING OF THE PATHOLOGICAL PHYSIOLOGY OF INFANTS UNDER STRESS AND UNDERSTOOD BETTER THE MANAGEMENT OF THEIR VERY LIMITED RESERVE. IT MAY SOUND BRASH AT THIS LATE DATE, BUT IT REALLY WAS TRUE IN 1946.**

IN SPITE OF THE VERY SINCERE AND STRONG SUPPORT OF I.S. RAVDIN AND JONATHAN E. RHOADES, EVEN THE UNIVERISTY OF PENNSYLVANIA WAS HOSTILE TO RAVDIN'S NEW PLANS FOR CHILD SURGERY. SO WAS THE HOSPITAL WHERE I WAS TO BECOME CHIEF, AND THE SURGEONS IN THE FOUR OTHER MEDICAL SCHOOLS IN PHILADELPHIA DID NOT WELCOME A 29-YEAR-OLD UPSTART AS THE CHIEF OF SURGERY IN THE OLDEST CHILDREN'S HOSPITAL IN AMERICA--INTENT ON MAKING IT THE CENTER OF A NEW SPECIALTY.

**LAMENTABLY, AT FIRST, THERE WASN'T MUCH TO DO IN SURGERY. PEDIATRICIANS HAD BECOME SO DISCOURAGED WITH THE OUTCOME OF ATTEMPTED SURGERY ON THE NEWBORN THAT INFANTS DIED ON THE MEDICAL WARDS OF THE CHILDREN'S HOSPITAL IN 1947 WITH ATRESIA OF THE SMALL BOWEL WITHOUT EVEN THE BENEFIT OF A SURGICAL CONSULTATION.**

THIS RELATIVE INACTIVITY PERMITTED ME TO SPEND HOURS IN THE RECORD ROOM. ONE OF THE FIRST PROJECTS I UNDERTOOK WAS TO TRY TO REVIEW THE RECORDS OF PATIENTS WHO HAD A DISCHARGE DIAGNOSIS OF A MALIGNANT TUMOR. IN RETROSPECT, SOME VERY INTERESTING ANECDOTES SURFACED. ONE I REMEMBER WELL WAS FINDING THE RECORD OF A CHILD WHO HAD BEEN TREATED, BY SURGICAL EXCISION, FOR A MALIGNANT TUMOR OF THE PAROTID.

THE SURGERY HAD BEEN DONE 60 YEARS BEFORE. TO MY UTTER AMAZEMENT, I FOUND THE PATIENT STILL LIVED AT HER CHILDHOOD ADDRESS--WITH NO EVIDENCE OF CANCER. SHE WAS THEN, AND MAY REMAIN NOW, THE LONGEST FOLLOW-UP ON A MALIGNANT TUMOR OF THE PAROTID ENCOUNTERED IN CHILDHOOD.

OF THE FIRST 100 RECORDS I STUDIED RETROSPECTIVELY, 25% HAD A DISCHARGE DIAGNOSIS OF NEUROBLASTOMA. THIRTEEN OF THESE PATIENTS HAD BEEN ADMITTED TO THE HOSPITAL BY A REFERRING PHYSICIAN OR HAD BEEN ADMITTED AFTER EXAMINATION IN THE EMERGENCY ROOM WITH A DIAGNOSIS OF RHEUMATIC FEVER,--A DIAGNOSIS MUCH MORE COMMONLY ENTERTAINED AND FEARED IN THOSE DAYS THAN NOW.

**WHY WOULD SO MANY NEUROBLASTOMAS BE MISDIAGNOSED AS RHEUMATIC FEVER? MANY OF THESE YOUNGSTERS HAD BONE METASTASES WHEN THEY WERE FIRST SEEN AND THE LEG PAIN SO COMMON WITH THAT COMPLICATION WAS INTERPRETED AS THE JOINT PAIN OF RHEUMATIC FEVER.**

**THEN THESE YOUNGSTERS, BY THE TIME THEY WERE SEEN, WERE OFTEN ANEMIC AND FRAIL AND PRESENTED WITH A TACHYCARDIA. AND FINALLY, THE SEDIMENTATION RATE, ON WHICH PEDIATRICIANS RELIED SO HEAVILY IN THE DIAGNOSIS OF RHEUMATIC FEVER, WAS ALWAYS ELEVATED IN NEUROBLASTOMA.**

EXCEPT FOR LEUKEMIA, CANCER WAS NOT A DIAGNOSIS FREQUENTLY ENTERTAINED BY PEDIATRICIANS, NO MATTER HOW OBVIOUS THE SIGNS AND SYMPTOMS MIGHT BE TO US TODAY.

I THINK I KNOW PEDIATRIC PRACTITIONERS AS WELL AS I KNOW ANY GROUP OF MY COLLEAGUES, THEY ARE KIND, GENTLE, AND THEY DON'T LIKE TROUBLE. MALIGNANT TUMORS IN CHILDREN ARE BIG TROUBLE. NOT ONLY TROUBLE WITH THE LOSS OF A PATIENT, BUT CANCER IN CHILDHOOD HAS FAR-REACHING EFFECTS. SOCIETY DOES NOT EXPECT CHILDREN TO DIE OF A DISEASE THAT THEY ASSOCIATE WITH OLDER AGE. THEY ALSO EXPECT MORE FROM MEDICINE AND HEALTH CARE THAN WE ARE SOMETIMES ABLE TO DELIVER. THE MAGIC OF MEDICINE DOES NOT ALWAYS EXTEND TO THE CURE OF MALIGNANT TUMORS IN CHILDREN.

TWO ANECDOTES FROM THE EARLY '50S WILL SERVE TO ILLUSTRATE THE ATTITUDE OF SOCIETY AND PEDIATRICIANS TOWARD THIS DIAGNOSIS.

THE POPULARITY OF AFTERNOON SOAP OPERAS OF TODAY WAS ASSUMED IN THE ERA OF WHICH I AM SPEAKING BY AFTERNOOON RADIO TALK SHOWS. I WAS INVITED BY A POPULAR PHILADELPHIA TALK SHOW HOSTESS TO COME AND DISCUSS "THE NEW AND WONDERFUL THINGS" I WAS DOING AT CHILDREN'S HOSPITAL.

**I ARRIVED AT THE STUDIO WITH THE USUAL LEAD TIME AND WE HAD A CONVERSATION SO THAT SHE COULD PREPARE HERSELF FOR THE QUESTIONS SHE WOULD ASK. WHEN I TOLD HER I WOULD BE DISCUSSING CHILDHOOD CANCER, SHE BRISTLED: "DON'T YOU DARE USE THAT HORRID WORD ON MY PROGRAM."**

"WHAT WORD?" I REPLIED.

"THAT HORRIBLE WORD, CANCER."

"WHAT DO YOU WANT ME TO CALL IT?"

"CALL IT THAT DREAD DISEASE."

BY THIS TIME WE WERE READY TO GO ON THE AIR. I COVERED PROBLEMS ABOUT CONGENITAL DEFECTS AND SO ON, AND EVENTUALLY GOT OFF INTO THE FIELD OF CANCER. I DID REFER TO IT AS TUMOR, AND LATER AS MALIGNANT TUMOR, AND THEN I DID USE THE WORDS "DREAD DISEASE."

BY THIS TIME THE SECOND HAND ON THE CLOCK WAS APPROACHING THE TIME I HAD BEEN TOLD WE HAD TO QUIT, WITH ABOUT 10 SECONDS LEFT, MY PARTING SHOT WAS: "OF COURSE, THE DREAD DISEASE I'M TALKING ABOUT IS CANCER." I WAS NEVER INVITED BACK.

PERMANENTLY ATTACHED TO MY SURGICAL SERVICE AT THE CHILDREN'S HOSPITAL WAS A FINE OLD GENTLEMAN, EDWARD J. RILEY. DR. RILEY WAS AN EXCELLENT PEDIATRICIAN WHO USED MORE GOOD SENSE THAN SCIENCE, AT TIMES, BUT HIS NOSTRUMS FOR TREATING PATIENTS WERE LEGENDARY AND HIS DIAGNOSTIC ABILITY WAS PRODIGIOUS.

HE HAD NEVER TAKEN HIS BOARDS AND WAS UNORTHODOX ENOUGH NOT TO BE ACCEPTED IN THE HIGHER SCIENTIFIC ECHELONS OF THE DEPARTMENT OF PEDIATRICS AT THE UNIVERSITY OF PENNSYLVANIA, HENCE HIS ASSIGNMENT AS A SORT OF PERMANENT "CONSULTANT" TO THE SURGICAL SERVICE. HE MADE ROUNDS WITH US DAILY; WE ALL PROFITED BY HIS WISDOM. ABOUT TUMORS, HE UNDERSTOOD WILMS' TUMORS AND NEUROBLASTOMAS AND HE CERTAINLY KNEW ABOUT LEUKEMIA, BUT THAT'S WHERE IT ENDED.

ONE AFTERNOON AS I WAS LEAVING THE HOSPITAL, HE WAS COMING IN. I STOPPED HIM IN THE LOBBY, TO TELL HIM ENTHUSIASTICALLY ABOUT A PATIENT I HAD ADMITTED THAT AFTERNOON. WHEN I TOLD HIM THAT I FELT QUITE CERTAIN I HAD A 13-YEAR-OLD GIRL WITH A CANCER OF THE THYROID, HE JUST LAUGHED. THEN HE DID MORE THAN THAT. HE SLAPPED HIS THIGH, AND LAUGHED AGAIN. IT WAS OBVIOUS THAT I HAD MADE THE GREATEST DIAGNOSTIC ERROR.

I TOOK HIM TO THE WARD, INTRODUCED HIM TO THE YOUNG LADY, AND DEMONSTRATED THE FIRM NODULE IN THE THYROID. HE WAS STILL SO AMUSED THAT, ONCE AGAIN, I GAVE HIM MY LITTLE LECTURE ON "ALL LUMPS AND BUMPS IN CHILDREN ARE MALIGNANT UNTIL PROVEN OTHERWISE." I TOLD HIM THE ONLY WAY YOU COULD PROVE THIS ONE TO BE OTHERWISE WAS TO DO A BIOPSY. AND THAT'S WHAT I INTENDED TO DO THE NEXT MORNING, BY FROZEN SECTION.

IN THE OPERATING ROOM AT 8:00 A.M., POP RILEY WAS PRESENT. IT'S THE FIRST TIME I EVER HAD SEEN HIM PUT ON A SCRUB SUIT, CAP, AND MASK TO GET CLOSE TO THE OPERATING TABLE. I BIOPSIED THE MASS AND WHEN IT CAME BACK AS A FOLLICULAR CARCINOMA OF THE THYROID I PERFORMED A TOTAL THYROIDECTOMY. THE CHILD RECOVERED, GREW UP, MARRIED, AND HAD THREE CHILDREN.

THREE WEEKS AFTER THAT SURGERY, POP RILEY BROUGHT A BEAUTIFUL 4-YEAR-OLD GIRL INTO MY OFFICE. HE STOOD HER DIRECTLY IN FRONT OF ME AND SAID "WHAT DO YOU THINK OF THIS BIRD?", USING THE AFFECTIONATE TERM BY WHICH HE CALLED HIS PATIENTS.

"WHAT AM I SUPPOSED TO SEE?"

"SMILE!" HE SAID TO THE CHILD.

SHE DID, AND IT WAS OBVIOUS THAT SHE HAD TWO DIMPLES ON ONE OF THE CHEEKS AND ONLY ONE ON THE OTHER.

"PUT YOUR FINGER ON THAT UPPER DIMPLE." SAID RILEY.

I DID AND WHILE I HELD MY FINGER THERE, HE SAID TO HER:

"STOP SMILING." AND TO ME "WHAT DO YOU FEEL?"

"A TINY NODULE."

"WELL, WHAT ARE YOU GOING TO DO ABOUT IT?" THEN WITH A SMIRK ON HIS FACE HE SAID "ALL LUMPS IN CHILDREN ARE MALIGNANT UNTIL PROVEN OTHERWISE."

"I'M GOING TO ADMIT HER AND DO AN EXCISIONAL BIOPSY." RILEY WENT ALONG WITH IT BUT VERY SKEPTICALLY. HIS CONVERSION TO MY THESIS WAS COMPLETE WHEN THE DIAGNOSIS CAME BACK "RHABDOMYOSARCOMA, COMPLETELY EXCISED." COULD BE THE EARLIEST DIAGNOSIS OF A FACIAL RHABDO EVER MADE--AND BY A NON-BELIEVER--AT LEAST UP TO THEN.

THE PROTOTYPE OF CHILDHOOD CANCER WAS THE WILMS' TUMOR. REMOVING A WILMS' TUMOR CAN BE ONE OF THE MOST SATISFACTORY ACCOMPLISHMENTS IN PEDIATRIC SURGERY. ON THE OTHER HAND, IT CAN ALSO BE ONE OF THE MOST TERRIFYING.

TO ENCOUNTER A WILMS' TUMOR OF PRODIGIOUS SIZE, DISPLACING THE LIVER AND THE BOWEL, PUSHING THE VENA CAVA AND THE AORTA TO THE OTHER SIDE OF THE SPINAL COLUMN, WITH TUMOR EXTENSION EXTENDING INTO THE RENAL VEIN AND UP THE VENA CAVA AND PERHAPS INTO THE LEFT ATRIUM, CAN BE HUMBLING INDEED.

A KIND OF FOLKLORE DEVELOPED AROUND THE MANAGEMENT OF WILMS' TUMOR. WE ALL KNEW THAT THESE TUMORS WERE FRIABLE AND THAT THE CAPSULE COULD BE EASILY RUPTURED.

WE ALSO KNEW THAT A RUPTURED WILMS' TUMOR HAD A VERY POOR PROGNOSIS. WE ALSO KNEW THAT WILMS' TUMORS GREW RAPIDLY, AND WHO KNEW WHEN THE MOMENT OF METASTASIS MIGHT BE? WE ALSO KNEW THAT WHEN A LARGE ABDOMINAL TUMOR WAS ADMITTED TO THE WARDS OF A CHILDREN'S HOSPITAL, MORE PEOPLE THAN NEEDED TO BE INVOLVED FELT THEY HAD TO FEEL THE TUMOR WITHIN THE ABDOMEN.

MY RULES DEVELOPED RAPIDLY AND WERE FIRM. THE FIRST PERSON ON THE SURGICAL SERVICE THAT ENCOUNTERED THE CHILD PUT A SIGN ON THE ABDOMEN WHICH SAID "DO NOT PALPATE THIS ABDOMEN." A SIMILAR SIGN WAS PUT ON THE FOOT OF THE BED. NO ONE ELSE FELT THAT BELLY EXCEPT THE SURGEON WHO WAS GOING TO PERFORM THE OPERATION AND HIS SUPERVISOR. IF THEY WERE ONE AND THE SAME, ONLY ONE PAIR OF HANDS, OTHER THAN THOSE OF THE ORIGINAL DIAGNOSTICIAN WERE INTENDED TO FEEL THE ABDOMEN.

SECONDLY, EXCISION OF A WILMS' TUMOR WAS CONSIDERED TO BE AN EMERGENCY; NO MORE THAN ONE COMPLETE HOSPITAL DAY WAS PERMITTED TO ELAPSE BEFORE THE OPERATION WAS PERFORMED. AT THE OPERATING TABLE THE TUMOR WAS TREATED AS THOUGH IT WERE AN UNEXPLODED BOMB AND HAD TO BE DEFUSED. IT WAS HANDLED WITH UTMOST CARE AND BECAUSE MOST METASTASES WERE BLOOD BORNE, BY WAY OF THE RENAL VEIN, THE VEINS WERE LIGATED BEFORE THE ARTERY.

THESE WERE NOT FOOLISH PRECAUTIONS AND I'M SURE THEY SAVED LIVES. MANY SURGEONS ARE UNAWARE OF THE DAMAGE CAUSED BY PALPATING FINGERS ON SMALL CHILDREN. I LEARNED THIS FROM WILLIAM E. LADD, WHO TOLD ME NEVER TO OPERATE ON A PYLORIC STENOSIS IF THE PEDIATRICIANS HAD A GO AT FEELING THE "OLIVE."

HE SAID HE HAD LEARNED BY BITTER EXPERIENCE THAT SUCH TRAUMA PRODUCED SO MUCH PYLORIC EDEMA THAT NO MATTER HOW WELL THE OPERATION WAS PERFORMED, THE CHILD VOMITED FOR DAYS THEREAFTER.

I HAVE OPENED THE ABDOMENS OF CHILDREN WITH PYLORIC STENOSIS, UNAWARE OF THE FACT THAT MY RULES HAD BEEN BROKEN ABOUT PREOPERATIVE PALPATION. IN ADDITION TO THE EDEMA OF THE PYLORUS, ACTUAL HEMORRHAGES CAN BE SEEN IN THE TRANSVERSE MESOCOLON FROM WHAT I'M SURE THE PERPETRATOR WOULD HAVE CALLED "GENTLE" PALPATION.

UNKNOWN TO ME ON ONE OCCASION, THE MEMBER OF THE PEDIATRIC STAFF WHO HAD REFERRED A WILMS' TUMOR TO ME, TOOK FOUR MEDICAL STUDENTS ON ROUNDS TO FEEL THE MASS WHILE I WAS OPERATING ON THE PRECEDING CASE. WHEN I OPENED THE ABDOMEN, THE WILMS' TUMOR WAS RUPTURED AND FRIABLE MALIGNANT TISSUE WAS FOUND THROUGH THE RETROPERITONEUM; THE HEMORRHAGE HAD EXTENDED WELL TO THE CONTRALATERAL SIDE AND HAD MADE ITS WAY UP INTO THE MESOCOLON OF THE ASCENDING AND TRANSVERSE BOWELS. THAT PATIENT DIED.

ONE OF THE MOST HORRENDOUS SURGICAL PROCEDURES IN REFERENCE TO A WILMS' TUMOR THAT WE EVER UNDERTOOK WAS A NEPHRECTOMY IN CONJUNCTION WITH THE REMOVAL, VIA THE RENAL VEIN, OF A TUMOR THROMBOUS THAT EXTENDED UP THE VENA CAVA, TURNED THE CORNER, AND ENDED IN THE RIGHT ATRIUM. POSTOPERATIVELY, IN ORDER TO DEMONSTRATE, FOR TEACHING PURPOSES, WHAT WE HAD DONE, AND WHILE THE CHILD WAS STILL ON THE OPERATING TABLE IN A SUPINE POSITION, WE PLACED THE TUMOR NEXT TO HIM AT HIS RIGHT FLANK AND THEN LAID THE THROMBUS ON HIS BODY TO MIMICK ITS INTERNAL POSITION.

IT STARTED AT THE LEVEL OF HIS LIGATED RENAL VEIN AND LAY ACROSS HIS RIBCAGE AND TURNED AROUND TO END IN A BULBUS MASS JUST OVER HIS RIGHT ATRIUM.

WHEN, A YEAR OR SO LATER, I WAS PRESENTING A PAPER AT THE BOSTON CITY HOSPITAL AS PART OF A SYMPOSIUM ON CANCER IN CHILDHOOD, I SHOWED THIS CASE, INCLUDING A MICROSCOPIC SECTION OF THE TIP OF THE THROMBUS FOUND IN THE ATRIUM.

THERE WAS NO DOUBT THE THROMBUS WAS WILMS' TUMOR AND THAT WAS THE ONLY POINT I WAS TRYING TO MAKE. IN THE AUDIENCE, HOWEVER, WAS JUDAH FOLKMAN, THEN SURGEON-IN-CHIEF OF THE CHILDREN'S HOSPITAL OF BOSTON, AND A SCIENTIST WITH A LIFE-LONG INTEREST IN THE ANGIOGENESIS FACTOR. AMONG OTHER CONCERNS, HIS THESIS WAS THAT TUMORS CAN'T GROW WITHOUT BLOOD SUPPLY. WHERE DO THE BLOOD VESSELS COME FROM, AND WHAT TRIGGERS THEIR DEVELOPMENT?

I PUSHED A BUTTON ON THE PODIUM TO MOVE THE SLIDE AND DR. FOLKMAN CRIED OUT, "WAIT, WAIT!" I BACKED THE SLIDE UP. THERE HE DEMONSTRATED SOMETHING I HAD NOT SEEN. ON THE VERY TIP OF THE THROMBUS, IN THE MIDST OF THE TELLTAIL HISTOLOGY OF WILMS' TUMOR, THERE WERE TINY BLOOD VESSELS GROWING MORE THAN TWO FEET AWAY FROM THE PRIMARY TUMOR THAT GAVE BIRTH TO THE THROMBUS.

IT WAS, OF COURSE, THE ADVENT OF CHEMOTHERAPY THAT CHANGED THE WHOLE CONCEPT OF THE MANAGEMENT OF CHILDHOOD CANCER,--AND IT AFFECTED WILMS' TUMOR FIRST.

IT IS INTERESTING THAT UP UNTIL THE ADVENT OF CHEMOTHERAPY, ALL OF THE MAJOR CHILDREN'S HOSPITALS IN THE COUNTRY HAD ABOUT THE SAME SURVIVAL RATE FOR WILMS' TUMOR USING JUST ABOUT THE SAME PROTOCOL THAT I HAVE DESCRIBED. SEVERAL OF US HAD ACHIEVED 47 POINT SOMETHING % SURVIVAL BEFORE CHEMOTHERAPY. I KNOW OF NO ONE WITH A RESPECTABLE SERIES WHO REACHED 48%.

UNTIL CANCER CHEMOTHERAPY GAINED A FOOTHOLD, THE MANAGEMENT OF CHILDHOOD CANCER WAS THE SURGEON'S DOMAIN, WITH AN ASSIST FROM THE RADIOLOGIST.

COLLEAGUES IN INSTITUTIONS SIMILAR TO MY OWN WERE NOT ONLY SURGEONS AND PEDIATRICIANS, BUT FAMILY COUNSELORS AND CHAPLAINS AS WELL. WITH THE ADVENT OF CHEMOTHERAPY, THE SPECIALTY OF PEDIATRIC ONCOLOGY CAME INTO ITS OWN. THERE IS NO DOUBT THAT BECAUSE OF AVAILABLE RESEARCH FUNDING, THE INTEREST IN A NEW FRONTIER, AND THE INCREASING SUCCESS WITH CHEMOTHERAPY FOR WILMS' TUMOR AND RHABDOMYOSARCOMA (AS WELL AS GREAT SUCCESS IN THE MANAGEMENT OF LEUKEMIA), ONCOLOGY BEGAN TO ATTRACT MORE AND MORE BRIGHT YOUNG PEDIATRICIANS AND HEMATOLOGISTS.

I HAVE CONSIDERABLE PRAISE FOR MEDICAL ONCOLOGISTS AND THEIR ACCOMPLISHMENTS. I THINK, IN MANY INSTITUTIONS ACROSS THE LAND, WHAT COULD HAVE BEEN A MAJOR THRUST BY MANY DISCIPLINES INVOLVED IN THE MANAGEMENT OF THE JUVENILE CANCER PATIENT FELL SHORT OF THE MARK. AS THE ONCOLOGIST HAS RISEN, SO HAS THE PERCEPTION OF THE VALUE OF THE SURGEON FALLEN. IT WOULD BE TRAGIC, IF, WITH THE HISTORY OF THE PAST FEW YEARS, THE SURGEON IS RELEGATED TO THE POSITION OF TECHNICIAN TO THE MEDICAL ONCOLOGIST.

**IT IS IRONIC THAT MOST GOOD MEDICAL ONCOLOGISTS WERE ATTRACTED TO THEIR PRESENT SUB-SPECIALTY BY THE REPUTATION AND CASE LOAD OF A PEDIATRIC SURGICAL CANCER ENTHUSIAST.**

**AS FASCINATING AS ALL CHILDHOOD MALIGNANT TUMORS WERE, IT WAS THE NEUROBLASTOMA AND ITS PECULIAR LIFE HISTORY THAT RIVETED MY ATTENTION,--EVEN EARLY ON.**

WHEN I DID MY RETROSPECTIVE STUDY OF RECORDS OF DISCHARGE DIAGNOSES WITH MALIGNANT TUMORS, I HAD BEEN WAS STRUCK THAT 25% OF THEM WERE NEUROBLASTOMA. I ATTEMPTED TO TRACE THESE CHILDREN, FOUND THAT MOST OF THEM HAD DIED, BUT THAT SOME RATHER REMARKABLE YOUNGSTERS HAD SURVIVED.

ONE HAD BEEN IN THE HANDS OF A NEUROSURGEON WHO HAD DONE A LAMINECTOMY AND REMOVED A PORTION OF A HIGHLY UNDIFFERENTIATED NEUROBLASTOMA, CLOSING THE PATIENT UP TO DIE.

IN RETROSPECT I THINK EVERYBODY MISSED THE ABDOMINAL TUMOR, OF WHICH THE INTRASPINAL EXTENSION WAS THE SMALL END OF A DUMBBELL. SOME YEARS LATER WHEN SOMEBODY FELT AN ABDOMINAL TUMOR IN THIS NOW PARAPLEGIC CHILD, IT WAS BIOPSIED AND PROVED TO BE A QUITE BENIGN GANGLIONEUROMA. THE OTHER LIVING PATIENTS IN THAT SMALL GROUP OF NEUROBLASTOMA SURVIVORS IMPRESSED ME THAT THE THERAPY SEEMED TO HAVE HAD LITTLE OR NOTHING TO DO WITH SURVIVAL.

OF COURSE I CAN ONLY SPEAK ABOUT THOSE CHILDREN AND KNEW NOTHING ABOUT THE QUALITY OR QUANTITY OF TREATMENT ON THOSE WHO DIED.

EARLY IN MY TENURE AT CHILDREN'S HOSPITAL, I WAS CALLED UPON TO TREAT AN ABDOMINAL MASS IN THE INFANT SON OF A FORMER RESIDENT WHO HAD MARRIED ONE OF OUR NURSES. DURING SURGERY, I RUPTURED THE PSEUDOCAPSULE OF A PERIRENAL NEUROBLASTOMA.

IN ADDITION TO THAT POOR PROGNOSTIC SIGN, THE CHILD ALSO HAD MULTIPLE BARELY VISIBLE METASTASES TO THE LIVER, CONFIRMED BY BIOPSY. THE SURGERY WAS CERTAINLY NOT THE METICULOUS SURGERY OF CANCER THAT I HAD BEEN TAUGHT. THERE WAS GROSS SPILL OF TUMOR THROUGHOUT THE PERITONEAL CAVITY. I TOLD THE FAMILY THE SITUATION WAS HOPELESS AND NO RADIATION THERAPY SHOULD BE GIVEN.

SIX WEEKS LATER THE CHILD RETURNED FOR A POSTOPERATIVE VISIT AND HAD MULTIPLE SUBCUTANEOUS NODULES WHICH I ASSUMED TO BE TUMOR. I DID NOT ASK FOR A BIOPSY.

THE YOUNGSTER WAS SENT HOME TO DIE. THAT PATIENT EVENTUALLY GRADUATED FROM LAW SCHOOL AND WHEN LAST SEEN BY ME, THE PYELOGRAM SHOWED NOTHING MORE THAN A DISTORTED CALYX OF ONE KIDNEY ON THE SIDE OF THE SURGERY.

A THREE AND ONE-HALF YEAR OLD GIRL WAS SENT TO ME WITH THE DIAGNOSIS OF SPLENOMEGALY. IT WAS OBVIOUS THAT THE MASS IN QUESTION WAS NOT A SPLEEN, BUT A TUMOR, AND AFTER SUITABLE WORKUP, ABDOMINAL EXPLORATION REVEALED A MALIGNANT NEUROBLASTOMA ARISING FROM THE ABDOMINAL SYMPATHETIC CHAIN, FASTENED TIGHTLY TO THE SPINAL COLUMN AND DIFFUSE ENOUGH IN THE RETROPERITONEUM AS TO BE NONRESECTABLE.

THE TUMOR WAS SOFT AND SUCCULENT, AND AFTER OPENING THE POSTERIOR P ERITONEUM, IN THE COURSE OF BIOPSY, THERE WAS GROSS SPILL OF THE TUMOR INTO THE PERITONEAL CAVITY.

I PRESENTED THE FATHER WITH A HOPELESS PROGNOSIS AFTER WHICH HE BEGAN TO READ BROADLY ABOUT NEUROBLASTOMA,--WHAT LITTLE THERE WAS WRITTEN ABOUT IT,--AND BECAME AN ALLY WITH ME AGAINST THE TUMOR.

THE TUMOR SLOWLY ENLARGED AND ITS LOWER TIP, WHICH HAD BEEN PALPABLE JUST BELOW THE COSTAL CAGE, DESCENDED UNTIL IT REACHED THE PELVIS, TURNED TOWARD THE RIGHT, AND EVENTUALLY POINTED UPWARD IN THE RIGHT LOWER QUADRANT. AFTER A PERIOD OF STABILIZATION THERE, THE TUMOR SLOWLY RECEDED IN THE DIRECTION FROM WHENCE IT HAD COME UNTIL IT WAS BARELY PALPABLE HIGH UP UNDER THE COSTAL CAGE ON THE LEFT. BY THAT TIME, IT WAS THE FATHER, NOT I, WHO WAS PUSHING FOR ANOTHER LOOK.

THIS WE DID AND FOUND AN EXTREMELY FIRM, SMALL GANGLIONEUROMA ABOUT THE SIZE OF A TENNIS BALL, WHICH I RESECTED, WITHOUT BEING ABLE TO DETACH EVERY CELL FROM THE SPINAL COLUMN. THE CHILD SURVIVED, AND WAS LOST TO FOLLOW-UP IN HER TEENS.

THE SURVIVAL OF THOSE YOUNGSTERS FOLLOWING GROSS SPILL OF THE TUMOR INTRAPERITONEALLY LED ME TO BELIEVE THAT PERHAPS THE VERY SPILL MIGHT HAVE HAD A BENEFICIAL EFFECT. AFTER MORE EXPERIENCE, MY FIRST PRESENTATION ON THE SUBJECT OF NEUROBLASTOMA WAS BEFORE THE SOCIETY OF UNIVERSITY SURGEONS IN 1955.

I ENTITLED THE PAPER "NEUROBLASTOMA IN CHILDHOOD: THE EFFECT OF MAJOR SURGICAL INSULT ON SURVIVAL." I REPORTED A 38% SURVIVAL IN MY EXPERIENCE THUSFAR.

IN A DISCUSSION FOLLOWING MY PRESENTATION, CRITICS SUGGESTED THAT IF ONLY I HAD BEEN SMART ENOUGH TO USE RADIATION THERAPY IN ADDITION TO SURGERY, I COULD HAVE IMPROVED MY RESULTS.

**THE NEXT EIGHT NEUROBLASTOMAS I TREATED WITH RADIATION. ALL OF THEM DIED. I THEN RETURNED TO MY LONG-HELD BELIEF THAT THE ADJUNCT OF RADIATION THERAPY FOR NEUROBLASTOMA DID NOT REALLY INCREASE SURVIVAL. THIS POSITION, WHICH WAS LATER CLARIFIED BY THE WORK OF MANY OTHERS, EVENTUALLY LED TO OUR UNDERSTANDING OF THE CURRENT STAGING OF NEUROBLASTOMA. SOME YOUNGSTERS, FOR EVERY SCIENTIFIC REASON, ENTITLED TO A POOR PROGNOSIS AND [redacted] ON THEIR WAY TO DEATH, WERE PATIENTS WITH STAGE IV-S DISEASE.**

ONE OF THE MOST DIFFICULT THINGS FOR ME TO SURMOUNT PROFESSIONALLY WAS DISBELIEF. SIDNEY FARBER, DAN DANCIS, & AUDREY EVANS DID NOT BELIEVE. AFTER AUDREY EVANS CAME TO CHOP - SHE HAD AMPLE OPPORTUNITY TO SEE MY PATIENTS. SEVERAL YEARS LATER AT A TEXAS MEETING MODERATED BY SIDNEY FARBER - DANCIS ACKNOWLEDGED I WAS RIGHT - THAT WAS THE FIRST TIME I KNEW I WAS BELIEVED [illegible] WAS ESTABLISHED

THEIR PROGNOSIS WAS NOT IMPROVED BY RADIATION AND THEIR SURVIVAL WAS ALMOST UNIFORMLY GOOD.

WHEN I LEFT THE PRACTICE OF SURGERY IN 1981 TO GO TO WASHINGTON, MY OWN SURVIVAL RATE WAS THE SAME 38% THAT MY PATIENTS ENJOYED IN 1955, IN SPITE OF ADJUNCTIVE RADIATION AND CHEMOTHERAPY. UNFORTUNATELY, NEUROBLASTOMA HAS NEVER HAD THE REMARKABLE SUCCESSFUL INCREASE IN SURVIVAL THAT WAS ACCOMPLISHED FOR WILMS' TUMOR WITH CHEMOTHERAPY.

I GUESS THE FIRST OF MANY SURGICAL AND PUBLIC HEALTH CRUSADES OF MY LIFE CENTERED AROUND AWAKENING PEDIATRICIANS TO THE POSSIBILITY OF DIAGNOSING CANCER IN CHILDREN. IT'S HARD TO BELIEVE, EVEN AT THIS LATE TIME, HOW DIFFICULT IT WAS TO FIND RECEPTIVE AUDIENCES AMONG PEDIATRICIANS. AS I TRIED TO AROUSE A FEELING OF GUILT FOR MISSING DIAGNOSES, BUT AT THE SAME TIME PROVIDING A WAY OUT FOR THE IMPOSSIBLE PROBLEMS, I USED TO SPEAK OF FOUR CATEGORIES OF TUMOR:

1. THE VISIBLE OR PALPABLE LESION WHICH NO ONE COULD BE EXCUSED FOR MISSING;

2. THE TUMOR THAT, BY ITS SYMPTOMATOLOGY, SHOULD AROUSE SUSPICION OF CANCER IF ONE INCLUDED IT IN THE DIAGNOSTIC POSSIBILITIES;

3. THOSE TUMORS WHOSE SYMPTOMS MIMICKED OTHER MORE FAVORABLE DIAGNOSES (SUCH AS THE DIAGNOSIS OF RHEUMATIC FEVER, INSTEAD OF NEUROBLASTOMA);

4. THE TUMORS HERALDED BY SUCH VAGUE SYMPTOMATOLOGY THAT NO ONE COULD BE BLAMED FOR A DELAYED DIAGNOSIS.

**AS I LOOK BACK OVER THE LAST HALF-CENTURY, IT'S HARD TO BELIEVE HOW LITTLE WE ALL KNEW WHEN I GRADUATED FROM MEDICAL SCHOOL AND WHAT TREMENDOUS ADVANCES THERE HAVE BEEN IN MEDICINE DURING MY LIFETIME.**

THE OPPORTUNITIES FOR LABORATORY AND CLINICAL INVESTIGATIONS OF CHILDHOOD CANCER ARE STILL LEGION. I STILL FEEL THAT IF SOMEONE COULD UNDERSTAND, IN ITS TOTALITY, THE BEHAVIOR OF NEUROBLASTOMAS, A KEY WOULD TURN IN MANY LOCKS IN OUR UNDERSTANDING OF ONCOGENESIS, MATURATION, AND SPONTANEOUS REMISSION. OF COURSE, ADJUNCTS TO THERAPY WOULD SOON FOLLOW. I THINK THAT COMBINATIONS OF ADJUNCTIVE THERAPY ALONG WITH SURGERY WILL CONTINUE TO LOWER MORTALITY RATES BUT ONLY SLOWLY WHILE INCREASING THE LONGEVITY OF CHILDREN DESPITE THE ULTIMATE FATAL OUTCOME. THE REAL BREAKTHROUGH, I THINK, WILL COME WITH A BETTER UNDERSTANDING OF THE IMMUNOLOGY OF CANCER AS WELL AS THE ELUCIDATION OF THE COMBINED FACTORS OF GENETIC PROPENSITY AND ENVIRONMENTAL STIMULI.

**WHILE THE DAY-TO-DAY CARE OF THE YOUNGSTER WITH THE MALIGNANT TUMOR IS ONE OF THE ULTIMATE CHALLENGES IN PEDIATRIC MANAGEMENT, THE IMPROVED SURVIVAL OF PATIENTS WITH PEDIATRIC MALIGNANT TUMORS HAS BEEN ONE OF THE OUTSTANDING SUCCESSES IN THE FIELD OF ONCOLOGY. IT HAS BEEN A GOOD TIME TO BE ALIVE.**

**--END--**